

UNIT 4

INSTRUCTIONAL OBJECTIVES

Dear student you are welcome to a new Unit. You will learn about instructional objectives. Just take it easy and read through.

Indicators:

The student will be able to:

- Formulate SMART learning objectives (performance-based objectives) in the three domains of learning.
- Evaluate learning objectives.

Activity 1: You are to answer the following questions

Explain the following terms:

- i. A goal and an objective
 - The information provided below will guide you.

4.1 Goals and Objectives

A **goal** sets out the overall aim of a course. An **objective** describes the skill, knowledge, or attitude a learner will have at the end of the learning activity or course. In other words, the goal describes the purpose behind the topic whilst the objective describes what the learner will learn, the conditions of learning, and the degree of mastery.

For example, let us consider the topic “Blood Pressure”

The goal and objective could be stated as follows:

Goal

The learner will demonstrate competency with monitoring blood pressure.

Objective

The learner can accurately measure and interpret changes in blood pressure in the clinical setting.

It is important to clarify the meaning of the term’s *educational objectives*, *instructional objectives*, and *behavioral* or *learning objectives*. Although often used synonymously, these terms can be distinguished from one another. **Educational objectives** are used to identify the intended outcomes of the education process, whether in reference to an aspect of a program or a total program of study, that guide the design of curriculum units. **Instructional objectives** describe the teaching activities and resources used to facilitate effective learning (Morrison, Ross, & Kemp, 2004). **Behavioral objectives**, also referred to as **learning objectives**, make use of the modifier *behavioral* or *learning* to denote that this type of objective is action oriented rather than content oriented,

learner centered rather than teacher centered, and short-term outcome focused rather than process focused. Behavioral objectives describe precisely what the learner will be able to do following a learning situation.

Definitions

Goals and objectives imply the target that one's efforts is desired to accomplish. Goals are generically for an achievement or accomplishment for which certain efforts are put. Objectives are specific targets within the general goal. Objectives are time-related to achieve a certain task.

A **goal** is defined as

1. The purpose toward which an endeavor is directed.
2. The result or achievement toward which effort is directed or aimed.

An **objective** has a similar definition but is supposed to be a clear and measurable target.

The words **goal** and **objective** are often confused with each other. They both describe things that a person may want to achieve or attain but in relative terms may mean different things. Both are desired outcomes of work done by a person but what sets them apart is the time frame, attributes they are set for and the effect they inflict.

A goal is a desired result you want to achieve, and is typically broad and long-term. You might use company goals to inform yearly strategies and guide the direction of all your marketing efforts. An objective, on the other hand, defines the specific, measurable actions each employee must take to achieve the overall goal. Objectives are essentially the measurable actions you can take to achieve your overall goals. For instance, if your overall goal is to increase brand awareness, one objective might be to increase blog traffic by 10%.

Activity 2:

- State and explain any four differences between goals and objectives

4.1.2 Comparison chart

	Goals	Objectives
Definition	Something which you try to achieve	A specific result that a person or system aims to achieve within a time frame and with available resources.
Time Frame	Usually long-term.	A series of smaller steps, often along the way to achieving a long-term goal.
Magnitude	Typically involves life changing outcomes, like	Usually a near-term target of a larger expected outcome, such as passing a

	Goals	Objectives
	retiring, buying a home or making a major career change.	course as part of completing a degree program.
Outcome of immediate action	Actions tend to advance progress in a very general sense; there is often awareness that there are several ways to reach a goal, so specific outcomes aren't necessary.	Very specific and measurable, a target is established and victory is declared only when the target is hit.
Purpose of action	A goal is often characterized as a change of direction that will ultimately lead to a desired outcome.	Objectives tend to be actions aimed at accomplishing a certain task.
Measure	Goals may not be strictly measurable or tangible.	Must be measurable and tangible.
Example 1	"I want to retire by age 50"	"In order to reach my goal of retiring at age 50, I need to save \$20,000 by the end of this year"
Example 2	I want to achieve success in the field of genetic research and do what no one has ever done.	I want to complete this thesis on genetic research by the end of this month.
Hierarchy	Goals tend to control objectives; a change in a goal could eliminate one or more objectives, or add new ones.	An objective can modify a goal, but will seldom change it in a fundamental way, even if the objective isn't reached.

Both are a Way of Moving Forward

The major similarity between goals and objectives is that they both involve *forward motion*, but accomplish it in very different ways. We can think of goals as being the Big Picture — where we hope that our efforts will ultimately bring us. Objectives are about a specific plan of attack — usually a series of them — each being relatively short-term in nature.

Activity 3:

- Discuss any two attributes of a goal and an objective.

Read the content below

4.1.3 Attributes of goals verses objectives

Differences in scope

Goals are broader than objectives in the sense that goals are general intentions and are not specific enough to be measured. Objectives are narrow and are set for certain tasks in particular.

Specificity

Goals are general while objectives are specific. Goals are just general intentions towards the attainment of something while objectives are precise actions for accomplishment of a specific task.

Tangibility

Goals may be intangible while objectives ought to be tangible. Goals may be directed at achieving non-measurable things while objectives may be targeted at getting measurable things or tasks.

