COMPULSORY COURSE 04 (CC-04)
TECHNOLOGY OF TEACHING

BLOCK 02
WRITING INSTRUCTIONAL OBJECTIVES

B.Ed. CC-04 : TECHNOLOGY OF TEACHING

Block
2

WRITING INSTRUCTIONAL OBJECTIVES

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BLOCK 02 : WRITING INSTRUCTIONAL OBJECTIVES

INTRODUCTION

Teaching is a meaningful, purposive and goal-directed activity. Hence, teaching pre-supposes certain goals. Without specific goals and purposes teaching may turn it to a useless, purpose activity. Hence, before embarking to teach a group of students, a teacher should ask himself some questions like. Why am I doing this activity of teaching? To whom I am teaching? With what purposes am I teaching? What changes do I expect in students? What do I expect from a student? What does the teaching-learning process offer? What content has to be taught? These questions relate to deciding. In education, these goals of teaching or instruction are termed as Instructional objectives.

Why do teachers need Instructional objectives? Because Instructional Objectives fix the goal towards which the instructional process to be directed. They help the teacher in planning his teaching which includes assessing the background of learning selection confident decoding about teaching strategies, selections and providing appropriate learning experiences to students. Instructional objectives also help teachers to evaluate these students achievement in hearing and to evaluate the degree of effectiveness of their teaching. These objectives provide feedback to students to assess as to what extent they have learnt. Hence formulating instructional objectives is a very essential stage of planning teaching learning activities.

This Block consists of six Units. In **Unit-7** the general aims and objectives are explained. These general aims and objectives have to be formulated in specific terms depending upon the content to be taught. Such objectives are known as Instructional Objectives. These are explained in **Unit-8.** In **Unit-9** and **Unit-10** you will study about the classification of Instructional Objectives.

Writing Instructional Objectives is an important skill which every teacher should possess. Objectives must be formulated in specific and concrete terms. In **Unit-11** you learn about the formulation of instructional objectives.

UNIT - 7 □ AIMS AND OBJECTIVES OF EDUCATION

Structure

7.1 Introduction

Behind every man's achievement there is definite target. The target needs to be achieved with full efforts. So, Vivekananda great saint of India encouraged our young generation by his words awake, arise, stop not till the goal is reached. These words, brought the message that every person should have some goals, or objectives to achieve. By attaining those goals and objectives he / she will become model to others. Likewise in education also, the students should have certain goals to achieve. Those goals may be achieved in one class, or one day or it may take more time through education only

national and international aims could be achieved. The process of education has certain aims and objectives because teaching-learning act aims that every teacher must be aware of terms, goals, aims and objectives. So, that the teacher can accomplish the task successfully and give direction to the activity.

7.2 Objectives

After studying this Unit, you will able to:
- ➢ State the goals/aims of education;
- ➢ Understand the general aims of teaching a subject/of education course;
- ➢ Establish relation between general aims, general objectives of subject/course;
- ➢ Explain meaning terms, aims, and objectives;
- ➢ Differentiate between general aims and specific aim;
- ➢ Perceive long range objectives and short range objectives; and
- ➢ Analyse the specifications of each objective.

7.3 General Aims / Goals of Education

Education is necessary for every human being and survival of the society. What is it that the education should be trying to do? What are its goals, aims and objectives? Without determining the aims of education it is not possible to plan the curriculum and the methods of imparting the education. Goals / aims are defined in very general, broad and abstract terms expressing noblest aspirations of man, society nation and the world. They give the vision and direction pointing to an end to be achieved. They act like traffic lights along the highway of education giving all clear signals for strategies conducted and reduce deviations.

With explosion of knowledge, the rise of new science and technology, the content and extent of education has become more complex. In this context, goals / aims eliminate the non-essentials and accidentals, and identify priorities and make the people to achieve those goals/aims.

They are useful in stating purposes of education and curriculum, in expressing the philosophy or point of view underlying the curriculum in communicating with lay persons, in identifying priorities, and in education structure, administration planning programming methods, aids techniques research.

Goals are yardsticks of measurement against which programme can be evaluated,

renewed, revised and recreated. Goals have permanence of values, so educators must cultivate the spirit goals, which make all those involved with the educational system conscious of the importance of working within their, specified area.

Here are some representative goal statements.

- To develop wholesome self-concept.
- To develop critical thinking and decision making process
- To develop vocational skills so that each student can find a place in the world of work.
- To develop an appreciation of the arts and ways in which they enrich life.
- To develop ethical attitudes and behaviour based on a sense of moral and spiritual values.
- To develop an understanding and appreciation of the values, goals, and processes of a democratic living.

‘Check Your Progress’ -1

1. Goals are defined in …………. items

   a. Specific/small   b. general broad

   c. flourish/vague   d. good/general

2. Give two goals of Education

   _____

   _____

   _____

   _____

   _____

7.4 General objectives of teaching a subject/course

General objectives are combination of specific objectives. By achieving several specific objectives we achieve more general objective, which in turn contributes to the accomplishment of a still more general objective. Such general objectives may be hoped to achieve ultimate goals of the entire educational programme. For example:

As a result of schooling, the students will be good citizens; think clearly and rationally; use their leisure time worthily, develop healthier life; earn a good living at

their vocations; appreciate beauty in art; nature and the community.

Such objectives are called as general objectives which will change according to the subject/course or disciplines.

Examples of general objectives of particular subject/course of cognitive domain.

- **Knowledge**
1. Knows common terms of the subject
2. Knows specific facts of the subject
3. Knows methods and procedures to deal with subject
4. Knows basic concepts
5. Knows principles

- **Understanding**
1. Understands facts and principles
2. Interprets verbal materials
3. Interprets charts and graphs
4. Translates verbal material to mathematical formula.
5. Estimates consequences implied in data.
6. Justifies methods and procedures.

- **Application**
1. Applies theories to practical situations
2. Applies principled to new situations
3. Salves mathematical problems
4. Constructs charts and graphs
5. Demonstrate correct use of a procedure

- **Analysis**
1. Recognizes unstated assumptions
2. Recognizes logical fallacies in reasoning
3. Distinguishes between facts and inferences
4. Evaluates the relevance of data
5. Analyses the organizational structure of a work (Art, Music, Writing)

- **Synthesis**
1. Writes a well-organised theme
2. Gives well organised speech
3. Writes creative short story or poem
4. Proposes plan for an experiment

5. Integrates learning from different areas, into a plan for salving problems
6. Formulates new scheme for classifying objective

- **Evaluation**
1. Judges the consistency of written material
2. Judges the adequacy with which conclusions are supported by data

'Check Your Progress'- 2

1. General objectives of subject/course achieved by…………
a. Instructional objectives   b. subject/course
c. Closed objectives   d. aims

2. Write two general objectives of cognitive domain objective of Bloom

_____

_____

_____

_____

_____

7.5 Goals/General Aims of Education, General Objectives of Teaching a Subject/Course-Relationship

General aims of education can be achieved through general objectives of teaching/ subject course. Generally speaking general aims of education have broad purposes and
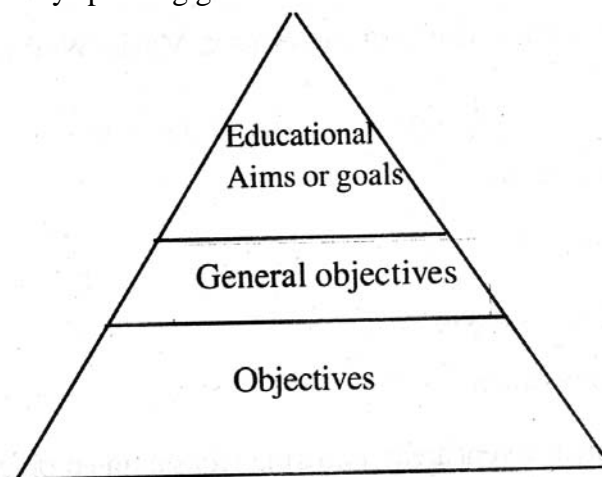

Fig. 1 : Hierarchal order of objectives

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they always usually serve the general purposes of education. ex. Development of democratic citizenship. Vocational efficiency, national integration, secularism, etc. are some of the general aims of education. They are made to serve the individual society. They differ from nation to nation and society to society.

General aims of education help in proper development of the cognitive and affective domains of lesson being through general theme of education and long term planning.

Infact educational aims general objectives and teaching-learning objectives represent the hierarchical order shown above fig.1.

The general objectives of teaching are the medium between broad undefinable statements or long range aims. And un manageable lists of specific types behavioural objective.

When developing a list of general objectives for a course our aim is to obtain list of aims of education to work to word and not specific types of behaviour to be attained by all students.

Each general objective will needs to be defined further by a sample of specific types of behaviour that characterize each objective.

The following verbs were used in the stating general objectives.

1. Applies   2. Comprehends   3. Knows   4. Understands   5. Uses

These will give desired level of generality for our major objectives.

In order to define general objectives, some of the suggestions are given below.

