KNOWLEDGE AND CURRICULUM

(Study Material – Prepared as per M. S. University Syllabus)

B.Ed.

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KNOWLEDGE AND CURRICULUM

After the completion of this course, the student-teachers will be able to

- Student teachers understand the meaning of knowledge and philosophical perspectives ofknowledge.
- Understand the concepts related to knowledge.
- Explain the sources and facets of knowledge.
- Student teachers understand the evolving meaning of curriculum when seen as dynamicprocess.
- The scope for teachers to make curricular decisions based on the field realities is highlighted.
- Student teachers develop the skills to transact the curriculum.

Unit I: Introduction to Knowledge

Meaning of Knowledge – Philosophical perspectives of knowledge – Differentiate the concepts thinking, feeling and doing – Distinguish between information, belief and truth - Knowing process – Way of knowing process – Knowledge construction – Knowledge transmission.

Unit II: Knowledge and Knowing

Epistemological bases of Knowledge – Kinds of Knowledge – Sources of knowledge – Domains - Cognition, Affective, Psychomotor and its significance in education – Metacognition. Catagorisation of knowledge – Basis of Knowledge – Forms of knowledge included in school education – School knowledge get reflected in the form of curriculum, syllabus and text books.

Unit III: Facets of Knowledge

Different facets of knowledge and its relationship such as : Local and universal – Concrete and Abstract - Theoretical and practical – Contextual and textual – Role of schools in knowledge development – Role of culture in knowing – Knowledge rendered into action – Knowledge reflexion.

Unit IV: Concept of Curriculum and Curriculum designing

Understanding the meaning and nature of curriculum – Curriculum and Syllabus – Need for curriculum in schools – Curriculum determinants – Systems approach in curriculum development - Types of curriculum. Principles of curriculum development - Assessing needs – Formulating objectives – Selection of content – Selection of learning experiences – Organisation of learning experiences – Curriculum visualized at different levels : National – state – school – class – levels and related issues. Balanced curriculum.

Unit V: Curriculum transaction and Evaluation

Curriculum transaction – Strategies, approach, methods, techniques for curriculum transaction – Organisation for instruction – Resources for curriculum transaction instructional materials – Computer and the internet. Meaning of educational evaluation – Evaluation as comparing objectives and outcomes – Focus of curricular evaluation: Subject, content, organization and mode of curriculum.

UNIT - I: INTRODUCTION TO KNOWLEDGE

1.0 Meaning of Knowledge

1.1 Philosophical perspectives of knowledge

1.2 Differentiate the concepts thinking, feeling and doing

1.3 Distinguish between information, belief and truth - Knowing process - Way of knowing process

1.4 Knowledge construction - Knowledge transmission.

1.0 Introduction to Knowledge

Knowledge is always concerned about knowing something. This something could be natural objects, man-made things, events, processes, persons, their activities, their relationships and many others. All of these and many other 'objects' of knowledge may, collectively, be called as phenomena. Therefore, knowledge always refers to comprehension of some or the other phenomenon. Knowledge is sum of human understanding of the world, be it physical, biological, social, mental and spiritual. In simple but generalised way, knowledge is sum of human understanding of material and mental reality - given and constructed. The acquisition of knowledge, or the build-up of knowledge, is by its very nature always refers to a process or the road from ignorance to knowledge, from not knowing things to knowing them. The transition from lack of knowledge to acquisition of the same is shaped by the human activity, which involves seeing lack of relation with a phenomenon to seeing the relation with phenomenon. Knowledge, the noun, is used in different contexts and situations to convey different meaning to different people.

Knowledge has different aspects, kinds and levels. Knowledge, in common sense understanding, signifies all the human meanings, beliefs about matters of facts (things, objects, events), about relationships between facts, and about principles, laws, theories that are at work in the nature and society. Knowledge is understanding about the relationships; the relationship of the knower with the known. In other words, it is the relationship of the subject with the object. Knowledge is the result of knower's active engagement with the object of knowledge. Knowledge and its intensity depend on the relationship between the knower and the known. Further, knowledge is understood in terms of enlightenment. The Indian tradition considers it as breaking the veil of ignorance. In practice, knowledge is a claim in the sense that the knower proclaims that he or she is aware of the phenomenon. This is to say that having knowledge of the phenomenon means both being aware of that phenomenon and also

stating that the awareness is true. In the school context, knowledge is the sum of conceptions, ideas, laws, and propositions established and tested as correct reflections of the phenomenon.

1.0.1 Meaning of Knowledge

Knowledge is a familiarity, awareness or understanding of someone or something. Such as facts, information, descriptions or skills, which is acquired through experience or education, by perceiving, discovering and learning. Knowledge involves cognitive abilities of an individual, acting on information obtained through sensory perceptions and experiences. Knowledge may result from education as well.

Knowledge can refer to a theoretical or practical understanding of a subject. It can be implicit (as with practical skill or expertise) or explicit (as with theoretical understanding of a subject), it can be more or less formal or systematic. Philosophy's core is the theory of knowledge; it is the foundation of science.

Plato, the Greek Philosopher defined knowledge as "justified true belief." Knowledge is familiarity or understanding of a particular skill, branch of learning. Knowledge acquisition involves complex cognitive processes like perception, communication and reasoning while knowledge is said to be related to the capacity of acknowledgment in human beings.

John Duns Scotus, Scottish philosopher and theologian, proposed in his philosophy two acts of knowledge: the abstractive and the intuitive. Intuitive knowledge is the knowledge of a things present and existing, as it is present and existing. Abstractive knowledge, on the other hand, can be had of an object whether it is present or not and whether it is existing or not.

1.0.2. Definition of Knowledge

'Knowledge acquisition' is a process where as 'knowledge' is the product resulting from 'knowledge acquisition'. Many believe that the knowledge cannot be defined. The problem of definition of knowledge is ongoing and is a debate among philosophers. Knowledge, says Prichard (1976, P. 100), 'is sui generis, and, as such, cannot be explained'. Since knowledge is sum total of definitions and explanations of phenomena, it is not possible to define knowledge. In spite of this difficulty, philosophers have made attempts to define knowledge.

The most accepted definition of knowledge is that it is a justified belief. In one of his dialogues, Theaetetus, Plato examined three definitions of knowledge that were widely in circulation at that time. The three definitions of the knowledge are (as given in Encyclopedia of Philosophy):

1. Knowledge is Perception or sensation;
2. Knowledge is True belief, and
3. Knowledge is True belief accompanied by a rational account of itself or ground.