Differences in time frame

Both have a certain time frame. Goals usually have a longer time-frame than objectives. Objectives are usually precise targets set for a short term. Goals may be set for a longer term but many objectives may be set within that goal.

Measuring goals and objectives

Goals may or may not be measured, but in most cases objectives are measurable.

Examples

"I want to achieve success in the field of genetic research and do what no one has ever done."

This is a goal.

"I want to complete the thesis on genetic research within this month." This is an objective.

4.2 Bloom's Taxonomy of Learning

Bloom's taxonomy divides educational objectives into three domains. The three domains of learning include:

- **Cognitive:** this is for mental skills (knowledge).
- **Affective:** this is for growth in feeling or emotional areas (attitude or self)
- **Psychomotor:** this is for manual or physical skills (skills)

Activity 4:

1. What is Bloom's Cognitive Domain of Learning?

4.2.1.1 Bloom's Taxonomy of Cognitive Domain of Learning

The cognitive domain involves knowledge and the development of intellectual skills (Bloom, 1956). This includes the recall or recognition of specific facts, procedural patterns, and concepts that serve in the development of intellectual abilities and skills. There are six major categories of cognitive domain, starting from the simplest to the most complex:

Levels of Cognitive Domain

Skills in the **cognitive domain** revolve around knowledge, comprehension, and critical thinking on a particular topic. Traditional education tends to emphasize the skills in this domain, particularly the lower-order objectives. The levels of cognitive processes are listed below:

1. Knowledge
2. Comprehension
3. Application
4. Analysis
5. Synthesis
6. Evaluation

The categories can be thought of as degrees of difficulties. That is, the first ones must normally be mastered before the next one can take place.

Knowledge

Knowledge: recall data or information.

Key words that can be used when constructing objectives are: arrange; define; describe; identify; knows; label; list; match; name; outline; recall; recognize; reproduce; select; state, etc.

Comprehension

Comprehension: Understand the meaning, translation, interpolation and interpretation of instructions and problems in one's own words

Key words that can be used in constructing objectives are: comprehend; convert distinguish; estimate; explain; generalize; infer; interpret; paraphrase; predict; rewrite; summarize; translate, etc.

Application

Application: Use of concept in a new situation or unprompted use of an abstraction. Apply what was learnt in the classroom into novel situations in the work place or everyday life

Key words: apply; change; compute; construct; demonstrate; manipulate; modify; produce; prepare; show; solve; use

Analysis

Analysis: Separates material or concepts into component parts so that its organizational structure may be understood. Distinguish between facts and inference.

Key words: analyse; breakdown; compare; contrast; differentiate; distinguish; identify; illustrate; infer; relate; select; separate

Synthesis

Synthesis: Build a structure or pattern from diverse elements. Put parts together to form a whole, with emphasis on creating a new meaning or structure

Key words: categories; combine, compile compose; create; devise; design; explain; generate; reorganize; rewrite; summarize

Evaluation

Evaluation: - make judgments about the value of ideas or materials.

Key words: - appraise; compare; conclude; contrast; criticize; defend; describe; discriminate; evaluate; explain; interpret; justify; relate; support

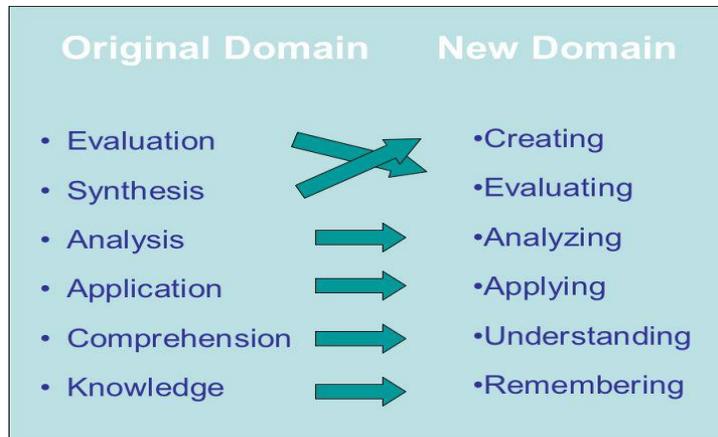
4.2.1.2 Revision of Bloom's Taxonomy of Cognitive Learning

Lorin Anderson, a former student of Bloom, and David Krathwohl revisited the cognitive domain in the mid-nineties and made some changes, with perhaps the three most prominent ones being the following:

- changing the names in the six categories from noun to verb forms
- rearranging them as shown in the chart below
- creating processes and levels of knowledge matrix

This new taxonomy reflects a more active form of thinking and is perhaps more accurate. In the revised version of Bloom's Taxonomy, the names of the major cognitive process categories were changed to indicate action because thinking implies active engagements.

The difference between Bloom's Taxonomy of Cognitive Learning and the revised version is that the newer taxonomy moves the evaluation stage down a level and the highest cognitive process becomes "creating" as shown in Chart 1 below.