1. Begin each general objective with a verb (knows, understands, appreciates etc.)

2. State each objective in terms of student performance (rather than teacher performance)

3. State each objective as learning product

4. State each objective so that it indicates terminal behaviour

5. State each objective so that it includes only one general learning one come (rather combination of several objectives)

6. State each objective at proper level of generality, that is, at a level of generality that clearly indicates the expected learning out come and that is readily definable by specific types of student behaviour

'Check Your Progress' - 3

1. General aims of education have achieved through
    a. general objectives   b. specific objectives

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c. short term objectives   d, long term objectives

2. Begin general objectives with verb…………..

   a. knows   b. converts   c. computes   d. identifies

7.6 Introduction To Terminology

7.6.1 Aims and Objectives

Aims are broad and general expressions purposes, or desired out comes. They are useful in stating the purposes of education and purpose of an area of the curriculum in expressing the philosophy or point of view underlying the curriculum in communicating with lay persons, in identifying priorities, and in policy planning related to the allocation of resources to various components of the educational program. These statements assist the teacher in communicating program which aims to portents, administrates, and students and conceptualizing desired out comes for the year.

Objectives are statements of specific outcomes of instruction, they are indicative of desired student behaviour or performance. They are related to aims but their specificity is needed to plan and evaluate instruction a function not served by aims.

Differences between Aims/Objectives

Aims	Objectives
1. Directions in education without which education cannot progress in a desirable direction	1. It is point sharing the possible achievement in that direction
2. Achievement of aims is beyond the scope of the schedule programme	2. Objective can be achieved in short time.
3. Aims of education cannot change from subject to subject	3. Objectives changed from subject to subject.
4. The attainment of objectives takes us to achievement of aims	4. Objectives originate from aims
5. They line broad and avoid not help in selecting content of subject	5. Objectives do help in this regard and not only that but they also help the classroom teacher.
6. They are meaning has to classroom teacher	6. While objectives being specific become meaningful to teacher

7.6.2 General Aim and Specific Aim

General aims are combination of specific aims. By achieving several specific aims we achieve more general aim. General aim is a direction in education. Specific aim is the specifically learning outcomes which will help the classroom teacher to plan his instructional to achieve specific aim.

7.6.3 Long Range Objectives and Short Range Objectives

● Long-range objectives are related directly to goals and they are used to check progress at the end of a unit. Goals could relate to course, school year, or designated level of instruction or performance. For example, by the end of the year, 90 percent of all students will write the 100 words spellings with 100 percent accuracy.

● Short range objectives are derived from long range instructional objectives and are designated as short range objectives which are going to guide short range instruction. For example, students will write from memory the correct 10 spellings accurately.

7.6.4 Instructional Objectives and Specification (as used by Bloom *et al.*)

Instructional objectives are behavioural statements of standards or norms that students are regularly expected to meet. Specification is desirable specific learning outcome starts with verb that indicates observable behaviour and which is stated before the students undergo learning experience. Specification determines the limits of the scope of each instructional objective.

Bloom, et al. classified the instructional objectives into three domains. They are cognitive, affective and psychomotor domain. According to Bloom, the instructional objectives include knowledge, comprehension, application, analysis, synthesis and evaluation. He has stated specification for each objective which is given below in table 7.1

Table-7.1: Objectives and Specifications

Objectives	Specification Specific learning outcomes
1 Knowledge	1. Recall 2. Recognize
2 Comprehension	1. See relationship 2. Cite example 3. Discriminate

Objectives		Specification Specific learning outcomes	
		4.	Classify
		5.	Verify
		6.	Generalize
3	Application	1.	Reason
		2.	Formulate
		3.	Establish
		4.	Infer
		5.	Predict
4	Analysis	analysis	
5	Synthesis	Synthesis	
6	Evaluation	Evaluate	

7.6.5   Learning Outcome, Anticipated Learning Outcome, Terminal Behaviour

Learning out come, means, every statement of an objective should describe the kind of change or growth expected in each child when the objectives are realized. We call it as learning out come, which is expressed in terms of change in behaviour.

The anticipated learning out come is derived observable behaviour that occurs earlier in time than the terminal behaviour i.e., it becomes the entering or prerequisite behaviour for the terminal behaviour. Just as addition to multiplication.

Terminal behaviour is a desired outcome of learning experiences expressed in terms of the observable behaviour of learner. According to Magar (1962) "It is description of a pattern of behaviour we want the learner to be able to demonstrate.

It is overt and is recognizable at the end of a specified time. Output objectives and task descriptions are other terms used synonymously in meaning by writers like Gagne (1965).

'Check Your Progress' - 4

1. Define aims.

_____

_____

_____

_____

2. Define objectives

_____

_____

_____

_____

_____

7.7 Let Us Sum Up

"Education is essential for every human being for the individual progress and as well as society. So goals/ aims and objectives really provide directions to plan curriculum for particular education. Goals/aims are broad and are called traffic lights along the high way of education in order to reduce deviations. General objectives are combination of specific objectives. By achieving several specific objectives we achieve more general objective.

The general objectives of teaching are the medium between broad indefinable statements or long range Aims and unmanageable specific objectives. Aims are broad and general expressions purposes; they are useful for stating purposes of education. Objectives are statement of specific outcomes of instruction. They are indicators of desired student behaviour.

Long range objects are directly related to goal but short range objectives are derived from long range objectives which guide the instruction. Instructional objectives are behavioural statements of standards or norms that students are expected to meet. Specification is observable behaviour which is stated before the students undergo learning experience that limits the scope of each instructional objective.

Learning outcome is statement which describes the kind of change in behaviour Terminal behaviour after undergoing learning experience the change in behaviour is terminal behaviour. It is overt and observable.

7.8 Answers to 'Check Your Progress'

'Check Your Progress'- 1

1.   (b) General broad
2.   Two goals of Education are
     i.   To develop whole some self concept
     ii. To develop ethical attitudes and behaviour based on a sense of moral and spiritual value.

'Check Your Progress' - 2

1. (a) instructional objectives

2. i. Applies, ii. Understands

'Check Your Progress' - 3

1. (a) General Objectives

2. (a) Knows,

'Check Your Progress' - 4

1. Aims are broad and expressed in General terms they give direction to education.

2. Objectives specific behavioural statements that students are regularly expected to meet.

7.9 Unit-End Exercises

1. Define goals of education and give two examples

2. Explain the differences between the following briefly:

   i. Aims and Objectives

   ii. Long range objectives and short range objectives

   iii. Anticipated learning outcome and Terminal behaviour

3. What is an Instructional Objective? Explain specification.

7.10 References

1. Aggarwal J. C. (1995) *Essentials of Educational Technology, Teaching and Learning* New Delhi, Vikas Publishing House Pvt. Ltd.

2. Gronlund N. E. (1970) *Stating Behavioural Objectives for Classroom Instruction.* The Macmillan Company Cavalier-Macmillan, London.

3. Mangal, S. K. (1992) *Educational Technology.* M/S. Prakash Brothers, Ludhiana.

4. Pritam Singh (1989) *Hand Book of Pupil Evaluation.* Allied Publishers Limited, New Delhi.

5. Usha Rao, (1991) *Educational Technology.* Himalaya Publishing House, Bombay.

UNIT - 8 ☐ INSTRUCTIONAL OBJECTIVES

Structure

8.1 Introduction

If we think instruction is a simple task, it may be possible to list all the types of behaviour directly and to include them all in evaluation of student performance. At the end of instruction, this is characteristic of the teaching-learning process at the training level. For higher levels of instruction, however, it-is possible to list only sample of the specific types of behaviour which representative of instructional objectives and these guide teaching learning process and testing. But instruction is not only depends on small sample of behaviour it includes larger domain of behaviour.

So learning outcomes in higher level should have two step-process.

1.   To state the instructional objectives as general learning out comes.

2.   To list under each object specific sample of behaviour which is an indicator of the attainment of objective.

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8.2 Objectives

After studying this Unit you will be able to

- ➢ Explain the meaning of instructional objectives
- ➢ Describe instructional objectives for a Unit
- ➢ Mention instructional objectives for a Lesson
- ➢ Bring out the need and importance of. instructional objectives
- ➢ Find out relationship between general instructional objectives and instructional objectives of a unit end a lesson

8.3 Meaning of Instructional Objectives

Instructional objectives are statements of specific outcomes of instruction that intends to bring out desired behaviour or performance among the students. They are related to goals but their specificity is needed to plan and evaluate instruction.

8.3.1 General Instructional Objectives

The first step in defining instructional objectives is to state the general learning outcomes we expect from our teaching. While writing general objectives the following points are to be kept in mind.

a. Begin each general instructional objective with a verb. (knows, understands, appreciates, etc.,) (For example, students applies the knowledge of motion to day to day life situation)
b. State each objective in terms of student performance.
c. State each objective as learning product
d. State the objective so that it includes only one general learning outcome.
e. State each objective so that it indicates terminal behaviour
f. State each objective at the proper level of generality. It should indicate the expected learning outcome and is readily definable by specific types of student behaviour.