After thorough examination, Plato defined knowledge as, 'justified true belief'. According to Plato's definition, human knowledge, in order to be given the 'status' of knowledge, should fulfil the condition of being a belief - true and justified. John Locke, the founding father of empiricism, and who defined 'mind as tabula rasa', surprisingly defined knowledge as "the perception of the agreement of disagreement of two ideas". For pragmatist Dewey (2010), knowledge denotes an 'inference from evidence'.

The National Curriculum Framework-2005, while placing the experience of the knower at centre, also defined knowledge. According to it, "Knowledge can be conceived as experience organised through language into patterns of thought (or structures of concepts), thus creating meaning, which in turn helps us to understand the world we live in. It can also be conceived of as patterns of activity, or physical dexterity with thought, contributing to acting in the world, and the creating and making of things. Human beings over time have evolved many bodies of knowledge, which include a repertoire of ways of thinking, of feeling and of doing things, and constructing more knowledge (P.25)." The process of understanding the meaning of defining knowledge direct us to identify, at least, three aspects associated with knowledge. These aspects are:

1. Processes involved in knowledge acquisition/generation/construction; this eventually enters into the domain of ways of acquisition / generation / construction of knowledge; to be precise it is ways of knowing;
2. Forms of knowledge; since knowledge is sum of human understanding, there ought to be different forms of understanding or types of knowledge; and
3. Purpose of knowing/knowledge. The purpose of knowing is different in different contests. Therefore, instead of labouring in understanding or defining knowledge in its product form, it may be appropriate to focus on knowing - the process, which explicates and explains and, to a large extent, determine the meaning and also nature of knowledge.

1.1 Philosophical perspectives of knowledge

Epistemology is the philosophical study of the nature, origin, and limits of human knowledge. The term is derived from the Greek term, "epistēmē ("knowledge")" and logos ("reason"), and accordingly the field is sometimes referred to as the theory of knowledge.

There are four philosophical perspectives currently used in educational settings: essentialism, perennialism, progressivism, and social reconstructionism/critical pedagogy.

1.1.1 Essentialism:

Essentialism tries to **instil** all students with the most essential or basic academic knowledge and skills and character development. ... Essentialists argue that classrooms should be teacher-oriented. The teacher should serve as an intellectual and moral role model for the students.

1.1.2 Perennialism:

Perennialism values knowledge that transcends time. This is a subject-centered philosophy. The goal of a perennialist educator is to teach students to think rationally and develop minds that can think critically. In this philosophy skills are developed in a sequential manner.

1.1.3. Social reconstructionism:

Social-reconstructionist education was based on the theory that society can be reconstructed through the complete control of education. The objective was to change society to conform to the basic ideals of the political party or government in power or to create a utopian society through education.

1.1.4. Critical Pedagogy:

According to the academia, critical pedagogy is a “philosophy of education that has developed and applied concepts from critical theory” (Kincheloe, 1997), “It views teaching as an inherently political act, reject the neutrality of knowledge, and insist that issues of social justice and democracy itself are not ...

1.2 Differentiate the concepts thinking, feeling and doing

Thinking is the ultimate cognitive activity, consciously using our brains to make sense of the world around us and decide how to respond to it. Unconsciously our brains are still 'thinking' and this is a part of the cognitive process, but is not what we normally call 'thinking'. Thinking is simply about chains of synaptic connections. Thinking as experienced is of 'thoughts' and 'reasoning' as we seek to connect what we sense with our inner world of understanding, and hence do and say things that will change the outer world.

Our ability to think develops naturally in early life. When we interact with others, it becomes directed, for example when we learn values from our parents and knowledge from our teachers. We learn that it is good to think in certain ways and bad to think in other ways.

Indeed, to be accepted into a social group, we are expected to think and act in ways that are harmonious with the group culture.

Thinking gradually develops and teaches us how to manage our feelings and how to solve the problems that feelings represent. Thinking can become very elaborate. The function of thinking stands for reality. It's a virtual space in which we can work out, in the safety of our minds, what to do in relation to reality, before we actually put solutions into effect. In short: thoughts are interposed between feelings and actions.

Feelings make us aware that something unexpected (or something unpredicted or something uncertain) is occurring. When we say that feelings represent demands upon the mind to perform work, what its mean is that they represent demands on thinking. The work of the mind is thinking. Feelings come first. Thoughts are always of dealing with feelings. Feelings comes first in both hierarchical sense and philosophical sense. Thinking derives from learning that is from experience.

The definition of doing is something being done or the process of getting something done. A deed or action for which somebody is responsible for it is called doing. The mental feeling is executed as action is called doing.

Feeling is subjective whereas thinking is objective. Feeling is emotional whereas thinking is rational. Feeling is based upon our perception of right and wrong whereas thinking is based upon facts and logic. Both thinking and feeling help us in arriving at a decision.

1.3 Distinguish Between Information, Belief and Truth

1.3.1 Truth

Truth is the property of being in accord with fact or reality. In everyday language, truth is typically ascribed to things that aim to represent reality or otherwise correspond to it, such as beliefs, propositions, and declarative sentences.

Truth is usually held to be the opposite of falsehood. The concept of truth is discussed and debated in various contexts, including philosophy, art, theology, and science. Most human activities depend upon the concept, where its nature as a concept is assumed rather than being a subject of discussion; these include most of the sciences, law, journalism, and everyday life. Some philosophers view the concept of truth as basic, and unable to be explained in any terms that are more easily understood than the concept of truth itself. Most commonly, truth is viewed as the correspondence of language or thought to a mind-independent world. This is called the correspondence theory of truth.

Various theories and views of truth continue to be debated among scholars, philosophers, and theologians. There are many different questions about the nature of truth which are still the subject of contemporary debates, such as: How do we define truth? Is it even possible to give an informative definition of truth? What things are truth-bearers and are therefore capable of being true or false? Are truth and falsehood bivalent, or are there other truth values? What are the criteria of truth that allow us to identify it and to distinguish it from falsehood? What role does truth play in constituting knowledge? And is truth always absolute, or can it be relative to one's perspective?

1.3.2. Comparison of Knowledge and Information

S. No.	Basis for Comparison	Information	Knowledge
1.	Meaning	When the facts obtained are systematically presented in a given context it is known as information.	Knowledge refers to the relevant and objective information gained through experience.
2.	What is it?	Refined data	Useful information
3.	Combination of	Data and context	Information, experience and intuition
4.	Processing	Improves representation	Increases consciousness
5.	Outcome	Comprehension	Understanding
6.	Transfer	Easily transferable	Requires learning
7.	Reproducibility	Can be reproduced	Identical reproduction is not possible
8.	Prediction	Information alone is not sufficient to make predictions	Prediction is possible if one required knowledge.
9.	One in other	All information need not be knowledge.	All knowledge is information.