The new taxonomy has cognitive process dimension and knowledge dimension. The cognitive process dimension has been presented in the Table of the Revised Cognitive Domain. The knowledge dimension in this new taxonomy is divided into different types of knowledge: factual, conceptual, procedural, and metacognitive as shown in Table 4.1

Table 4.1: Levels of Knowledge

MAJOR TYPE	SUBTYPE
Factual Knowledge	Knowledge of terminology; Knowledge of specific details and elements
Conceptual Knowledge	Knowledge of classifications and categories; Knowledge of principles and generalizations; Knowledge of theories, models, and structures
Procedural Knowledge	Knowledge of subject specific skills and algorithms; Knowledge of subject-specific techniques and methods; Knowledge of criteria for determining when to use appropriate procedures
Meta-cognitive Knowledge	Strategic knowledge; Knowledge about cognitive tasks, including appropriate contextual and conditional knowledge; Self-knowledge

Anderson and Krathwohl (2001) also created the Cognitive Processes and Levels of Knowledge Matrix

Cognitive Processes and Levels of Knowledge Matrix

The Knowledge Dimension	The Cognitive Process Dimension					
	Remember	Understand	Apply	Analyze	Evaluate	Create
Factual Knowledge						
Conceptual Knowledge						
Procedural Knowledge						
Meta-cognitive Knowledge						

Activity 5:

1. What is Bloom’s Affective Domain of Learning?
2. State and discuss the five Levels of Bloom’s Affective Domain of Learning

4.2.2 The Affective Domain of Learning

The affective domain includes the manner in which we deal with things emotionally such as feelings; values; appreciation; enthusiasm; motivations; and attitudes. The five major categories are listed from the simplest behavior to the most complex:

Levels of Affective Domain

There are **five levels** in the affective domain moving through the lowest order processes to the highest:

1. Receiving

The lowest level; the student passively pays attention. Without this level no learning can occur. Receiving is about the student's memory and recognition as well.

Key Words: acknowledge, asks, attentive, courteous, dutiful, follows, gives, listens, understands

2. Responding

The student actively participates in the learning process, not only attends to a stimulus; the student also reacts in some way.

Key Words: answers, assists, aids, complies, conforms, discusses, greets, helps, labels, performs, presents, tells

3. Valuing

The student attaches value to an object, phenomenon, or piece of information. The student associates value or some values to the knowledge acquired.

Key Words: appreciates, cherish, treasure, demonstrates, initiates, invites, joins, justifies, proposes, respect, shares

4. Organizing

The student can put together different values, information, and ideas and accommodate them within his/her own schema; comparing, relating and elaborating on what has been learned.

Key Words: compares, relates, synthesizes

5. Characterizing

The student holds a particular value or belief that now exerts influence on his/her behavior so that it becomes a characteristic.

Key Words: acts, discriminates, displays, influences, modifies, performs, qualifies, questions, revises, serves, solves, verifies

Activity 6:

1. What is Bloom's Psychomotor Domain of Learning?
2. Discuss the levels of Psychomotor Domain of Learning

4.2.3 Psychomotor Domain of Learning

Bloom published the taxonomy of educational objectives on the cognitive domain of learning in 1956 and the taxonomy of educational objectives on the affective domain of learning in 1965. However, another taxonomy, for the psychomotor domain was planned but never got published. Since then, there have been several published taxonomies of the psychomotor domain such as Simpson's (1972) taxonomy; Dave's (1975) taxonomy; and Harrow's (1972) taxonomy.

4.2.3.1 Simpson's (1972) Taxonomy

Simpson taxonomy of the psychomotor domain (includes physical movement, coordination, and of the motor skills area. Development of skills requires practice and is measured in terms of speed, precision, distance, procedures or techniques in execution. Thus, psychomotor skills range from manual tasks such as digging a ditch or washing a car, to more complex tasks such as operating a complex piece of machinery. The seven major categories are listed from the simplest behaviour to the most complex.

1. Perception

The ability to use sensory cues to guide motor activity. This ranges from sensory stimulation, through cue selection, to translation. Examples: Detects non-verbal communication cues. Estimate where a ball will land after it is thrown and then moving to the correct location to catch the ball. Adjusts heat of stove to correct temperature by smell and taste of food. Adjusts the height of the forks on a forklift by comparing where the forks are in relation to the pallet. Key Words: chooses, describes, detects, differentiates, distinguishes, identifies, isolates, relates, selects.

2. Set

Readiness to act. It includes mental, physical, and emotional sets. These three sets are dispositions that predetermine a person's response to different situations (sometimes called mindsets). Examples: Knows and acts upon a sequence of steps in a manufacturing process. Recognize one's abilities and limitations. Shows desire to learn a new process (motivation). NOTE: This subdivision of Psychomotor is closely related with the "Responding to phenomena" subdivision of the Affective domain. Key Words: begins, displays, explains, moves, proceeds, reacts, shows, states, volunteers.

3. Guided response

The early stages in learning a complex skill that includes imitation and trial and error. Adequacy of performance is achieved by practicing. Examples: Performs a mathematical equation as demonstrated. Follows instructions to build a model. Responds to hand-signals of instructor while learning to operate a forklift. Key Words: copies, traces, follows, react, reproduce, responds.