8.3.2 Instructional Objectives of a Unit

Motion and its Types, Equations, Newton's Laws of Motion

i. Student understands the concept of motion.

ii. Student knows the types of motion.

iii. Student understands the equations of motion.

iv. Student applies the knowledge of motion to day-to-day life situations.

v. Student knows the types of motion in day-to-day life.

vi. Student understands the Newton's first law of motion.

vii. Student analyse first law of motion in day to day activities

viii. Student understands the Newton second law of motion.

x i Student interprets the second law of motion.

x. Student understands the Newton third law of motion.

xi. Student appreciates the use of third law motion in launching satellites.

8.3.3 Instructional Objectives of a Lesson (of one class period)

Motion and Types of Motion

a. Students recall the definition of motion.

b. Students recognise the types of motion, rotation, circulation, straight motion.

c. Students classify the examples of motion according to their types.

d. Students explain rotation with examples.

e. Students explain oscillation with examples.

f. Students find difference between the types of motion.

'Check Your Progress' -1

1. The verbs used in writing general objectives are

    a. Knows   b. Identifies   c. classifies   d. recalls

2. The verbs used for stating instructional objectives for one Lesson.

    a. Recalls   b. Knows   c. Understands   d. Applies.

8.4   Need and Importance of Instructional Objectives

Objectives are the starting points of all the educational ventures. They are statements which express scenically and in 'measurable term' an attitude that will be developed or it may be cognitive or it may be psycho-motor. Skills that students would be able to demonstrate after providing specific treatment, method or mode of instruction.

Instructional objectives give directions for the teacher to organise learning

experiences. They give directions to evaluation the learning experience provided to students. Psychology is the basis of instructional objectives. Instructional objectives are very specific which bring desirable change among the students.

They are beginning steps for educational objectives.

The teacher's work becomes more systematic in teaching and evaluation of students. So instructional objectives are inevitable for the teachers as educationists without these the will be blind planners in education ventures.

1. Objectives worth pursuing can be more distinguished from those not worth pursuing when specific outcomes are indicated.

2. Teachable and learning elements related to goals can be identified and arranged in instructional sequences.

3. Individual needs of students and special needs of groups of students can be identified, planned for and evaluated more effectively.

4. Learning activities and instructional materials can be selected and used to attain clearly defined out comes.

5. Evaluation of outcomes of instruction can be improved because observable behaviour or a product of behaviour is specified.

6. Desired outcomes of instruction can be communicated more effectively to students and to parents.

7. The operation of accountability programs can be improved because clearly defined objectives are specified, and

8. Policy making can be facilitated because more adequate data on educational needs and the strengths and weaknesses of instruction are provided. Instructional objectives should be viewed as tools that are useful in improving teaching and learning process. Not as a set of arbitrary and rigid requirements that hinder creative teaching and learning.

'Check Your Progress' - 2

1. State the importance of instructional objectives.

_____

_____

_____

_____

8.5 Relationship between General Objectives of a Teaching Subject, Instructional Objectives of Teaching a Unit and a Lesson

Instructional objectives of teaching a unit or lesson demands clear element of general objectives of teaching subject in terms of general learning outcomes by using terms knows, understands, applies, appreciates, and thinkers. Instructional objectives of teaching a lesson are specific learning act without which general objective are fuzzy notion of learning outcomes.

For example, general objectives of teaching subject know specific facts about Indian History Instructional objectives of lesson.

i. **Identifies** important dates, places and persons.
ii. **Describes** the characteristics of a given historical period.
iii. **Lists** important events in chronological order.
iv. **Relates** events to their most probable causes.

So these verbs, identifies, describes, Lists, Relates, describe the specific instructional objectives which exhibit evidence that students has achieved general objectives knows specific facts.

'Check Your Progress' - 3

1. Give one example of your choice about general objective and instructional objectives of lesson.

_____

_____

_____

_____

8.6 Let Us Sum Up

Instructional objectives are statements of a specific outcome of instruction. They are the indicators of student's desired behaviour or performance. They are related to goals. But their specificity needed to plan and evaluate instruction. Instructional objectives must be initially stated in general objectives and next with specific behaviour objectives.

Importance of Instructional Objectives.

1. Objectives worth pursuing scan be more distinguished from those not worth pursuing when specific outcomes are indicated.

2. Teachable and learning elements related to goals can be identified and arranged in instructional sequences.

3. Individual needs of students and special needs of groups of students can be identified, planned for and evaluated more effectively.

4. Learning activities and instructional materials can be selected and used to attain clearly defined out comes.

5. Evaluation of outcomes of instruction can be improved because observable behaviour, or a product of behaviour a specified.

6. Desired outcomes of instruction can be communicated more effectively to students and to parents.

7. The operation of accountability programs can be improved because clearly defined objectives are specified, and

8. Policy planning and decision-making can be facilitated because more adequate data on educational needs and the strengths and weaknesses of instruction are provided. Instructional objectives should be viewed as tools that are useful in improving teaching and learning process. Not as a set of arbitrary and rigid requirements that hinder creative teaching and learning.

8.7 Answers to 'Check Your Progress'

'Check Your Progress'- I

1. (a) Knows

2. (a) Recalls

'Check Your Progress' - 2
1. The two important instructional objectives are:
   ● Learning activities and instructional materials can be selected and used to attain clearly defined outcomes.
   ● Evaluation of outcomes of instruction can be improved.

'Check Your Progress' - 3

1. General instructional objectives of unit.
   The students understand duties of citizens.

Instruction objectives of a lesson.

 i. The student recalls the duties of citizens.

 ii. The student discriminates between rights and duties.

 iii. The student interprets the duties of citizen in day to day activities.

 iv. The student relates the duties of citizen in day to day life activities.

8.8 Unit-End Exercises

1. Define instructional objective

2. Need and importance of instructional objectives.

3. Write general objectives of one unit.

4. Write instructional objectives lesson.

8.9 References

1. Aggarwal J. C. (1995) *Essentials of Educational Technology, Teaching and Learning* New Delhi, Vikas Publishing House Pvt. Ltd.

2. Gronlund N. E. (1970) *Stating Behavioural Objectives for Classroom Instruction.* The Macmillan Company Cavalier-Macmillan, London.

3. Mangal, S. K. (1992) *Educational Technology*. M/S. Prakash Brothers, Ludhiana.

4. Pritam Singh (1989) *Hand Book of Pupil Evaluation*. Allied Publishers Limited, New Delhi.

5. Usha Rao, (1991) *Educational Technology*. Himalaya Publishing House, Bombay.

UNIT-9 □ CLASSIFICATION OF INSTRUCTIONAL OBJECTIVES - 1

Structure

9.1 Introduction

You have learnt about instructional objectives, their need and importance in education. Teaching or learning objectives specify the outcomes of teaching act which may be grouped or categorised into relatively broad groups of categories known as educational objectives. These are related to three domains of individual behaviour such as cognitive, effective and psychomotor. So educational objectives also classified under these categories then the learning out comes becomes more specific to specific human behaviour and the behavioural changes may be easily evaluated under these three domains.

9.2 Objectives

After studying this unit, you will be able to:
  ➢ Explain the meaning of instructional objective
  ➢ Bring out the need and important of instructional objectives
  ➢ Elaborate the taxonomy of instructional objectives by bloom
  ➢ Describe the NCERT classification system

9.3 Taxonomy - Need and Importance

One of the most useful guides in identifying and defining instructional objectives is Taxonomy of Educational Objectives.

The taxonomy provides a classification of educational objectives which is similar to classification scheme used for plants and animals.

Taxonomy means the analysis of instructional objectives in terms of specific and precise teaching outcome or learning appropriate to classroom action.

Need and Importance

1. Well defined taxonomy is great help in defining and evaluating educational standards of a school.

2. To establish the accuracy of communication regarding the objectives of education.

3. The logical nature of classification helps in identifying and grading teaching learning situations which can be an important source of selecting appropriate testing situation too.

4. Curriculum development and preparation of instructional materials can profit from such a scheme of classification in several ways.

5. Identification, areas and their interrelationships may well establish.

6. The well defined criteria and classification provide a bridge for further communication among teachers, evaluators, research workers.

7. The taxonomy has opened new areas of research.

8. To stay clear from the ambiguity of loosely defined terms and concepts and to find a meaningful relationship among them.

9. To establish common understanding about hierarchical classification of objectives.

'Check Your Progress.' - 1

1. What is Taxonomy?

_____

_____

_____

_____

2. Write the significance of taxonomy of educational objectives.

_____

_____

_____

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_____

9.4 Taxonomy of Instructional Objectives by Bloom-A Bird's Eye view

Several attempts have been made by educationists in preparing the taxonomy of educational objectives.

The word "Taxonomy of Instructional Objectives" is closely related with the name B.S. Bloom. He has explained them extraordinarily in 1956. It is accepted by teachers, educationists and test developers. It also offers systematic evaluation of the whole range of cognitive processes and its impact on curriculum development and teaching methods. It further lays emphasis on processes rather than contents.

It has maintained the proper balance between lower and higher cognitive process.