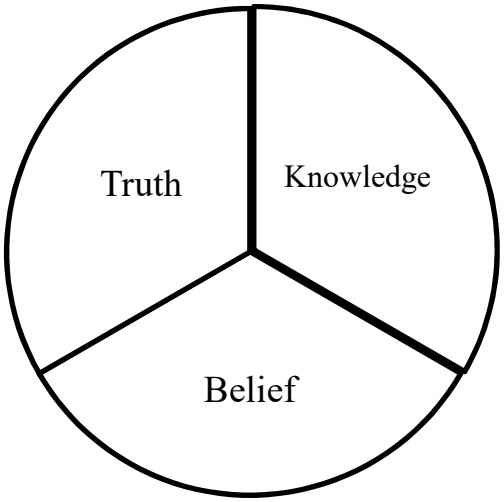
1.3.3. Differences between Information and Knowledge

S. No	Information	Knowledge
1.	Information denotes the organised data about someone or something obtained through various sources such as newspaper, internet, television, discussions, etc.	Knowledge refers to the awareness or understanding on the subject acquired from education or experience of a person.
2.	Information is nothing but the refined form of data, which is helpful to understand the meaning.	Knowledge is the relevant and objective information that helps in drawing conclusions.
3.	Data compiled in the meaningful context provides information.	When information is combined with experience and intuition, it results in knowledge.
4.	Processing improves the representation, thus ensures easy interpretation of the information.	As against this, processing results in increased consciousness thus enhances subject knowledge.
5.	Information brings on comprehension of the facts and figures.	Knowledge which leads to the understanding of the subject.
6.	The transfer of information is easy through different means, i. e., verbal or non-verbal signals.	The transfer of knowledge is a bit difficult, because it requires learning on the part of the receiver.
7.	Information can be reproduced in low cost.	Similar reproduction of knowledge is not possible because it is based on experiential or individual values, perceptions, etc.
8.	Information alone is not sufficient to make generalization or predictions about someone or something.	Knowledge has the ability to predict or make inferences.
9.	Every information is not necessarily a knowledge	All knowledge is information.

1.3.4. Distinction between Knowledge and Information

Knowledge

- ❖ K=JTB (Knowledge = Justified True Belief)
- ❖ There are 4 ways of Knowing
  - Language
  - Perception
  - Reason
  - Emotion
- ❖ Reasonable Knowledge
  - Evidence
  - Coherence



- ❖ Information is said to be facts provided or learned about someone or something
- ❖ Information is factual
  - o Can even be trivial
- ❖ But Information can also be false
- ❖ Information can lack connectedness

1.3.5. Knowing Process

Knowing always becomes knowledge -- and you have to be alert not to allow it. One of the most delicate situations on the path of a seeker: knowing always becomes knowledge -- because the moment you have known something, your mind collects it as knowledge, as experience.

Knowing is a process. Knowledge is a conclusion. When knowing dies it becomes knowledge. And if you go on gathering this knowledge, then knowing will become more and more difficult -- because with knowledge, knowing never happens. Then you carry your knowledge around you. A knowledgeable person is almost hidden behind his knowledge; he loses all clarity, all perception. The world becomes far away; the reality loses all transparency.

The knowledgeable person is always looking through his knowledge. He projects his knowledge. His knowledge colors everything -- now there is no longer any possibility of knowing. Remember: knowledge is not gathered only through scriptures -- it is also gathered, and more so, through your own experience.

1.3.6. Way of Knowing Process

Philosophers have identified these four ways of knowing: Sense Perception, Language, Emotion/intuition and Logics/Reason. The source of this knowledge is language.

Sense Perception: Empiricists says that knowledge comes from the senses. According to their view sense perception is very important.

Language/Authority: Get knowledge from books or some authoritative persons one who knows more about a particular thing.

Emotion/intuition: Know somethings by feeling that emotionally. They are ethically not right. Some decisions in life are so complicated that people rely on their intuition.

Logics/Reason: You know certain things because you can apply logics and reasoning. You know that 2 times 3 is 6 not because of sense perception or because someone told you. You know the solution because you can calculate an answer by applying the rules of math.

1.4. Knowledge Construction

Learning for construction of knowledge is the basic presumption of constructivism which is a paradigm contrary to traditional objectivist approach. National Curriculum Framework-2005 emphesized that there is a ‘need to recognize the child as a natural learner, and knowledge as the outcome of the child’s own activity.’ (p. 12). The emphasis is on such learning environment where children can construct their own knowledge, develop their capacities and remain an active learner. In order to facilitate such learning, you as teacher need to be in tune with constructivist approach of learning. Constructivism is not a single theory of learning. It is based on ideas proposed by various philosophers, psychologists, anthropologists and educationists. You must have heard of names like Piaget, Vygotsky, Novok or sometimes Dewey as contributors to this new paradigm of learning. This approach

is contrary to traditional objectivist approach which establishes knowledge as something to be imparted into learners by some means like teacher. Objectivists assume knowledge as complete, real, objective and external to the learner. This basic assumption was being questioned by a new approach which believes that knowledge "is a function of how the individual creates meaning from his or her own experiences".

1.4.1. Knowledge Transmission

There are four major ways of learning known as transmission, acquisition, accretion and emergence.

Transmission is the process by which information, knowledge, ideas and skills are taught to others through purposeful, conscious telling, demonstration, and guidance. While historically this is the most traditional and, currently, the most predominate method of instruction, unfortunately we are finding out that while prominent in schools, it is not very effective in relation to long-term retention. This is especially true when compared to the other methods of learning like acquisition and emergence.

Acquisition is the conscious choice to learn. Material in this category is relevant or interesting to the learner. This method includes exploring, experimenting, self-instruction, inquiry, and general curiosity. Because acquisition implies an emotional commitment on the part of the learner, it is a more effective process than transmission.

Accretion is the gradual, often subconscious or subliminal, process by which we learn things like language, culture, habits, prejudices, and social rules and behaviors. We are usually unaware that the processes involved in accretion are taking place, but this method accounts for a large sum of things humans know and do. Social learning and modeledbehaviors as they are passed on and imitated certainly play into this type of learning, as does the hidden or covert curriculum.