4. Mechanism

This is the intermediate stage in learning a complex skill. Learned responses have become habitual and the movements can be performed with some confidence and proficiency. Examples: Use a personal computer. Repair a leaking tap. Drive a car. Key Words: assembles, calibrates, constructs, dismantles, displays, fastens, fixes, grinds, heats, manipulates, measures, mends, mixes, organizes, sketches.

5. Complex overt response

The skillful performance of motor acts that involve complex movement patterns. Proficiency is indicated by a quick, accurate, and highly coordinated performance, requiring a minimum of energy. This category includes performing without hesitation, and automatic performance. For example, players will often utter sounds of satisfaction or expletives as soon as they hit a tennis ball or throw a football, because they can tell by the feel of the act what the result will produce. Examples: Maneuvers a car into a tight parallel parking spot. Operates a computer quickly and accurately. Displays competence while playing the piano. Key Words: assembles, builds, calibrates, constructs, dismantles, displays, fastens, fixes, grinds, heats, manipulates, measures, mends, mixes, organizes, sketches. NOTE: The Key Words are the same as Mechanism, but will have adverbs or adjectives that indicate that the performance is quicker, better, more accurate, etc.

6. Adaptation

Skills are well developed and the individual can modify movement patterns to fit special requirements. Examples: Responds effectively to unexpected experiences. Modifies instruction to meet the needs of the learners. Perform a task with a machine that it was not originally intended to

do (machine is not damaged and there is no danger in performing the new task). Key Words: adapts, alters, changes, rearranges, reorganizes, revises, varies.

7. Origination

Creating new movement patterns to fit a particular situation or specific problem. Learning outcomes emphasize creativity based upon highly developed skills. Examples: Constructs a new theory. Develops a new and comprehensive training programming. Creates a new gymnastic routine. Key Words: arranges, builds, combines, composes, constructs, creates, designs, initiate, makes, originates.

4.2.3.1 Dave's (1975) Taxonomy

Dave's taxonomy of the psychomotor domain has five major categories listed from the simplest behaviour to the most complex as shown below.

1. Imitation

Observing and patterning behaviour after someone else. Performance may be of low quality. **Examples:** Copying a work of art, performing a skill while observing a demonstrator. **Key Words:** copy, follow, mimic, repeat, replicate, reproduce, trace.

2. Manipulation

Being able to perform certain actions by memory or following instructions. **Examples:** Being able to perform a skill on one's own after taking lessons or reading about it; follows instructions to build a model. **Key Words:** act, build, execute, perform

3. Precision

Refining, becoming more exact. Performing a skill within a high degree of precision. **Examples:** Working and reworking something, so it will be "just right;" perform a skill or task without assistance; demonstrate a task to a beginner. **Key Words:** calibrate, demonstrate, master, perfectionism.

4. Articulation

Coordinating and adapting a series of actions to achieve harmony and internal consistency. **Examples:** Combining a series of skills to produce a video that involves music, drama, colour, sound, etc.; combining a series of skills or activities to meet a novel requirement. **Key Words:** adapt, constructs, combine, creates, customize, modifies, formulate.

5. Naturalization

Mastering a high-level performance until it become second-nature or natural, without needing to think much about it. **Examples:** Manoeuvres a car into a tight parallel parking spot; operates a computer quickly and accurately; displays competence while playing the piano; Michael Jordan playing basketball or Nancy Lopez hitting a golf ball. **Key Words:** create, design, develop, invent, manage, naturally

4.2.3.1 Harrow's (1972) Taxonomy

Harrow's taxonomy has a focus toward physical ability. This taxonomy is better suited to assessing ability to perform a task or activity or to sports and recreation activities. Harrow's

taxonomy of the psychomotor domain has six major categories listed from the simplest behaviour to the most complex:

1. Reflex Movements

Reactions that are not learned, such as an involuntary reaction. **Examples:** Instinctive response. **Key Words:** react, respond

2. Fundamental Movements

Basic movements such as walking, or grasping. **Examples:** Perform a simple task. **Key Words:** grasp an object, throw a ball, walk.

3. Perceptual Abilities

Response to stimuli such as visual, auditory, kinaesthetic, or tactile discrimination. **Examples:** Track a moving object, recognize a pattern. **Key Words:** catch a ball, draw or write

4. Physical Abilities (fitness)

Stamina that must be developed for further development such as strength and agility. **Examples:** Gain strength, run a marathon. **Key Words:** agility, endurance, strength.

5. Skilled movements

Advanced learned movements as one would find in sports or acting. **Examples:** Using an advanced series of integrated movements, perform a role in a stage play or play in a set of series in a sports game. **Key Words:** adapt, constructs, creates, modifies.

6. Nondiscursive communication

Use effective body language, such as gestures and facial expressions.

Examples: Express one's self by using movements and gestures **Key Words:** arrange, compose, interpretation.