Bloom's Taxonomy has inspired the majority of other taxonomies uses four basic principles.

a. The major distinction should reflect the ways teachers state educational objectives (methodological principle).

b   The taxonomy should be consistent with our present understanding of psychological phenomena (Psychological principle).

c. The taxonomy should be logically developed and internally consistent (logical principles).

d. The hierarchy of objectives does not correspond to hierarchy of values (objective principle).

The taxonomy itself comprises six cognitive levels.

Hierarchy

Knowledge ⟶ Comprehension ⟶ Application ⟶

Analysis ⟶ Synthesis ⟶ Evaluation ⟶
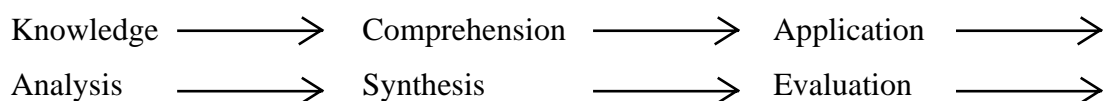
1. Knowledge is defined as recall of specifics and universal which is lowest level in cognitive development.

2. Comprehension involves understanding or previewing which means processing of information.

3. Application involves using something in a specific manner.

4. Analysis - involved breaching down or the separation of a whole into its component parts.

5. Synthesis - it is apposite to analysis. It involves combining together a number of demerits in order to form a coherent whole.

6. Evaluation - It is highest level in the taxonomy which is combination of all the 5 categories which is concerned with making judgement about value.

'Check Your Progress' - 2

1. The name associated with taxonomy of education objectives is.

   a. Krathwhole   b. Horrow and Amitha

   c. Bloom   d. Guilford.

2. Bloom classified domain concerned to

   a. Affective   b. Cognitive

   c. Psychomotor   d. None of the Above

9.5 NCERT Classification System

National Council for Educational Research and Training established was in New Delhi in 1961. It classified educational objectives into three main categories which are condensed form of Bloom's "Taxonomy".

1. Knowledge   2. Understanding / Comprehension   3. Applications.

The specifications of these objectives are

1. **Knowledge**

   The pupil

   i. Recalls

   ii. Recognises

2. **Understanding / Comprehension.**

   The pupil

a. Translates

b. Identifies relationship

c. Compares

d. Interprets

e. Cites examples

f. Detects error

g. Classifies

h. Explains

3. **Application**

   The pupil

a. Analyses

b. Suggests methods and materials

c. Hypothesises

d. Establishes relationships

e. Reasons out

f. Generalizes or draws conclusions.

g. Predicts

h. Judges adequacy, consistency and relevance etc.

<div align="center">**Table E.1**</div>

MAJOR CATEGORIES IN THE COGNITIVE DOMAIN OF THE TAXONOMY OF EDUCATIONAL OBJECTIVES (BLOOM, 1956)

<div align="center">**Descriptions of the major categories in the cognitive domain**</div>

1. **Knowledge**: Knowledge is defined as the remembering of previously learned material. This may involve the recall of a wide range of material, from specific facts to complete theories, but all that is required is the bringing to mind of the appropriate information. Knowledge represents the lowest level of learning outcomes in the cognitive domain.

2. **Comprehension**: Comprehension is defined as the ability to grasp the meaning of material. Thismay be shown by translating material from one form to another (words to numbers), by interpreting material (explaining or summarizing), and by estimating future trends (predicting consequences or effects). These learning outcomes go one step beyond the simple remembering of material, and represent the lowest level of understanding than under comprehension.

3. **Application:** Application refers to the ability to use learning material in new and concrete situations. This may include the application of such things as rules, methods, concepts, principles, laws and theories. Learning outcomes in this area require a higher level of understanding than those under Comprehension.

4. **Analysis:** Analysis refers to the ability to break down material into its component parts so that its organizational structure may be understood. This may include the identification of the pails, analyis of the relationships between parts, and recognition of the organisational principles involved. Learning outcomes here represent a higher intellectual level than comprehension and application because they require an understanding of both the content and the structural form of the material.

5. **Synthesis:** Synthesis refers to the ability to put parts together to form a new whole. This may involve the production of a unique communication (theme or speech), a plan of operations (research proposal), or a set of abstract relations (scheme for classifying information). Learning outcomes in this area stress creative behaviors, with major emphasis on the formulation of new patterns or structure.

6. **Evaluation:** Evaluation is concerned with the ability to judge the value of material (statement, novel, poem, research report) for a given purpose. The judgements are to be based on definite criteria. These may be internal criteria (organization) or external criteria (relevance to the purpose) and the student may determine the criteria or be given them. Learning outcomes in this area highest in the cognitive hierarchy because they contain elements of all of the other categories, plus conscious value judgements based on clearly defined criteria.

Table E.3

MAJOR CATEGORIES IN THE AFFECTIVE DOMAIN OF THE TAXONOMY OF EDUCATIONAL OBJE CTIVES (KRATHWOHL, 1964)

Descriptions of the major categories in the affective domain

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1. **Receiving**: Receiving refers to the student's willingness to attend to particular phenomena or stimuli (classroom activities, textbook, music, etc.) From a teaching standpoint, it is concerned with getting, holding, and directing the student's attention. Learning outcomes in this area range from the simple awareness that a thing exists to selective attention on the part of the learner. Receiving represents the lowest level of learning outcomes in the affective domain.

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2. **Responding:** Responding refers to active participation on the part of the student. At this level he not only attends to a particular phenomenon but also reacts to it in some way. Learning outcomes in this area may emphasize acquiescence in responding (reads assigned material), willingness to respond (voluntarily reads beyond assignment), or satisfaction in responding (reads for pleasure or enjoyment). The higher levels of this category include those instructional objectives that are commonly classified under "interest"; that is, those that stress the seeking out and enjoyment of particular activities.

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3. **Valuing:** Valuing is concerned with the worth or value a student attaches to a particular object, phenomenon, or behavior. This ranges in degree from the more simple acceptance of a value (desires to improve group skills) to the more complex level of commitment (assumes responsibility for the effective functioning of the group). Valuing is based on the internalization of a set of specified values, but clues to these values are expressed in the student's overt behaviour. Learning outcomes in this area are concerned with behavior that is consistent and stable enough to make the value clearly identifiable Instructional objectives that are commonly classified under "attitude" and "appreciation" would fall into this category.

4. **Organisation:** Organization is concerned with bringing together different values, resolving conflicts between them, and beginning the building of an internally consistent value system. Thus the emphasis is on comparing, relating and synthesizing values. Learning outcomes may be concerned with the conceptualization of a value (recognizes the responsibility of each individual for improving human relations) or with the organization of a value system (develop a plan that satisfies his need for both economic security and social service). Instructional objectives relating to the development of a philosophy of life would fall into this category.

5. **Characterization by a Value or Value Complex**: At this level of the affective domain, the individual has a value system that has controlled his behavior for a sufficiently long time for him to have developed a characteristic "life style". Thus the behaviour is pervasive, consistent, and predict-able. Learning outcomes at this level cover a broad range of activities, but the major emphasis is on the fact that the behavior is typical or characteristic of the student. Instructional objectives that are concerned with the student's general patterns of adjustment (personal, social, emotional) would be appropriate here.

'Check Your Progress' - 3

1. NCERT classified objectives into

    a. Two Areas   b. Three areas   c. Four Areas   d. Six Areas.

2. Recognizes the specification of

    a. Knowledge objective   b. Comprehensive

    c. Application   d. analysis.

9.6 Let Us Sum Up

Taxonomy is the classification of educational objectives. The name associated with Taxonomy is Benjamin S. Bloom in 1956. He has classified objectives of cognitive Domain in to six categories namely:

   1. Knowledge - Lowest level in the category

   2. Understanding

3. Application

4. Analysis

5. Synthesis

6. Evaluation

Taxonomy is useful for curriculum development methods to be used for imparting knowledge and evaluation become more objective. In the basis of this NCERT classified educational objectives in three categories.

1. Knowledge   2. Comprehension   3. Application

9.7 Answers to 'Check Your Progress'

'Check Your Progress'- 1

1.   Classification of objectives into categories is called taxonomy.

2.   The uses of taxonomy is that

     i. Evaluation becomes more objective

     ii. Organising materials according to the development of cognitive domain.

'Check Your Progress' - 2

1.   (c) Bloom

2.   (b) Cognitive

'Check Your Progress' - 3

1.   (a) Three Areas

2.   (a) Knowledge objective

9.8   Unit-End Exercises

1. Discuss the need and importance of taxonomy

2. Explain Bloom's Taxonomy of educational objectives.

3. How NCERT classified the educational objective, write specification for each objective.

9.9   References

1. Aggarwal J. C. (1995) *Essentials of Educational Technology, Teaching and Learning* New Delhi, Vikas Publishing House Pvt. Ltd.

2. Gronlund N. E. (1970) *Stating Behavioural Objectives for Classroom Instruction.* The Macmillan Company Cavalier-Macmillan, London.