Emergence is the result of patterning, structuring, and the construction of new ideas and meanings that did not exist before, but which emerge from the brain through thoughtful reflection, insight and creative expression or group interactions. This form of learning accounts for the internal capacities of synthesis, creativity, intuition, wisdom, and problem-solving. This method is greatly dependent on the allocation of time, and opportunities to reflect and construct new knowledge. Emergence plays an important role in inspiration and originality.

Meaning of 'Belief'

Belief is an acceptance of something as true, even in the absence of proof. For example, one may say that 'I am the believer of God'. But one may not be able to give a

proper reason for his faith in God. Once may change his beliefs when some proof is obtained that go against his belief. Accepting of something blindly as true without being ready to examine the evidences is called “wrong beliefs”. In the absence of evidences, beliefs are taken to be true.

Difference between ‘Knowing’ and ‘Believing’

To know about something, is to believe what we know is true or besides accepting it as true, capable of properly justifying it. Knowledge = Beliefs + Proper justification for the beliefs. That is, one’s knowledge is his proper justifiable belief about things and happenings. Beliefs which are based on improper justifications are not considered as knowledge; they are wrong beliefs.

Information, Belief, and Truth

Knowledge is expressed or shared in the form information, belief, and truth. In fact, when knowledge is stated in the form of concepts, principles, laws, propositions, and theorems and enters into public domain for consumption, it assumes various forms depending on the context and the emotion it evokes in knower.

Knowledge in Relation to Information, Belief, and Truth

Information	Belief	Truth
It is raw data; It is discrete; Pre-meaning stage of knowledge; Prerequisite to knowledge; Preliminary level of knowledge; It is about facts of known; Publicly available.	Belief is personal and primarily subjective feeling and expectation, though shared by others; Could be verified or beyond verification; Pre-linguistic experience may be called ‘belief’ Preparedness for delayed reaction to a situation is belief - be it true or false; Preparedness for delayed reaction that is only true is knowledge. Pre-intellectual response to a situation; Unverified knowledge; pre-verified stage of knowledge; Unquestionable knowledge.	Verified Knowledge; Truth is a property of beliefs, and derivatively of sentences which express beliefs.

The Concepts Thinking and Feeling

A feeling is your experience of **the emotion** and its context. A thought is all the words you use to describe it. Our thoughts often skip labeling the emotion. We say "I feel like I'm not enough," but really, we are experiencing the emotions of fear and sadness.

Thought

"Think" and "Thinking" redirect here. For other uses, see Think (disambiguation) and Thinking (disambiguation).The Thinker by Rodin (1840–1917), in the garden of the Musée Rodin.

In their most common sense, the terms **thought** and **thinking** refer to conscious cognitive processes that can happen independently of sensory stimulation. Their most paradigmatic forms are judging, reasoning, concept formation, problem solving, and deliberation. But other mental processes, like considering an idea, memory, or imagination, are also often included. These processes can happen internally independent of the sensory organs, unlike perception. But when understood in the widest sense, any mental event may be understood as a form of thinking, including perception and unconscious mental processes. In a slightly different sense, the term thought refers not to the mental processes themselves but to mental states or systems of ideas brought about by these processes.

Various theories of thinking have been proposed. They aim to capture the characteristic features of thinking. Platonists hold that thinking consists in discerning and inspecting Platonic forms and their interrelations. It involves the ability to discriminate between the pure Platonic forms themselves and the mere imitations found in the sensory world. According to Aristotelianism, to think about something is to instantiate in one's mind the universal essence of the object of thought. These universals are abstracted from sense experience and are not understood as existing in a changeless intelligible world, in contrast to Platonism. Conceptualism is closely related to Aristotelianism: it identifies thinking with mentally evoking concepts instead of instantiating essences. Inner speech theories claim that thinking is a form of inner speech in which words are silently expressed in the thinker's mind. According to some accounts, this happens in a regular language, like English or French. The language of thought hypothesis, on the other hand, holds that this happens in the medium of a unique mental language called Mentalese. Central to this idea is that linguistic representational systems are built up from atomic and compound representations and that this structure is also found in thought. Associationists understand thinking as the succession of ideas or images. They are particularly interested in the laws of association that govern how the train of thought unfolds. Behaviorists, by contrast, identify thinking with behavioral

dispositions to engage in public intelligent behavior as a reaction to particular external stimuli. Computationalism is the most recent of these theories. It sees thinking in analogy to how computers work in terms of the storage, transmission, and processing of information.

Various types of thinking are discussed in the academic literature. A judgment is a mental operation in which a proposition is evoked and then either affirmed or denied. Reasoning, on the other hand, is the process of drawing conclusions from premises or evidence. Both judging and reasoning depend on the possession of the relevant concepts, which are acquired in the process of concept formation. In the case of problem solving, thinking aims at reaching a predefined goal by overcoming certain obstacles. Deliberation is an important form of practical thought that consists in formulating possible courses of action and assessing the reasons for and against them. This may lead to a decision by choosing the most favorable option. Both episodic memory and imagination present objects and situations internally, in an attempt to accurately reproduce what was previously experienced or as a free rearrangement, respectively. Unconscious thought is thought that happens without being directly experienced. It is sometimes posited to explain how difficult problems are solved in cases where no conscious thought was employed.

Thought is discussed in various academic disciplines. Phenomenology is interested in the experience of thinking. An important question in this field concerns the experiential character of thinking and to what extent this character can be explained in terms of sensory experience. Metaphysics is, among other things, interested in the relation between mind and matter. This concerns the question of how thinking can fit into the material world as described by the natural sciences. Cognitive psychology aims to understand thought as a form of information processing. Developmental psychology, on the other hand, investigates the development of thought from birth to maturity and asks which factors this development depends on. Psychoanalysis emphasizes the role of the unconscious in mental life. Other fields concerned with thought include linguistics, neuroscience, artificial intelligence, biology, and sociology. Various concepts and theories are closely related to the topic of thought. The term "law of thought" refers to three fundamental laws of logic: the law of contradiction, the law of excluded middle, and the principle of identity. Counterfactual thinking involves mental representations of non-actual situations and events in which the thinker tries to assess what would be the case if things had been different. Thought experiments often employ counterfactual thinking in order to illustrate theories or to test their plausibility. Critical thinking is a form of thinking that is reasonable, reflective, and focused

on determining what to believe or how to act. Positive thinking involves focusing one's attention on the positive aspects of one's situation and is intimately related to optimism.