Activity 7:

1. Formulate three SMART learning objectives. One on each of the three Domains of Learning
2. Mention any four (4) characteristics of instructional objectives
3. Discuss two importance of instructional objectives

4.3 Formulation of Learning Objectives

Learning objectives should be formulated explicitly in such a way that they are given in the form of concrete, observable actions of students. They indicate precisely which concepts and skills are to be addressed; which activity students must be able to carry out; under what conditions this behaviour must be produced; and what the acceptance level of behaviour is

It is important to realize that all kinds of unexplained hidden aims play a role. Examples of these are:

- Learning to plan
- Learning to reason abstractly
- Getting a sense of the order of magnitude of a quantity.

Bloom (1956) and Anderson and Krathwohl (2001) have categorized learning objectives into three different domains; each domain is subdivided into different categories according to their complexity as discussed earlier. The domains are:

A. Cognitive Domain

The aims in this domain have to do with thinking and reasoning. For example, with learning to reproduce facts, solve problems, acquire insight, explain concepts, analyse and interpret data, write an essay, and so on.

B. Psychomotor Domain

This domain addresses so-called skills which relate to motion. In the sciences, most motor skills are learned in practical work that is by using apparatus; working with instruments, and setting up experiments. Motor skills are always related to thinking and therefore to the cognitive domain.

C. Affective domain

This has to do with attitudes or feelings, such as enthusiasm, motivation, working safely and accurately; it also includes feelings about careful treatment of nature and the environment. Also, the scientific attitudes fit into this domain. Scientific attitudes concern the tendency to follow scientific conventions; to report data honestly; and to be open to criticism and alternative interpretations. A fourth domain is often added.

4.3.1 Learning objectives can be formed by using the following guidelines.

1. Differentiate between goals and objective. Objectives and goals are terms that are sometimes used interchangeably, but there is a distinct difference between educational objectives and educational goals. One should be sure of this difference before attempting to write an objective.
2. Use the Bloom's Taxonomy to classify different types of learning, as well as a hierarchy illustrating different levels of learning. Bloom's taxonomy is usually used when writing educational objectives.
3. Learn the characteristics that communicate your intention. When writing an educational objective, there are three characteristics that one needs to focus on.
 - Performance; - This is the first characteristic. An objective should always state what your students are expected to be able to-do by the end of a unit or lesson.
 - Condition; this is the second characteristic. A good educational objective will outline the conditions under which a student is supposed to perform a said task.
 - Criterion; is the third characteristic. It outlines how well a student must perform. That is, the specific expectations that need to be met. For example; 'By the end of the lesson, the learner will be able to dissect a small mammal, in a typical laboratory setting,

- without killing it'. This outline the performance - dissecting a small mammal; the conditions - typical laboratory settings; and the criterion - without killing it.
4. Write stem statements: A stem statement should outline the performance expected of a learner. You should use measurable verbs to form your stem statement.
 - Your stem statement should begin by referencing the lesson. For example; By the end of the lesson.....
 - Your stem statement outlines the duration of time your learners need to have mastered a certain skill. For example, it should be; ‘By the end of the lesson-----‘and not, “By the end of the course.....” specify the lesson in the objective rather than the whole course content.
 5. Select the proper verb: The verb you use are contingent on which level of learning in cognitive, affective and psychomotor taxonomies you are conveying. For example, you should write a variety of educational objectives that all speak to differing levels of Bloom’s taxonomy of cognitive learning.
 - For knowledge, you should go for words like, list, recite, define, name etc.
 - For comprehension; words like describe, explain, paraphrase, restate etc.
 - For application; include verbs like calculate, predict, illustrate, apply etc.
 - For analyses; words like; categorize, analyze, draw, illustrate etc.
 - For synthesis use words like; design, formulate, build, invent, create, etc.
 - For evaluation; try terms like; choose; relate; contrast; argue; support etc.
 6. Make sure your objectives are SMART.
 - S stands for **specific**. Do your learning objectives outline skills that you are able to measure?
 - M stands for **measurable**. Your objectives should be able to be measured in classroom setting, through testing or observed performances.
 - A stands for **action** – oriented or achievable. Can the objective be achieved?
 - R stands for **relevant**, realistic or reasonable. Make sure your learning objectives reflect realistic expectations of your learners given the timeframe of your lesson.
 - T stands for **time-bound**. All educational objectives should outline a specific timeframe they need to be met.

4.3.2 Verb to avoid when writing learning objectives;

Understand	Enjoy
Perceive	Know
Realize	Be aware of.

Instead use **SMART** verbs:

- | | |
|---------------|-------------|
| • Demonstrate | Incorporate |
| • Create | Play |
| • Organize | Apply |
| • Implement | Evaluate |
| • Produce | Construct |
| • Analyse | Identify |
| • Develop | Explain |
| • Express | List |
| • Compile | etc |

4.3.3 Characteristics of Instructional Objectives

It must be (BOMSTRA OR SMART)

- Behavioural
- Observable
- Measurable
- Specific
- Time bound
- Relevance
- Achievable

4.3.4 How instructional Objectives Enhance teaching and Learning

- The objectives should be based on the topic, nature of the subject matter and intellectual level of the pupils.
- Objectives should be selected from the syllabus
- Must be stated in behavioural terms. It must be achievable, specific, measurable, observable and time bound
- Should be stated to cover the three integral learning domains:
 - i. Knowledge, Understanding and Application
 - ii. Process Skills
 - iii. Attitudes and Values.
- Appropriate percentage weighting should be placed on each of the classes of learning domains.
- Should state the performance standards.