3. Mangal, S. K. (1992) *Educational Technology*. M/S. Prakash Brothers, Ludhiana.

4. Pritam Singh (1989) *Hand Book of Pupil Evaluation*. Allied Publishers Limited, New Delhi.

5. Usha Rao, (1991) *Educational Technology*. Himalaya Publishing House, Bombay.

6. Husen, International Encyclopedia of Education, Vol.6.

UNIT-10 ◻ CLASSIFICATION OF INSTRUCTIONAL OBJECTIVES - II

Structure

10.1 Introduction

You have understood the taxonomy of educational objectives. This concept was explained by B.S. Bloom in 1956. The taxonomy is divided into three parts.

1. Cognitive Domain

2. Affective Domain

3. Psychomotor Domain

The cognitive domain includes those objectives that emphasize intellectual outcomes, such as knowledge, understanding, thinking skills etc. Affective domain includes those objectives which emphasize emotion and feeling such as interests, attitudes, appreciation, adjustments. The psychomotor includes those objectives that emphasize motor skills such as hand writing, typing and swimming. In the following chapter your will understand the meaning of three domains and respective verbs which describe the classes/sub classes of objectives of cognitive, affective and psychomotor domain.

10.2 Objectives

After studying this Unit you will be able to:
- ➢ Explain the meaning of cognitive domain objectives.
- ➢ Write the verbs, describe the classes and categories of objectives of Cognitive Domain, Affective Domain and Psycho-motor Domain

10.3 The meaning of verbs that describe classes and sub-classes of cognitive, affective and psychomotor domain

10.3.1 Cognitive Domain

Cognitive Domain objectives were classified into 6 major classes and it is based on 4 principles (a) Major distinction should reflect the ways teacher state educational objectives (methodological principles). (b) The Taxonomy should be consistent with our present understanding of psychological phenomena (psychological principle). (c) Taxonomy should be logically developed and internally consistent (logical principle); (d) The hierarchy of objectives does not correspond to the hierarchy of values. (objective principle).

6 major classes were arranged in the hierarchical order on the basis of complexity of task and arranged in simple to complex behaviour. The classes are (1) Knowledge, (2) Comprehension, (3) Application, (4) Analysis (5) Synthesis and (6) Evaluation.

Table for writing objectives in cognitive Domain Describing verbs of classes / sub classes of objectives Knowledge as a Product

1) Knowledge: Knowledge involves the rather elementary skill of recalling. Or remembering specific information or experiences. The information recalled may include specific pieces of information terminology and facts. A higher level form of knowledge involves knowing the ways or means of dealing with information. This includes conventions, as well as trends and trends and sequences, classifications and categories, criteria methodology. The highest level of all involves knowledge of universals and abstractions. This includes knowledge of principles and generalizations, as well as theories and structures. The organizing principles behind these three broad sub-categories of knowledge is from highly specific and concrete knowledge to more	to describe to recall to define to state to identify to recognize to enumerate to underline to reproduce to measure to label to write

2) *Comprehension:* Comprehension involves understanding or perceiving. It includes taking in, grasping, insight, and as such is highly stresses in school learning. In many ways, comprehension necessitates the processing of information, which many include changing that information into some parallel from more meaningful to the learner. Three subcategories of comprehension are recognized, translation (changing something into another form), interpretation (elucidate or clarify meaning),	to comprehend to understand to develop insight to predict to interpolate to extrapolate to interpret to translate to illustrate
3) *Application:* Applications involves using something in a specific manner .As such it includes relevancy, as well as the capacity for close attention to detail. Diligence and effort are also involved. The two lower categories of knowledge and comprehension are prerequisites to application. Interestingly enough application involves an element of creativity. Since it involves seeing how particular phenomena can be used in a new situation to which there is no specified solution. The skill of application underlies a great part of school learning and is intimately concerned with some of the primary objectives of education.	to apply to show to demonstrate to use to perform to relate to develop to transfer to construct to explain to interpret
4) *Analysis:* Analysis involves the breaking down, or the separation of a whole into its component parts, it is a process of reasoning or thinking. In its simplest form, analysis a simple listing of elements. A higher level of analysis involves determining the nature of the relationships between these elements. The highest form of analysis includes identifying the organizing principle or principles behind the actual material or phenomena concerned. At the level, analysis begins to take on many of the features of synthesis.	to analyse to identify to separate to break down to discriminate to distinguish to detect to categorise
5) *Synthesis:* Synthesis is the opposite of analysis. It involves combining together a number of elements in order to form a coherent whole. The process involves logical deduction, and in the sense the category is intimately concerned with thinking and	to combine to restate to summarize to specify

creativity. Synthesizing or combining elements involves doing something in a unique or original way. The discovery of pattern or structure is an important part of the activity. The sub – categories of synthesis are production of a unique combination, production of a plan or proposed set of operation and derivation of a set of operation and derivation of a set of abstract relations.	to generalize to conclude to derive to organize to design to deduce to classify to formulate to propose to compose
6) Evaluation: This represents the highest level in the taxonomy. It includes a combination of all the previous five categories. Evaluation is concerned with making judgements about value. In order to make such an assessment, some yardstick or criterion is necessary as a standard which things can be measured. The evaluation can be quantitative or qualitative, direct or indirect, subjective or objective usually judgment is made in terms of internal evidence. Making judgments in terms of external criteria is regarded as the highest level of evaluative activity.	to evaluate to judge to decode to choose to assess to contrast to criticize to select to defend to support to attack to avoid to seek out to compare to determine

10.3.2 Affective Domain

This classification was explained by Krathwohl (1964). This domain includes those objectives which are concerned with change in interest, attitudes, and values and development of appreciation and adjustment.

It is divided into five major classes arranged in a hierarchical order on the basis of involvement. These classes were: 1. Receiving (attending), 2. (Responding, 3. Valuing, 4. Organization and 5. Characterisation by value system.

Major categories	Action verbs
1) Receiving (Attending): Receiving or attending is the lowest level in the taxonomy. It implies only that the communication will be intended to or heeded, that the person involved is aware of message stimulus. The subcategories are awareness (conscious of what is happening). Willingness to receive (will tolerate what is happening and will not seek to avoid it), and controlled or selected attention (will attend carefully to what is going on.	to listen to attend to receive to control to select to accumulate to be aware to perceive to favour to accept
2) Responding: responding implies that something more than merely attending is involved. Some sort of reply or answer occurs, and this suggests that a level of interest and motivation have been tapped as a resource. The level of commitment is low but a degree of curiosity, or arousal has occurred. The subcategories of this level are acquiescence in responding (learner reads), willingness to respond and satisfaction in response (sense of pleasure is evoked). Whatever the subcategory involved however, the important things to ember is the sense of willingness and pleasure involved in responding.	to stage to answer to complete to select to list to record to develop to comply to follow to acclaim to applaud
3) Valuing: valuing implies that the attitude is regarded as having merit or intrinsic worth to the person concerned. It is worthwhile, useful; desirable it is esteemed, appreciated, and important. At this level, the things that is valued has taken on the characteristics of a belief, and as such as great motivating force concerned. Enthusiasm and interest are all involved. Three subcategories are identified acceptance of value (is seen to have worth), preference for a value (there is a sense of commitment, and commitment itself (this involves quite a high degree of certainly about the value). Initiation into a set of personally developed values is the very essence of what education is all about?	to accept to recognize to participate to increase to develop to attain to indicate to decide to influence to support to debate to argue to appreciate

4) Organization: organization is involved when situation are encountered which involve more than one value or attitude. Under these circumstances some sort of organization or patterning is called for, otherwise behavior because of consistent and unpredictable. Organization, however, implies only the beginning of a value system that is carried to its most developed form in characterization. In both cases. Something more than an ability to put the value into words is called for, and some kind of ability to defend one's values is implied. Two sub-categories are included: Conceptualization of a value (the value is abstract or symbolic), and organization of a value system (an ordered set of relationship is beginning to occur).	to discuss to organize to judge to relate to correlate to determine to associate to form to select to balance to define to formulate to weigh
5) Characterization by a value complex: This represents the highest level in the taxonomy. Characterization, as the name implies, is concerned with a person's character; with is or her uniqueness as an individual. At this high level, values have been placed within a coherent framework, which lends consistency to what a person does or believes this characterization is seen in the philosophy of life of person, in their fundamental rules of conduct. Belief, ideas and attitudes are all fused together into an overall view of life. The sub-categories are generalized set (this gives internal consistency to a system of values), and characterization (which is the peak of internationalization)	to revise to change to face to accept to judge to develop to require to resolve to resist to reject to identify with to believe

10.3.3 Psychomotor Domain

These categories were explained by Harrow Anitha. J. in the year (1972) 'Psychomotor' covers any human voluntary observable movement that belongs to the domain of learning. Behaviour that belongs to this domain requires muscular action and neuro-muscular co-ordination.

The major clauses in domain are: 1. Reflex movements 2. Basic fundamental movements 3. Perceptual abilities 4. Physical abilities 5. Skilled movements 6. Non-Discursive Communication.