Definition

The terms "thought" and "thinking" refer to a wide variety of psychological activities. In their most common sense, they are understood as conscious processes that can happen independently of sensory stimulation. This includes various different mental processes, like considering an idea or proposition or judging it to be true. In this sense, memory and imagination are forms of thought but perception is not. In a more restricted sense, only the most paradigmatic cases are considered thought. These involve conscious processes that are conceptual or linguistic and sufficiently abstract, like judging, inferring, problem solving, and deliberating. Sometimes the terms "thought" and "thinking" are understood in a very wide sense as referring to any form of mental process, conscious or unconscious. In this sense, they may be used synonymously with the term "mind". This usage is encountered, for example, in the Cartesian tradition, where minds are understood as thinking things, and in the cognitive sciences. But this sense may include the restriction that such processes have to lead to intelligent behavior to be considered thought. A contrast sometimes found in the academic literature is that between thinking and feeling. In this context, thinking is associated with a sober, dispassionate, and rational approach to its topic while feeling involves a direct emotional engagement.

The terms "thought" and "thinking" can also be used to refer not to the mental processes themselves but to mental states or systems of ideas brought about by these processes. In this sense, they are often synonymous with the term "belief" and its cognates and may refer to the mental states which either belong to an individual or are common among a certain group of people. Discussions of thought in the academic literature often leave it implicit which sense of the term they have in mind.

Related concepts and theories

Laws of thought

Traditionally, the term "laws of thought" refers to three fundamental laws of logic: the law of contradiction, the law of excluded middle, and the principle of identity. These laws by themselves are not sufficient as axioms of logic but they can be seen as important precursors to the modern axiomatization of logic. The law of contradiction states that for any proposition, it is impossible that both it and its negation are true:. According to the law of excluded middle, for any proposition, either it or its opposite is true:. The principle of identity asserts that any object is identical to itself: . There are different conceptions of how the laws

of thought are to be understood. The interpretations most relevant to thinking are to understand them as prescriptive laws of how one should think or as formal laws of propositions that are true only because of their form and independent of their content or context.

While there is a very wide acceptance of these three laws among logicians, they are not universally accepted. Aristotle, for example, held that there are some cases in which the law of excluded middle is false. This concerns primarily uncertain future events. On his view, it is currently "not ... either true or false that there will be a naval battle tomorrow".

Some formulations of the laws of thought include a fourth law: the principle of sufficient reason. It states that everything has a sufficient reason, ground, or cause. It is closely connected to the idea that everything is intelligible or can be explained in reference to its sufficient reason. According to this idea, there should always be a full explanation, at least in principle, to questions like why the sky is blue or why World War II happened. One problem for including this principle among the laws of thought is that it is a metaphysical principle, unlike the other three laws, which pertain primarily to logic.

Counterfactual Thinking

Counterfactual thinking involves mental representations of non-actual situations and events, i.e. of what is "contrary to the facts". It is usually conditional: it aims at assessing what would be the case if a certain condition had obtained. In this sense, it tries to answer "What if"-questions. For example, thinking after an accident that one would be dead if one had not used the seatbelt is a form of counterfactual thinking: it assumes, contrary to the facts, that one had not used the seatbelt and tries to assess the result of this state of affairs. In this sense, counterfactual thinking is normally counterfactual only to a small degree since just a few facts are changed, like concerning the seatbelt, while most other facts are kept in place, like that one was driving, one's gender, the laws of physics, etc. When understood in the widest sense, there are forms of counterfactual thinking that do not involve anything contrary to the facts at all. This is the case, for example, when one tries to anticipate what might happen in the future if an uncertain event occurs and this event actually occurs later and brings with it the anticipated consequences. In this wider sense, the term "subjunctive conditional" is sometimes used instead of "conditional". The paradigmatic cases of counterfactual thinking involve alternatives to past events.

Counterfactual thinking plays an important role since we evaluate the world around us not only by what actually happened but also by what could have happened. Humans have a greater tendency to engage in counterfactual thinking after something bad happened because

of some kind of action the agent performed. In this sense, many regrets are associated with counterfactual thinking in which the agent contemplates how a better outcome could have been obtained if only they had acted differently. These cases are known as upward counterfactuals, in contrast to downward counterfactuals, in which the counterfactual scenario is worse than actuality. Upward counterfactual thinking is usually experienced as unpleasant, since it presents the actual circumstances in a bad light. This contrasts with the positive emotions associated with downward counterfactual thinking. But both forms are important since it is possible to learn from them and to adjust one's behavior accordingly to get better results in the future.

Thought Experiments

Thought experiments involve thinking about imaginary situations, often with the aim of investigating the possible consequences of a change to the actual sequence of events. It is a controversial issue to what extend thought experiments should be understood as actual experiments. They are experiments in the sense that a certain situation is set up and one tries to learn from this situation by understanding what follows from it. They differ from regular experiments in that imagination is used to set up the situation and counterfactual reasoning is employed to evaluate what follows from it, instead of setting it up physically and observing the consequences through perception. Counterfactual thinking, therefore, plays a central role in thought experiments.

Thought experiments are employed for various purposes, for example, for entertainment, education, or as arguments for or against theories. Most discussions focus on their use as arguments. This use is found in fields like philosophy, the natural sciences, and history. Central to the rejection of this usage is the fact that they pretend to be a source of knowledge without the need to leave one's armchair in search of any new empirical data. Defenders of thought experiments usually contend that the intuitions underlying and guiding the thought experiments are, at least in some cases, reliable. But thought experiments can also fail if they are not properly supported by intuitions or if they go beyond what the intuitions support. In the latter sense, sometimes counter thought experiments are proposed that modify the original scenario in slight ways in order to show that initial intuitions cannot survive this change. Various taxonomies of thought experiments have been suggested. They can be distinguished, for example, by whether they are successful or not, by the discipline that uses them, by their role in a theory, or by whether they accept or modify the actual laws of physics.

Positive thinking is an important topic in positive psychology. It involves focusing one's attention on the positive aspects of one's situation and thereby withdrawing one's attention from its negative sides. This is usually seen as a global outlook that applies specially to thinking but includes other mental processes, like feeling, as well. In this sense, it is closely related to optimism. It includes expecting positive things to happen in the future. This positive outlook makes it more likely for people to seek to attain new goals. It also increases the probability of continuing to strive towards pre-existing goals that seem difficult to reach instead of just giving up.

The effects of positive thinking are not yet thoroughly researched, but some studies suggest that there is a correlation between positive thinking and well-being. For example, students and pregnant women with a positive outlook tend to be better at dealing with stressful situations. This is sometimes explained by pointing out that stress is not inherent in stressful situations but depends on the agent's interpretation of the situation. Reduced stress may therefore be found in positive thinkers because they tend to see such situations in a more positive light. But the effects also include the practical domain in that positive thinkers tend to employ healthier coping strategies when faced with difficult situations. The time needed to fully recover from surgeries and the tendency to resume physical exercise afterward.