4.3.5 Importance of Specific Objectives in Lesson Plan Preparation and Delivery

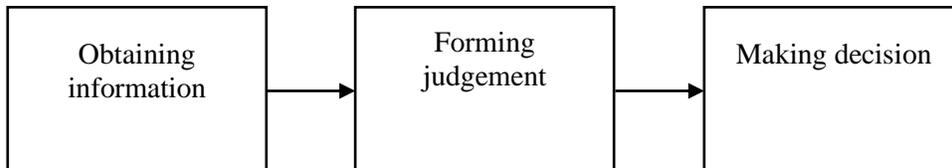
- It helps in the choice of the method of teaching
- It helps in the selection of content
- It helps in the collection of teaching and learning materials
- It helps in the evaluation or assessment of pupils
- It serves as a guide to the teacher not to digress from the lesson

Activity 8:

- i. What is Evaluation?
- ii. Explain formative and summative evaluation

4.4 Evaluation of Instructional, Behavioural and Learning Objectives

4.4.1 Evaluation is the process of obtaining information and using it to form judgement that, in turn are used in decision making.



Evaluation is a fact of life. Students require feedback on their progress. We must evaluate the progress of our student as well as the effectiveness of our teaching.

The evaluation process consists of 4 stages.

1. Preparing for evaluation: Determine the kind of information needed and decide how and when to obtain it.
2. Obtaining needed information: Obtain a variety of information as possible.
3. Forming Judgements: Judgements are made by comparing the information to selected criteria.
4. Using judgements in making decision and preparing evaluation reports: Record significant finding and determine appropriate courses of action.

In the process of evaluation, we may select essays, checklists, performance evaluation, surveys and many other methods to assess performance. We hold these assessments to standards that have been set. Then we evaluate or judge. The process of evaluating or judging is ongoing.

Formative and Summative Evaluation

Effective teaching involves both formative and summative evaluation. If the mode of evaluation is such that whatever judgements that are made count in the final analysis then the mode of evaluation is summative.

Formative evaluation includes identifying the areas in which the student needs improvement. Every time you give comments to student you are making a formative evaluation. The main purpose of formative evaluation is acquisition and strengthening of the student's knowledge and competencies.

Formative evaluation enables student to know how they are progressing towards meeting the objective of a give course. Some words synonymous with formative evaluation are: improvement, ongoing, feedback, betterment, enhancement, advancement, progression, assistance.

Summative Evaluation The focus of summative evaluation is judgement of the level of achievement. It refers to the final outcome, verdict or judgement. Summative evaluation is used in determining a final grade for the student. The decision is indicated as grades on a transcript, certificate, awarded diploma, accreditation, written evaluation and/or performance appraisal.

4.4.2 Lesson Evaluation

Lesson evaluation is meant to find out whether the teacher has achieved the stated specific objectives or not after the lesson delivery.

To be able to evaluate the method of teaching you may ask yourself the following questions

- a. Did I review the previous knowledge of the pupils?
- b. Did I link the previous knowledge to the new topic?
- c. Did I involve all the pupils in the lesson?
- d. Did I present my teaching and learning activities sequentially?
- e. Did I help the pupils understand the subject matter/core points I presented?
- f. Did I present the subject matter sequentially?

The answers you will give to these questions will help you to evaluate your method of teaching. The evaluation of pupils' performance or achievement deals with how your pupils have understood the lesson and can apply the new concepts you have taught them to new unfamiliar situations. Evaluation of pupils' performance can effectively be done by using class test, oral questions, quizzes and assignment (homework). You should set adequate number of questions when you give pupils an exercise or a task on what you have taught. Exercise must be marked promptly

A complete evaluation of a lesson, involves the assessment of these competency areas:

- Lesson Plan Preparation
- Lesson Presentation or delivery and
- Class organisation

4.4.3 Evaluation of Instructional Objectives

Rating Scale:

Excellent -1: Very Good -2: Good -3: Fairly Good -4: Poor -5:

Competency Area	Teacher Requirement	Rating Scale				
		1	2	3	4	5
Objectives	a) All the main objectives stated (to cover knowledge and understanding, application of knowledge, and attitudes and process skills.					
	b) Adequate number of objectives for the duration.					
	c) Clarity of terms (behavioural terms using active words)					

Activity 10:

1. What is profile dimension?
2. How will you integrate profile dimension in your teaching and learning?

4.5 Profile dimensions of teaching and learning at the basic school level

4.5.1 Explanation of terms or words

- a. Profile means a description of a state of something.
- b. The word dimension means measurement in a specific direction.
- c. Behaviour is the way in which an individual responds to his or her thought.

4.5.2 What are ‘dimensions’ of teaching and learning?

In teaching and learning, our dimensions are the behavioural changes in the learners. Normally, we say that learning has taken place in learners when there is a change in their behaviours. The changes in behaviour may be in the form of the knowledge acquired, their understanding, how they are able to apply the concept they have learnt, the process skills they have acquired and the desirable attitudes they have developed. Some examples of the dimensions of teaching and learning at the basic school level are Knowledge, Understanding, Application, Process skills, Attitudes, Values etc.