Major Categories	Action Verbs
1) Reflex movement: Reflex movements are defined as involuntary motor responses to stimuli. They form the basis for all behaviour involving movements are functional at birth, and develop throughout life. They involve one or more spinal segment, and sometime the participation of the brain center. Reflex movements represent the lowest level in the psychomotor domain, but without them	to flex to stretch to straighten to extend to inhibit to lengthen to shorten to tense to stiffen
2) Basic fundamental movements: Basic fundamental movements are defined as those inherent body movement patterns, which build upon the foundation laid by reflex movements. They usually occur during the first year of life, and unfold rather than are taught or consciously acquired. These movements involve movement patterns which change a child from a stationary to an ambulatory learner. They also involve non – loco motor movements of the extremities. The movements involved in this category are fundamental to all, everyday human activity, and any deficiency	to crawl to creep to slide to walk to run to jump to grasp to reach to righten to support
3) Perceptual Abilities: Perceptual abilities are really inseparable from motor movements. They help learners to interpret stimuli so that they can adjust to their environment. Superior motor activities depend upon the development of perception. They involve kinesthetic discrimination, visual discrimination, auditory discrimination and coordinated abilities of eye, hand and foot. The skill of discrimination underlies all these abilities, Whether they are gross in character or fine in quality.	to catch to bounce to eat to write to balance to bend to bounce to draw from memory to distinguish by touching

4) Physical Abilities; Physical abilities are essential to efficient motor activity. They are concerned with the vigour of the person, and allow the individual to meet the demands placed upon him or her in and by the environment. Physical abilities are an essential foundation for the development of skilled movements. Prominent amongst physical abilities are spend endurance exertion and flexibility	to endure strength activity to endure for long periods of time to improve to increase to stop and start to more precisely to touch toes
5) Skilled movements: Skilled movements are defined as any efficiently performed complex movement. They require learning, and should be based upon some adaptation of the inherent patterns of movement described in level number two below. Skilled movements involve simple adaptive skills, compound adaptive skills incorporating the management of a tool or implement, and complex adaptive skills requiring a greater a mastery of body mechanics. The important thing about skilled movements is that they are performed with ease and grace, almost as if no effort or thought were involved. In every case, however, they been consciously acquired and practiced over a period of time until the present level of skill was acquired.	to waltz to saw to type to play the piano to plane to file to skate to somersault to juggle to punt to twist-dive to fence to change
6.Non-Discursive Communication: Non-Discursive Communication can be defined as comprising those behaviours which are involved in movement communication. They range from facial expression to highly sophisticated dance choreographies as in classical ballet. Generally speaking such non-discursive communication involves expressive communication forms like gestures and posture, as well as interpretative movements which can be either aesthetic or creative in from. The essential in such psychomotor movements is that the response comes more from intuition and the tacit dimension than from reason or explicitness. This is way the term 'non-discursive' is employed.	to gesture to carry oneself to stand to sit to express facially to dance skillfully to paint skillfully to play skillfully to smile knowingly

'Check Your Progress'- 1

1. The categories in cognitive domain are classified into
   a. 6 categories   b. 7 categories   c. 5 categories   d. 8 categories
2. Affective Domain is concerned with
   a. Thinking   b. Understanding   c. Feeling   d. Movements
3. Psychomotor domain objectives is explained by
   a. Bloom   b. Guilford   c. Krathwohl   d. Harrow, A.J.

10.4 Let us sum up

The behaviours of human being are classified into three main domain cognitive, affective, psychomotor. The objectives were also, associated with these domain which brings desirable change in these domains. This was systematically classified by educationists.

Bloom was explained the Taxonomy of cognitive domain objective which includes the intellectual abilities either thinking, knowing and understand in, they six classes in cognitive Domain.

Classes	Subclasses	Verbs
1. Knowledge	Which includes 1. Specific facts, terminology 2. Ways and means of dealing with specifics conventions trends, sequences, classification categories, criteria and methodology 3. Universal and Abstractions in the field principles, Generalization Theories	to describe to recall to define to state to identify to recognize to name to list to underline to reproduce to measure to label to write to acquire
2. Understanding	1. Translation 2. Interpretation 3. Extrapolation	to comprehend to understand to have insight into to predict to interpolate to extrapolate to interpret to translate to illustrate to draw

3. Application	Which includes application to unfamiliar situations	to apply to show to demonstrate to use to perform to relate to develop to transfer to construct to explain to inter
4. Analysis	1. Analysis of element 2. Analysis of relationships 3. Analysis organizational principles	to analyse to identify to separate to break down to discriminate to distinguish to detect to categories
5. Synthesis	1. Production of unique communication 2. Production of a plan or proposed out of operations 3. Derivation of a set of abstract relations	to combine to restate to summarize to précis to generalize to conclude to derive to organize to design to deduce to classify to formulate to propose to compose

6. Evaluation	1. Judgement in terms internal evidence 2. Judgement in terms of external evidence.	to evaluate to judge to decode to choose to assess to contrast to criticize to select to defend to support to attack to avoid to seek out to compare to determine

Affective Domain is associated with name Krathwohl (1964) and explained the this domain is concerned with feeling attitude, interests and adjustment and is classified into five classes.

Classes	Subclasses	Verbs
1. Receiving (Attending)	1. Awareness 2. Willingness to receive 3. Controlled or selected attention	to listen to attend to receive to control to select to accumulate to be aware to perceive to favour to accept
2. Responding	1. Acquiescence in responding 2. Willingness to respond 3. Satisfaction in response	to stage to answer to complete to select to list to record to develop to comply

		to follow
		to acclaim
		to applaud
3. Valuing	1. Acceptance of a value	to recognize
	2. Preference for a value	to participate
	3. Commitment to accept	to increase
		to develop
		to attain
		to indicate
		to decide
		to influence
		to support
		to debate
		to argue
		to appreciate
4. Organization	1. Conceptualization of value	to discuss
	2. Organization of value	to organize
		to judge
		to relate
		to correlate
		to determine
		to associate
		to form
		to select
		to balance
		to define
		to formulate
		to weigh
5. Characterisation by value system	1. Generalized set	to revise
		to change
		to face
	2. Characterization	to accept
		to judge
		to develop
		to require
		to resolve
		to resist
		to reject
		to identify with
		to believe

Psychomotor domain is concerned with human voluntary observable movement that belongs to domain of learning. Behaviour which include muscular action and require neuro muscular co-ordination.

The major classes in this domain 6

Classes	Subclasses	Verbs
1. Reflex movements	Movement response to stimulus	to flex to stretch to straighten to extend to inhibit to lengthen to shorten to tense to stiffen to relax
2. Basic fundamental movements	Interest movement developed early in life	to crawl to creep to slide to walk to run to jump to grasp to reach to righten to support to handle
3. Perceptual abilities	Interpretation of stimuli to catch	to bounce to eat to write to balance to bend to bounce to draw from memory to distinguish by touching to explore

		to endure strength activity
4. Physical abilities	Emotional vigour	to endure strength activity
		to endure for long periods of time
		to improve
		to increase
		to stop and start
		to more precisely
		to touch toes
5. Skilled movement	Efficient and complex movement	to waltz
		to saw
		to type
		to play the piano
		to plane
		to file
		to skate
		to somersault
		to juggle
		to punt
		to twist-dive
		to fence
		to change
6. Non-discursive movements	Bodily movement neuro-muscular communications.	to gesture
		to carry oneself
		to stand
		to sit
		to express facially
		to dance skillfully
		to perform skillfully
		to paint skillfully
		to play skillfully
		to smile knowingly

10.5 Answers to 'Check Your Progress'

<u>**'Check Your Progress'- 1**</u>

1. (a) 6 categories

2. (c) Feeling

3. (d) Harrow, A.J.

10.6 Unit-End Exercises

1. Explain Bloom's Taxonomy of Educational Objective and write action verbs for each objective.

2. Explain Taxonomy of Affective Domain objectives and write action verbs.

3. Explain the Taxonomy of Psychomotor Objectives and write action verbs.

10.7   References

● Harrow, A.J. (1972) A *Taxonomy of the Psychomotor Domain.* New York, Mckay.

● Krathwohl, D.R., Bloom, B.S. and Masia B.B. (1964) *Taxonomy of Educational Objectives.* Hand Book II Affective Domain, New York, Mckay.

● Bloom, B.S. (1956) *Taxonomy of Educational Objectives.* Hand book of Cognitive Domain, New York: Mackay.

● Mangal, S.K. (1992) *Fundamental of Educational Technology.* Ludhiana, M/S Prakash Brothers. Husen, (   ) *International Encyclopedia of Education* Vol. 6.

● Gronlund, N.E. (1970) *Stating Behavioural Objectives for Classroom Instruction.* London, Collier MacMillan Limited.
● International Encyclopedia of Education; vol. 6.

UNIT-11 □ WRITING INSTRUCTIONAL OBJECTIVES

Structure

11.1 Introduction

As you have learnt about the meaning of instructional goals objectives, taxonomy of educational objectives gives broad view of the objectives and their classification. Interesting questions which arise like - How to state instructional objectives? What is the criterion for well stated instructional objectives? The following unit throws highest on these aspects. So that it is easy for the teacher to state the instructional objectives for unit and lesson.