But it has been argued that whether positive thinking actually leads to positive outcomes depends on various other factors. Without these factors, it may lead to negative results. For example, the tendency of optimists to keep striving in difficult situations can backfire if the course of events is outside the agent's control. Another danger associated with positive thinking is that it may remain only on the level of unrealistic fantasies and thereby fail to make a positive practical contribution to the agent's life.

Positive thinking is a recurrent topic in the self-help literature. Here, often the claim is made that one can significantly improve one's life by trying to think positively, even if this means fostering beliefs that are contrary to evidence. Such claims and the effectiveness of the suggested methods are controversial and have been criticized due to their lack of scientific evidence.

Feeling

Feeling was originally used to describe the physical sensation of touch through either experience or perception. The word is also used to describe other experiences, such as "a feeling of warmth" and of sentience in general. In psychology, the term feeling is closely related to emotion, and usually refers to the conscious subjective experience of emotions. The study of subjective experiences is referred to as phenomenology, whereas psychotherapy

refers to a process whereby a therapist helps a client understand their own feelings and experiences. Feelings are also known as a state of consciousness.

Difference between Feelings From Emotions

The neuroscientist Antonio Damasio distinguishes between emotions and feelings: Emotions refer to mental image sand the bodily changes accompanying them, whereas feelings refer to the perception of bodily changes. In other words, emotions contain a subjective element and a 3rd person observable element, whereas feelings are subjective and private.

Emotion regulation

There are two main types of emotion work: evocation and suppression. Evocation is used to obtain or bring up a certain feeling and suppression is used to put away or hide certain unwanted feelings. Emotion work is done by an individual, others upon them, or them upon others. Emotion work is done to achieve a certain feeling that one believes one should feel.

Three more specific types of emotion work are cognitive, bodily, and expressive. Cognitive changes images, bodily changes physical aspects, and expressive changes gestures. A person who is sad uses expressive emotion work to lift their spirits by trying to smile. A person who is stressed may use bodily emotion work by, for example, trying to breathe slower in order to lower stress levels.

Emotion work allows individuals to change their feelings so that the emotions suit the current situation (or are deemed appropriate). Since individuals want to fit in and be seen as normal, they are constantly working on their feelings in order to fit the situations they are in.

Review Questions:

1. What do you mean by knowledge?
2. Explain the meaning of ‘Belief’.
3. What is the difference between ‘Knowing’ and ‘Believing’?
4. What is the difference between ‘Knowledge’ and ‘Information’?
5. Explain the difference among ‘Information’, ‘Belief’ and ‘Truth’.
6. Distinction between Knowledge and information.
7. Define Knowledge.

UNIT II: KNOWLEDGE AND KNOWING

2.0. Epistemological bases of Knowledge – Kinds of Knowledge – Sources of knowledge

2.1. Domains -Cognition, Affective, Psychomotor and its significance in education

2.2. Metacognition.

2.3. Catagorisation of knowledge – Basis of Knowledge – Forms of knowledge included in school education – School knowledge get reflected in the form of curriculum, syllabus and text books.

Unit 2 - Epistemological Bases of Knowledge

2.0. Introduction

In this unit titled 'Epistemological bases of education' , meaning Of 'Epistemology', three epistemological conceptions of knowledge , six important types Of knowledge, meaning of 'Education', meaning of important terms in education such as teaching, learning, Skills, training, data and information, reasoning, belief, difference between teaching and training, difference between knowledge and belief, distinction between knowledge and skill, distinction between knowledge and information, difference between reasoning and belief, are to be taken up for a detailed discussion.

2.0.1 Meaning of Epistemology

Epistemology' is a branch of philosophy which studies the relationship between acquisition of knowledge and the knowledge thus acquired . Are things which are not known to us, do really exist?What are the frontiers of knowable knowledge? What are the gateways of knowledge? These are some of the questions raised for which answers are sought in epistemology.

Epistemologists are involved in investigating:

- The development of human knowledge, its nature limitations.
- The ways of knowing as well as discriminating the truth from the false and speculations.

2.0.2. Meaning of Knowledge

Knowledge is a familiarity, awareness or understanding of someone or something, such as facts, information, descriptions or skills, which is acquired through experience or education, by perceiving, discovering and learning. Knowledge involves cognitive abilities of

an individual, acting on information obtained through sensory perceptions and experiences. Knowledge may result from education as well.

Knowledge can refer to a theoretical or practical understanding of a subject. It can be implicit (aswith practical skill or expertise) or explicit (as with theoretical understanding of a subject), it can be more or less formal or systematic. Philosophy's core is the theory of knowledge; it is the foundationof science.

2.0.3. Definition of Knowledge

"The Greek Philosopher defined knowledge as "justified true belief" though "Well adjusted true belief" is more complete as it accounts for the Gettier problems". - Plato

Knowledge acquisition involves complex cognitive processes like perception, communication and reasoning while knowledge is said to be related to the capacity of acknowledgment in human beings.

In other words 'Knowledge acquisition' is a process where as 'Knowledge' is the product resulting from 'Knowledge acquisition'.

Three Conceptions of Knowledge in Epistemology

There are three conceptions of knowledge viz.

(i) Knowledge for practice

(ii) Knowledge in practice and

(iii) Knowledge of practice.

Given below is brief account brief each of these three:

Knowledge for Practice

This conception of knowledge , reflects the objective of acquiring knowledge. Though we mayacquire knowledge from various sources using different methods, true knowledge is the ones whichfind use in our daily life. In other words we can say that among those we have learnt, what we applyin our life constitute our true knowledge; the remaining ones remain insignificant or go to waste.

For example, knowledge of 'law acquired by lawyer, if helps him. to argue his cases in the courtefficiently, then it is valid knowledge for him; or otherwise it loses significance as far as he is concerned. Here it is worth recalling the slaying of pragmatists which states 'knowledge is that whichworks'. Hence it could be concluded that knowledge of an individual consists of the abilities to acquire it and apply the same appropriately in his / her life.

Aim of all education is to help pupils acquire **'functional Knowledge': passive Knowledge** servesno purpose for any one.

Knowledge in Practice

This conception of knowledge throws light on the method of acquiring true knowledge. According to this conception of knowledge, actions are more important than thoughts. When man reacts with environment, he gets experience. One's knowledge is the result of his / her experience. Action is the pre-runner for knowledge. There is no pre-existing knowledge — knowledge is not given; but one acquires it through efforts and Self-experience. When theories are operationalized , they derive practical use. That is why 'learning by doing' is advocated as the most appropriate method of acquiring real knowledge. Educationists emphasize the importance of making curriculum, activity
- centered and task oriented.