4.5.3 What are Profile dimensions?

Profile dimensions describe the underlying behaviours for teaching, learning and assessment. In simple term, profile dimensions are a combination of any two or more of the dimensions of teaching and learning.

4.5.4 Learning Domains (Expected Learning Behaviours) Primary 1 -6

A central aspect of this curriculum is the concept of three integral learning domains that should be the basis for instruction and assessment. These are

- 1) Knowledge, Understanding and Application
- 2) Process Skills
- 3) Attitudes and Values.

4.5.5 Learning Domains (Expected Learning Behaviours) JHS 1-3

A central aspect of this curriculum is the concept of three integral learning domains that should be the basis for instruction and assessment. These are

- 1) Knowledge, Understanding and Application
- 2) Process Skills
- 3) Attitudes and Values.
- 4) Performance

4.5.8 Knowledge, Understanding and Application

Under this domain, learners acquire knowledge through some learning experiences. They may also show understanding of concepts by comparing, summarizing, re-writing etc. in their own words and constructing meaning from instruction. The learner may also apply the knowledge acquired in some new contexts. At a higher level of learning behaviour, the learner may be required to analyse an issue or a problem. At a much higher level, the learner may be required to synthesize knowledge by integrating a number of ideas to formulate a plan, solve a problem, compose a story, or a piece of music. Further, the learners may be required to evaluate, estimate and interpret a concept. At the last level, which is the highest, learners may be required to create, invent, compose, design and construct. These learning behaviours “knowing”, “understanding”, “applying”, “analyzing”, “synthesizing”, “evaluating” and “creating” fall under the domain “Knowledge, Understanding and Application”.

In this curriculum, learning indicators are stated with action verbs to show what the learner should know and be able to do. For example, the learner will be able to describe something. Being able to “describe” something after teaching and learning has been completed means that the learner has acquired “knowledge”. Being able to explain, summarize, and give examples etc. means that the learner has understood the concept taught.

Similarly, being able to develop, defend, etc. means that the learner can “apply” the knowledge acquired in some new context. You will note that each of the indicators in the curriculum contains an “action verb” that describes the behaviour the learner will be able to demonstrate after teaching and learning has taken place. “Knowledge, Understanding and Application” is a domain that

should be the prime focus of teaching and learning in schools. Teaching in most cases tends to stress **on** knowledge acquisition to the detriment of other higher level behaviours such as applying knowledge.

Each action verb in any indicator outlines the underlying expected outcome. Each indicator must be read carefully to know the learning domain towards which you have to teach. The focus is to move teaching and learning from the didactic acquisition of “knowledge” where there is fact memorization, heavy reliance on formulae, remembering facts without critiquing them or relating them to real world – *surface learning* – to a new position called – *deep learning*. Learners are expected to deepen their learning by knowledge application to develop critical thinking skills and to generate creative ideas to solve real life problems in their school lives and later in their adult lives. This is the position where learning becomes beneficial to the learner.

The explanation and the key words involved in the “Knowledge, Understanding and Application” domain are as follows:

Knowing:

The ability to remember, recall, identify, define, describe, list, name, match, state principles, facts and concepts. Knowledge is the ability to remember or recall concepts already learnt and this constitutes the lowest level of learning.

Understanding:

The ability to explain, summarize, translate, rewrite, paraphrase, give examples, generalize, estimate or predict consequences based upon a trend. Understanding is generally the ability to grasp the meaning of some concepts that may be verbal, pictorial, or symbolic.

Applying:

This dimension is also referred to as “Use of Knowledge”. Ability to use knowledge or apply knowledge, apply rules, methods, principles, theories, etc. to situations that are new and unfamiliar. It also involves the ability to produce, solve, plan, demonstrate, discover etc.

Analyzing:

The ability to break down concept/information into its component parts; to differentiate, compare, distinguish, outline, separate, identify significant points etc., ability to recognize unstated assumptions and logical fallacies; ability to recognize inferences from facts etc.

Synthesizing:

The ability to put parts or ideas together to form a new whole. It involves the ability to combine, compile, compose, devise, plan, revise, organize, create, generate new ideas and solutions.

Evaluating:

The ability to appraise, compare features of different things and make comments or judgment, contrast, criticize, justify, support, discuss, conclude, make recommendations etc. Evaluation refers to the ability to judge the worth or value of some concepts based on some criteria.

Creating: The ability to use information or materials to plan, compose, produce, manufacture or construct other products. From the foregoing, creating is the highest form of thinking and learning and is therefore a very important behaviour. This unfortunately, is the area where most learners perform poorly. In order to get learners to develop critical thinking skills beginning right from the lower primary level, it is advised that you do your best to help your learners to develop analytic skills as we have said already.

4.5. 9 Skills and Processes

These are specific activities or tasks that indicate performance or proficiency in the learning of science. They are useful benchmarks for planning lessons, developing exemplars and are the core of inquiry-based learning.

Equipment and apparatus handling

This is the skill of knowing the functions and limitations of various apparatus, and developing the ability to select and handle them appropriately for various tasks.