11.2 Objectives

After studying this unit, you will be able to:

➢ State the criteria of a well stated instructional objective

➢ State the guidelines for writing instructional of knowledge, comprehension, application, skills etc.,

➢ State the guidelines for writing instructional objectives for unit.

➢ Write instructional objectives for lesson.

11.3 Criteria for a well stated instructional objectives

As you know, the objectives should be stated properly in well-defined terms and clear language.

1. The criteria for a well-stated instructional objective.

Aspects

a. Object: Specification of the content, concepts skills attitude or other instructional objectives which is the focus of the objective and instruction what is being studied? What is the focus of instructional objective?

b. Specification of Leaner: the objective must specifically indicate the learner to whom, the objectives were written for i.e. who is going to demonstrate change in behaviour on end product of the instruction.

c. Specification of learner performances in observable behavioural terms (using verbs in writing objectives that indicate behaviour that are observed directly).

d. Specification of the conditions in which the learner performance occurs (learning experiences, provided for the-students rural tools/materials are needed to demonstrate understanding.

e. Specification of minimum expected level of performance of the learner: Specification of how well students must perform the behaviour with a set of conditions. What is the criterion of acceptable performance (i.e. 85%, 90%, 100%). What level of accuracy, proficiency, or speed must the student attain to meet the objective?

f. Time: Designation of time by which students will be expected to meet the objectives when should the objective be attained? By the end of unit? By end of term? By the end of Lesson? By end of week?

g. Covering objectives of all the three domains cognitive, affective and psychomotor.

h. Covering objectives of different levels of learning out-come

i. Formulating objectives of instruction in direct relation with the particular content of the lesson.

j. Correlating objectives with evaluation procedure

Example-1: At the end of the unit, the students will be able to write in tabulated form a essay on the role of different enzymes in the digestion of food giving the source, food rested upon, organs associated and resulting end products.

a. Object: Role of different enzymes in digestion and

b. Learner: All students

c. Observable behaviour term : will be able to write

d. Conditions: In a tabulated form

e. Minimum expected level of performance: In the digestion of food giving the source, food reacted upon, organs associated and resulting end products.

f. Time: By the end of the unit.

Example 2: By the end of period given out line map of India, with points representing major cities marked and list of ten major cities the IX Standard students will be able to Label nine out of ten cities correctly.

a. Object: Major cities in India

b. Learner: IX Standard students

c. Behavioural term: will be able to label

d. Conditions: Give an outline map with points of major cities

e. Minimum expected level of performance: 9 out 10 major cities correctly

f. Time: by the end of a period

'Check Your Progress'- I

Here are a couple of examples to test your knowledge of the criteria in writing well stated objectives. Write appropriate criteria in the blank.

1. At the end of lesson, (……..a……..), students in group B (...... b...........) will dictate (...   . c…….) a summary sentence for each event (............d ……....) that occurred in the story (……....e ......). Stating them in sequential order (...   . f…….).

2. At the end of the unit (...　　. a ……..), 90% of students (............. b……) will point to and name (.......c....... at least three (........d …….) major river systems and mountain ranges (... …..e........) as shown on relief map of India (......f…...).

11.4 Guidelines for Writing Instructional Objectives (Knowledge, Understanding, Application, Skills etc.)

1. Keep in mind the entry behaviour of learner.

2. Give thought to the element of content, topic or the learning experience to be provided to the learner.

3. Keep in mind the teaching-learning objective.

4. Select appropriate mental processor abilities for writing objectives.

   For writing objectives as knowledge, understanding, application, skill mental process and abilities involved should be used.

For example.

1. Knowledge

   i.　The students will be able to recognize

   ii.　The students will be able to recall

2. Understanding

   The student will be able to- (a) to see relationship, between and, (b) to discriminate between and (c) to classify, (d) to interpret, (f) to generalize, (g) to cite example.

3. Application

   The student will be able to - (a) reason, (b) formulate, (c) establish, (d) infer, (e) predict.

4. Skills

   The student will be able to - (a) drawing skill, (b) manipulative skills

Table E.2

EXAMPLE OF GENERAL INSTRUCTIONAL OBJECTIVES AND BEHAVIORAL TERMS FOR THE COGNITIVE DOMAIN OF THE TAXONOMY

Illustrative General Instructional Objectives	Illustrative Behavioral Terms for Stating Specific Learning Outcomes
Knows Common terms Knows specific facts Knows methods and procedures Knows basic concept Knows principles	Define, describes, identifies, labels, lists, matches, names, outlines, reproduces, selects, states
Understands facts and principles Interprets verbal material Interprets charts and graphs Translates verbal material to mathematical formulas Estimates future consequences implied in data Justifies methods and procedures	Converts, defends, distinguish, estimates, explain, extends, generalizes, gives examples, infers, paraphrases, predicts, rewrites, summarizes
Applies concepts and principles to new situations Applies laws and theories to practical situations Solves mathematical and graphs Demonstrates correct usage of a method or procedure	Changes, computes, demonstrates, discovers, manipulates, modifies, operates, predicts, prepares, produces, relates, shows, solves, uses
Recognizes unstated assumptions Recognizes logical fallacies in reasoning Distinguishes between facts and inferences Evaluates the relevancy of data Analyzes the organizational structure of a work (art, music, writing)	Breaks down, diagrams, differentiates, discriminates, distinguishes, identifies, illustrate, infers, outlines, points out, relates, selects, separates, subdivides
Writes a well organized theme Gives a well organized speech Writes a creative short story (or poem, or music) Propose a plan for an experiment Intergrates learning from different areas into a plan for solving a problem Formulates a new scheme for classifying objects (or events, or ideas)	Categories, combines, compiles, composes, creates, devises, design, examplains, generates, modifies, organizes, plans, rearranges, recon structs, relates, reorganizes, revises, rewrites, summarizes, tells, writes

Judges the logical consistency of written material	Appraises, compares, concludes, contrasts,
Judges the adequacy with which conclusions ar supported by data	criticizes, describes, discriminates, explains, justifies, interprets, relates, summarizes,
Judges the value of a work (art, music, writting) by use of internal criteria	supports
Judges the value of a work (art, music, writting) by use of external standards of excellence	

Table E.4

EXAMPLES OF GENERAL INSTRUCTIONAL OBJECTIVES AND BEHAVIORAL TERMS FOR THE COGNITIVE DOMAIN OF THE TAXONOMY

Illustrative General Instructional Objectives	Illustrative Behavioral Terms for Stating Specific Learning Outcomes
Listens attentively Shows awareness of the important of learning Shows sensitivity to human needs and social problems Accepts differences of race and culture Attends closely t the classroom activities	Asks, chooses, describes, follows, gives, holds, identifies, locates, names, points to, select, sits erect, replies, uses
Completes assigned homework Obeys school rules Participates in class discussion Completes laboratory work Volunteers for special tasks Shows interest in subject Enjoys helping others	Answers, assists, complies, conforms, discusses, greets, helps, labels, performs, practices, presents, reads, recites, reports, selects, tells, writes
Demonstrates belief in the democratic process Appreciates good literature (art or music) Appreciates the role of science (or other subjects) in everyday life Shows concern fot the welfare of others Demonstrates problem - solving attitude Demonstrates commitment to social improvement	Completes, describes, differentiates, explains, follows, forms, initiates invites, joins, justifies, purposes, reads, reports, selects, shares, studies,

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Recognizes the need for balance between freedom responsibility in a democracy Recognize the role of systematic planning in solving problems Accepts responsibility for his own behavior Understands and accepts his own strengths and limitations Formulates a life plan in harmony with his abilities, interests, and beliefs	Adheres, alters, arranges, combines, and compares, completes, defends, explains, generalizes, identifies, integrates, modifies, orders, organizes, prepares, relates, synthesize
Displays safety consciousness Demonstrates self- reliance in working independently Practices cooperation in group activities Uses objective approach in problem solving Demostrates industry, punctuality and self discipline Maintains good health bahits	Acts, discriminates, displays, influences, listens, modifies, performs, practices, proposes, qualifies, questions, revises, serves, solves, uses, verifies

Table E. 5

EXAMPLE OF GENERAL INSTRUCTIONAL OBJECTIVES AND BEHAVIORAL TERMS FOR THE PSYCHOMOTOR DOMAIN OF THE TAXONOMY

Taxonomy Categories	Illustrative General Instructional Objectives	Illustrative Behavioral Terms for Stating Specific Learning Outcomes
See Pages 32,33 34 of this Block 10.3.3 Psycho-Motor Domain.	Writes smoothly and legibly Draws accurate reproductin of a picture (or map, biology specimen etc.) Sets up labortary equipment quickly and correctly Types with speed and accuracy Operates a power saw safely and skillfully Performs skillfully on the violin Performs a dance step correctly Demonstrates correct form in swimming Demonstrates skill in driving an automobile Repairs an electric motor quickly and effectively Creates new ways of performing (creative dance, etc.)	Assembles, builds, calibrates, changes, cleans, composes, connects, constructs corrects, creates, designs, dismanles, drills, fastens, fixes, follows, grinds, grips, hammers, heats, hooks, identi fies, locates, makes, manipulates, mends, mixes nails, paints, sands, saws, sharpens, sets, sews, sketches, starts, stirs, uses, weighs, wraps

* Tables E.1-E.5 are from N.E. Gronlund, Stating Behavioral Objectives for Classroom Instruction (New York; Macmillan, 1970).