Knowledge of Practice

This conception of knowledge gives emphasis for the applications of knowledge. Knowledge, apart from proving itself as beneficial to man, should also lead to further knowledge, for finding new uses and innovations. Body Of knowledge is not fixed and stagnant; it is ever growing and expanding due to new discoveries and inventions. Existing knowledge should be applied to new situations so as to develop new knowledge. This is implied in the saying 'knowledge is that which leads to further knowledge'. This conception of knowledge is taken to mean knowledge as a tool forfurtherance of knowledge.

Summing up, it could be stated that knowledge is one which finds practical uses in life; is acquired by self-experiences derived from getting involved in appropriate activities; is the ability to apply the existing knowledge to find new uses and develop new knowledge. These three conceptions of knowledge are equally true but they approach knowledge from different angles. In the first approach, the emphasis is on the objective of acquiring knowledge; in the second approach the emphasis is on the method of acquiring knowledge and in the third, importance is given to finding new applications for existing knowledge, which leads to further knowledge.

2.0.4. Kinds of Knowledge

Knowledge, depending upon its nature , is categorized into six types viz. (i) Apriori knowledge (ii) Aposteriori knowledge (iii) Explicit knowledge (iv) Tacit knowledge (v) Propositional knowledge and (vi) Non-propositional knowledge, the details of which are presented below .

Apriori Knowledge

The Latin phrase 'Apriori' means "from the earlier" It implies that a person can derive knowledge from the world without needing to experience it. This is better known as reasoning.

That is to say that ‘apriori knowledge' or justification is independent Of experience or empirical evidences.

'Deductive reasoning' forms the basis for arriving at conclusions in 'apriori knowledge'. Philosophy of Idealism gives prominence for ‘apriori knowledge' Apriori knowledge finds its placein subjects like metaphysics, economics, astronomy, mathematics etc

Aposterioti Knowledge

The Latin phrase "Aposteriori" means "from the latter. This is a reference to experience andusing inductive reasoning to gain knowledge. That is to say, in 'aposterioi knowledge', we first gain experiences through our five senses and then subject them to logical reasoning (inductive reasoning) and reflection to derive understanding (conclusion). In other words it could be said that 'Aposteriori knowledge' or justification is dependent on experience or empirical evidence, as with most aspects of science (evolution) and personal knowledge. In Philosophy, 'aposteriori knowledge' is sometimes used inter-changeably with empirical knowledge, which is knowledge based on observations.

Naturalists and Pragmatists accept 'aposterioti knowledge' only.

Explicit Knowledge

Explicit knowledge is similar to apriorit knowledge in that it is more formal and perhaps more reliable. It is knowledge that is recorded and communicated through media like libraries and databases. Anything from the arts to the sciences can have elements that could be expressed clearly and they constitute explicit knowledge.

Tacit Knowledge

Facial expressions, body movements and gestures, body language etc. may communicate information. Knowledge thus communicated nonverbally is otherwise known as **'Tacit Knowledge'**. Tacit Knowledge is opposite to explicit knowledge. Explicit knowledge is easily transferable whereas tacit knowledge is very difficult. almost impossible to be communicated.

Tacit knowledge could be communicated through consistent and extensive relationships orcontacts over a long period of time.

Propositional Knowledge

It is also known as 'Descriptive' or 'Declarative' knowledge. Explicit knowledge and tacit knowledge are propositional and non-propositional knowledge respectively.

Propositional knowledge is the one which can literally be expressed in propositions. The key attribute of propositional knowledge is that it states 'something is true'. It is

knowledge of something and not about how to do something. For example you can learn to use a computer, but may not knowhow to program a computer.

Non-propositional Knowledge

- It is the opposite of Propositional Knowledge and be used or applied in specific problemsand situations.
- Procedural Knowledge gives the rules and guidelines for initiating legal action, conductingfunctions and dealing with administrative problems.
- So teaching of science should encourage the formation of right habits, Confident, Socially desirable and acceptable.

2.0.5. Sources of Knowledge

1) Sense experience (empiricism)
2) Reasoning alone (rationalism)

   We truly know only that of which we are certain (a priori).Since sense experience (a posteriori knowledge) cannot guarantee certainty, reason alone must be the means for getting knowledge
3) Introspection - knowledge of oneself that can be found through internal self-evaluation. This is generally considered to be a sort of perception. (For example I know I am hungry or tired.)
4) Memory - memory is the storage of knowledge that was learned in the past - whether it be pastevent or current information.
5) Testimony - Testimony release on other to acquire knowledge and communicate it to us. Some deny that testimony can be sources of knowledge, and insist that beliefs gained through Testimonymust be verified in order to be knowledge.

2.1. Domains Cognition, Affective, Psychomotor and Its Signification inEducation

The objectives of educational are to bring about desirable changes in the students' behaviour patterns. To study the objectives of instruction, Benjamin S.Bloom classified them under their domain is called cognitive, affective, and psychomotor. Under each domain, Bloom listed the objectives in a hierarchical form, starting from the lower level to higher level. Hence his arrangementis called Taxonomy of Educational objectives.

2.1.a. Cognitive Domain

Under the cognitive domain, the objectives listed in the form of a hierarchy are not Knowledge, understanding, application analysis synthesis and evaluation according to

Bloom, the cognitive domain includes those objectives which deal with recall and recognition of knowledge and the development of intellectual abilities.

2.1,a. 1. Knowledge

This objective is concerned with recall of information. Most of the teachers are of the opinion that the purpose of education is to impart knowledge. Knowledge is no doubt is essential but it is not theend of all teaching teacher's intentions should be to move the student to higher level of thinking.

2.1.a. 2. Understanding

This second level objectives requires more than simple recall of information. It requires the learnersto translate, interpret and predict Trends.

2.1.a. 3. Application

Science as a set of principles or generalizations which must be understood. This objective principles

students to apply these principles to solve concrete problems and make predictions.