Observing

This is the skill of using the senses to gather information about objects or events. This also includes the use of instruments to extend the range of our senses.

Classifying

This is the skill of grouping objects or events based on common characteristics.

Comparing

This is the skill of identifying the similarities and differences between two or more objects, concepts or processes.

Communicating/Reporting

This is the skill of transmitting, receiving and presenting information in concise, clear and accurate forms - verbal, written, pictorial, tabular or graphical.

Predicting

This is the skill of assessing the likelihood of an outcome based on prior knowledge of how things usually turn out.

Analyzing

This is the skill of identifying the parts of objects, information or processes, and the patterns and relationships between these parts.

Generating possibilities

This is the skill of exploring all the options, possibilities and alternatives beyond the obvious or preferred one.

Evaluating

This is the skill of assessing the reasonableness, accuracy and quality of information, processes or ideas. This is also the skill of assessing the quality and feasibility of objects.

Designing

This is the skill of visualizing and drawing new objects or gargets from imagination.

Measuring

This is the skill of using measuring instruments and equipment for measuring, reading and making observations.

Interpreting

This is the skill of evaluating data in terms of its worth: good, bad, reliable, unreliable; making inferences and predictions from written or graphical data; extrapolating and deriving conclusions. Interpretation is also referred to as “Information Handling”.

Recording

This is the skill of drawing or making graphical representation boldly and clearly, well labelled and pertinent to the issue at hand.

Generalizing

This is the skill of being able to use the conclusions arrived at in an experiment to what could happen in similar situations.

Designing of Experiments

This is the skill of developing hypotheses; planning and designing of experiments; persistence in the execution of experimental activities; modification of experimental activities where necessary in order to reach conclusions.

4.5.10 Attitudes and Values

To be effective, competent and reflective citizens, who will be willing and capable of solving personal and societal problems, learners should be exposed to situations that challenge them to raise questions and attempt to solve problems. Learners, therefore need to acquire positive attitudes, values and psychosocial skills that will enable them participate in debates and take a stand on issues affecting them and others.

4.5.10.1 Attitudes**i. Curiosity:**

The inclination or feeling toward seeking information about how things work in a variety of fields.

ii. Perseverance:

The ability to pursue a problem until a satisfying solution is found.

iii. Flexibility in ideas:

Willingness to change opinion in the face of more plausible evidence.

iv. Respect for Evidence:

Willingness to collect and use data in one’s investigation, and also have respect for data collected by others.

v. Reflection:

The habit of critically reviewing ways in which an investigation has been carried out to see possible faults and other ways by which the investigation could be improved upon. The teacher should

endeavours to ensure that learners cultivate the above scientific attitudes and process skills as a prelude to effective work in science.

4.5.10.2 Values

At the heart of this curriculum is the belief in nurturing honest, creative and responsible citizens. As such, every part of this curriculum, including the related pedagogy, should be consistent with the following set of values.

Respect: This includes respect for the nation of Ghana, its institutions and laws and the culture and respect among its citizens and friends of Ghana.

Diversity: Ghana is a multicultural society in which every citizen enjoys fundamental rights and responsibilities. Learners must be taught to respect the views of all persons and to see national diversity as a powerful force for nation development. The curriculum promotes social cohesion.

Equity: The socio-economic development across the country is uneven. Consequently, it is necessary to ensure an equitable distribution of resources based on the unique needs of learners and schools. Ghana's learners are from diverse backgrounds which require the provision of equal opportunities to all, and that, all strive to care for each other.

Commitment to achieving excellence: Learners must be taught to appreciate the opportunities provided through the curriculum and persist in doing their best in whatever field of endeavour as global citizens. The curriculum encourages innovativeness through creative and critical thinking and the use of contemporary technology.

Teamwork/Collaboration: Learners are encouraged to become committed to team-oriented working and learning environments. This also means that learners should have an attitude of tolerance to be able to live peacefully with all persons.

Truth and Integrity: The curriculum aims to develop learners into individuals who will consistently tell the truth irrespective of the consequences. In addition, be morally upright with the attitude of doing the right thing even when no one is watching. Also, be true to themselves and be willing to live the values of honesty and compassion. Equally important, is the practice of positive values as part of the ethos or culture of the work place, which includes integrity and perseverance. These underpin the learning processes to allow learners to apply skills and competences in the world of work. The action verbs provided in the learning domains in each content standard should help you to structure your teaching to achieve the desired learning outcomes. Select from the action verbs provided for your teaching, for evaluation exercises and for test construction. Check the learning indicators to ensure that you have given the required emphasis to each of the learning domains in your teaching and assessment.

UNIT 4: SUMMARY

The unit covered the following sub-topics:

4.1 Goals and Objectives

4.2 Bloom's Taxonomy of Learning

4.2.1 Bloom's Taxonomy of Cognitive Domain of Learning

4.2.2 The Affective Domain of Learning

4.2.3 Psychomotor Domain of Learning

4.3 Formulation of Learning Objectives

4.4 Evaluation of Instructional, Behavioural and Learning Objectives

4.5 Profile dimensions of teaching and learning at the basic school level