1. Write two guidelines of writing objectives

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_____

_____

_____

_____

11.5 Instructional Objectives for a Unit

1. Unit - Nature of Matter- Class IX Standard Instructional objectives

2. By the end of unit, all students of 9th B class will be able to recall the meaning and nature of matter correctly (knowledge)

3. The students will be able to recognize the different states of matter solid liquid, Gases, correctly (Knowledge)

4. The students will be able to discriminate the different states of matter solid liquid and gases. (Understanding)

5. The students will be able to compare the different states matter solid liquid and gases (Understanding)

6. The students will be able to apply the knowledge of different states of matter in day to day examples. (Application)

7. The students will able to list different examples of solid state, liquid state, Gases state (Application)

8. The students will classify the examples of different states matter into solid liquid Gases, According to their nature correctly (Application)

9. The students will be able to draw the Arrangement of Atoms in different states of matter, solid liquid and gases (skill)

11.6 Instructional Objectives for a Lesson (of one class period)

Lesson - Fractions and types of fraction

Class - VIII std.

Duration   - 45 minutes

Instructional objectives

1. By the end of the lesson, the students will be able write the meaning of Fraction correctly with example (knowledge)

2. By the end of the lesson, the students will be able to cite examples of fractions (understanding)

3. By the end of the lesson all the students will be able to identify the types of fraction - as proper, improper, and mixed fractions (knowledge)

4. By the end of the lesson, students will discriminate the types of fraction (understanding)

5. By end of the lesson, students will be able to classify the types of fraction in given set of fractions (understanding)

6. By the end of the lesson, students will be able to list proper fractions according to their nature (Application)

11.7 Let Us Sum Up

In order to state instructional objectives the following points are to be kept in mind.

1. Object - specification of the content

2, specification of the learner

3. Specification of learner performances in behaviour terms (terminal behaviour)

4. The conditions in which learner performance occurs.

5. Specification of minimum expected level of performance of the learner.

6. Time.

'Check Your Progress' -3

1. 'Write two objectives for a lesson on fractions in Mathe matries.

_____

_____

_____

_____

11.8 Answers To 'Check Your Progress'

'Check Your Progress' - 1

1. a) Time, b) learner, c) terminal behaviour, d) object, e) condition,

    f) performance level,

2. a) Tie, b) learner, c) terminal behaviour, d) performance level, e) object,

    f) condition

'Check Your Progress' - 2

1. Guide lines for writing instructional objectives.

    a. Keep in mind the entry behaviour of learner.

    b. The learning experience given to students.

'Check Your Progress' - 3

1. a. By the end of unit students will be able to recognize the types of fractions.

b. By the end of unit the students will be able to recall the meaning of fraction with examples

11.9 Unit-End Exercises

1. Explain the criteria for writing instructional objectives with one example

2. Write guide lines for writing instructional objectives

3. Take unit of your choice and write instructional objectives (knowledge, understanding skill applications)

4. Take a lesson of your choice and write instructional objectives (knowledge, comprehension skills, application).

11.10 References

● Aggarwal, J.C. (1995), *Essentials of Educational Technology : Teaching Technology.* New Delhi, Vikas Publishing House Pvt. Ltd.

- Boom, B.S. (ed) (1956), *Taxonomy of Educational Objectives.* Handbook-1 Cognitive Domain New York, Makay.

- Marce, Watter D and Lorber, Michael, A. (1977), *Objectives and Methods for Secondary Teaching.* New Jersey, Prentice Hall Inc.

- Mangal S.K. (1992), *Fundamentals of Educational Technology.* Ludhiana, M/S Prakash Brothers.

- Pritam Sing, (1989), *Hand Book of Pupil Evaluation.* New Delhi, Allied Publishers Limited.

UNIT - 12 □ ANALYSIS AND CLASSIFICATION OF WELL STATED INSTRUCTIONAL OBJECTIVES

Structure

12.1 Introduction

In the previous units you have studied the aims and instructional objectives. Aims are called large range objectives which are stated in a general terms. But instructional objectives are specifics which defined in terms of students behavioural changes that occur in different domains like cognitive, affective, and psychomotor. This was explained in Taxonomy of Educational objectives by bloom. But, this classification gives the overall classification of educational objectives. But, in case teacher want to state well-stated objectives. He has to classify the objective in knowledge understanding skill, application, etc. In the present chapter we shall understand the classification of objectives.

12.2 Objectives

After studying this unit, students will be able to:

➢ Analyse the objectives with respect to knowledge understanding, application, skills etc.

➢ Able to list the objectives with respect to knowledge objectives, understanding application and skill

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12.3 Analysing the well-stated Objectives with respect to Knowledge, Understanding, Application, Skill etc.

Objectives may be classified in variety of ways. The classification of objectives in a particular group emphasizes the dominance of objectives in that group. When stating specific instructional objectives the teachers must focus on the terminal behaviour of students. This terminal behaviour gives the idea to the teacher whether the stated objective was grouped under knowledge, understanding, skill and application.

The terminal behaviours are those which are also called the action verbs used under each objective, knowledge, understanding, skill and application.

The action verbs under "knowledge objective" are.

    1. Recall and recognize

    2. Define, list label measure, name

    3. Reproduce, select state, write underline, etc.

While writing instructional objective with respect to knowledge these action verbs are used.

For example I : The pupils are able to reproduce the formula for calculation of the area of a circle. Here the terminal behaviour is "reproduce" so this objective is classified under knowledge objective.

Example II : The pupils once able to state the laws of floating bodies.

Here also "state" is the action verb which is grouped under knowledge objective. It Action verbs used under "understanding" objective

1.   Change, classify, distinguish, explain, formulate, Illustrate, Indicate, Interpret, Justify, Judge, represent, select, translate, contrast, cite example, see relationship, verify, generalize.

For example.

1)   The pupils are able to explain the formula for finding out the area of a circle. Here the "action verb" or terminal behaviour used is explain so, this objective is grouped under understanding objective.

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2)   The pupils one able "cite examples" for improper fraction "cites examples" is also grouped under understanding objective.

●   Action verbs under for stating Application "objectives are:

1. Predict 2. Select 3. Assess 4.Choose 5. Find 6. Show 7. Demonstrate 8. Construct 9. Compute 10. Use 11. Perform.

For example, by end of the lesson the pupil will be able use simple interest formula for calculating simple interest. ''Use'' is action verb used for stating application objectives.

Likewise the well -stated objectives were classified on the basis of the action verbs used for the particular (objectives (knowledge, understanding, application and skills). So action verbs and terminal behaviour will indicate the particular objective belongs to particular objective; such as knowledge, understanding, application skill etc.

'Check Your Progress'-1

Classify the following objective with respect to knowledge, understanding, application, skill etc.

1.   By the end of the lesson students will be able to formulate the formula for solving simple interest problem.

2.   By the end of the lesson students will be able reproduce the definition of Archimedes principle.

3.   By the end of the lesson students will be able to explain the properties of solid state.

4.   By the end of the lesson students will be able to draw a circle using compass box.

12.4 Let Us Sum Up

Objectives were classified with respect to the knowledge, understanding application and skill. These objectives were classified according to the terminal behaviour which is learning 'outcome' defined in terms of action verbs, used in the particular objective. For example: Action verbs for knowledge is define, state list, name, write, recall recognize etc.

Action verbs for understanding objectives are:
Justify, select, indicate, illustrate explain judge contrast, classify etc.
Action verbs for application objectives are predict, select, assess, chase find etc.
Action verbs for skill objective are draw, sketch, construct, manipulate,

12.5 Answers to 'Check Your Progress'

<u>**'Check Your Progress'-1**</u>

1.   Application (because formulate is action verb for application objective)

2.   Knowledge (because reproduce is action verb for knowledge objective)

3.   Understanding (because explain is action verb for comprehension objective)

4.   Skill (because draw is action verb for skill objective).

12.6 Unit-End Exercises

1.   How do you classify objectives with respect to knowledge, comprehension, skill and application?

2.   State knowledge objectives.

3.   List the action verbs used for comprehension?

4.   Mention the action verbs of application objective.

12.7 References

1.   Aggarwal J. C. (2002) *Essentials of Educational Technology, Teaching and Learning* New Delhi, Vikas Publishing House Pvt. Ltd.

2.   Gronlund N. E. (1970) *Stating Behavioural Objectives for Classroom Instruction.* The Macmillan Company Cavalier-Macmillan, London.

3.   Mangal, S. K. (1992) *Educational Technology*. M/S. Prakash Brothers, Ludhiana.

4.   Pritam Singh (1989) *Hand Book of Pupil Evaluation*. Allied Publishers Limited, New Delhi.

5.   Usha Rao, (1994) *Educational Technology*. Himalaya Publishing House, Bombay.
6.   Das, R.C (1995), Educational Technology, New Delhi, Sterling Publisheres, Pvt. Limited.