2.1.a. 4. Analysis

Objective at this level requires learners to work on principles. Students should analyse a complicatedtask and break it into parts to understand better

2.1.a. 5. Synthesis

In a way, Synthesis is just the opposite of analysis level. This objective requires the student to put parts together to form a new whole. This requires divergent thinking and creativity

2.1.a. 6. Evaluation

This is highest level of cognitive domain. It requires judgment based on known or collectedevidences

2.1.b. Affective Domain

As cognitive domain is important to learning ,detailed attention has been paid to it. However emotions also play an important part in learning. psychologists are of the opinion that psychologist equal and emotional development are inseparable and that meaningful learning involves the emotion. science is no longer considered only a body of knowledge. Rather it involves attitudes and feelings. The affective domain deals with emotional aspect. A taxonomy of educational objectives under this domain was given by Benjamin Bloom at the following level viz. Receiving, Responding ,valuing organization, characterization, The different objectives and the affective domain or discussed briefly in a psychological approaches in a modified form here.

2.1.b.1. Interest

All living things that are surround them and beauty of nature fascinate to pupils. it is the task ofscience teacher to create and sustain this interest . Interest in Science may lead the student to vocational pursuits or in the development of lifelong hobbies.

To achieve this objective the pupil is provided ample changes for the following activities whichhelp scientific interest in them , visiting places of scientific interest, making collection of specimen, fabricating improvised apparatus ,making simple preparation, reading scientific journal are the scientific activities where the student interest are manifest.

2.1.b.2. Appreciation

The student of science should be able to appreciate the contribution of science for the progress of Civilization. The progress of civilization, the appreciation must come as an outcome teaching

2.1.b.3. Attitude

Conditional of readiness for certain activity it is the mental set of the individual which is characterized by Predisposition toward objective persons of event and tendency to act. Development of proper scientific attitude is one of the major objectives of teaching science this helps the student to become open minded well planned teaching situations, direct meaningful and purpose activities adequate experimentation verification wide reading build up right attitude among pupils.

To achieve this objective that teaching of science has to be done in on evolutionary way. Thecurriculum includes such topic where it is possible to reveal stirring biography and anecdotes, some stories having incidents of adventure, charm and romance, and life histories of scientific and the impact of science in modern life.

2.1.b.4. Habit Formation

Science is Pursuit of Truth and it is pursuit demands honesty, preservation, patience, concentration of mind and objective observation. These help the learners to become self-confident. So teaching of Science should encourage the formation of right habit, socially desirable and acceptable.

2.1.c. Psychomotor Domain

Science has been defined as a combination of knowledge, attitudes, and processes or skills. The ultimate objective of teaching of science is the development of skills. Students should use or apply theacquired knowledge and attitudes to the process of science. Although the taxonomy of educational objectives have been proposed by different educationists, Dave under this domain classified as Imitation, Manipulation, Precision, Articulation and

Naturalization. For simplicity, we discuss the objectives in the following categories.

2.1.c.1. Experimental Skill:

This includes collecting the necessary apparatus and assembling them for an experiment, handling of apparatus and instruments, the extreme care exercised in manipulating the sensitive apparatus, preserving chemicals, specimens for future use.

2.1.c.2. Construction Skill:

This involves improvising the equipments for performing the experiments, repairing certainequipments, apparatus and appliances.

2.1.c.3. Drawing Skill:

The skill includes drawing the sketches of certain apparatus proper proportions, neat labelingof parts etc.

2.1.c.4. Observation Skill:

The skill considered to be achieved if the pupil can read correctly the instrument and apparatus record observations faithfully and make calculations correctly and draw inference.

2.1.c.5. Problem Solving Skill

The pupil is expected to adopt a systematic method in problem solving called scientific method. The method consists of some essential steps like sensing the problem, defining it, collecting data, organizing, interpreting, formulation of hypothesis, testing them and finally arriving conclusions.

The above discussion brings out the objectives broadly classified by Bloom's taxonomy. Science being an ever changing and growing subject, the objectives should also change and grow correspondingly. The present tendency is to give importance for affective and psychomotor domain of teaching physical science in addition to cognitive domain.

2.2. Meta Cognition

Meta cognition means cognition about cognition. In other words, it is thinking about thinking. Itis an awareness of one's own thinking processes.

It allows individual to think about how they feel and what they are thinking. It provides the abilityto plan ahead, see the future consequences of on action and to provide alternative explanations of event. It also helps to think about how one is perceived by others.

One's knowledge of his own thinking patterns leads to better self control and more effective studying. It can be used to develop Strategies for improving learning it facilitates development of theskill of debate and augmentation.

Meta cognition consists of three basic elements. They are development a plan of action, maintaining and maintaining and monitoring the plan and evaluating the plan.

Components of Meta Cognition

Meta cognition knowledge it implies the individual knowledge about themselves and other as cognitive processors. It is also called metacognitive awareness. Meta cognitive knowledge is of threetypes.

Declarative knowledge: it refers to the knowledge about one's own capabilities and to the factorsthat can influence his performance. It is also known as personal knowledge

Procedural knowledge: it refers to knowledge about doing things. It considers show one perceives the difficulty of a task. A high degree of procedural knowledge can help individuals a lotto perform task more automatically. It is also called task knowledge.

Conditional knowledge: it refers to knowing when and why to use declarative and procedural knowledge. It implies one's own ability to strategies to acquire information. It is also called strategyknowledge.

Meta cognition regulation: it is the regulation of cognitive process and learning experience through a set of activities that help people control their learning. Meta cognition regulation contains three skills they are following

Planning: it refers to the proper selection of Strategies and the correct allocation of resources that affect task performance

Monitoring: it refers to one's Awareness of comprehension and task performance

Evaluation: Its referred to assessing the performance of the individual and the final product of task

Meta cognition experience: it implies the experience that has something to do with the on-going cognitive process. Meta cognitive experience in a responsive for creating an identity that matter to anindividual.

Importance of metacognition

It makes learners aware of the learning process

It help people known About their own thinking

It enhances examination performance

It helps learner performance task more efficiently

It facilitates accurate evaluation of learning tasks

It increases learning output

2.3. Basis of Knowledge

Knowledge is the understanding that people develop as they react to and use information, either individually or as an organisation. **Explicit knowledge** refers to knowledge that is transmittable in formal, systematic language which is more precisely and formally articulated, and removed from the original context of its creation or use. **Tacit knowledge** has a personal quality, which makes it hard to formalise and communicate. Tacit knowledge is subconsciously understood and applied, developed from direct experience and action, and usually communicatedthrough informal conversation and shared experience.

- **Knowledge by acquaintance** is knowledge based on personal experience. Examples of this sort of knowledge could be places we have visited, books we have read, and people we have met and spoken to.
- **Knowledge by description**, on the other hand, is knowledge that we have not acquired by direct experience. Examples include places that we have only seen photos of, books we have just read reviews of, and people we only know through other people..

2.3.1. Forms of Knowledge are included in School Education

Understanding the different forms that knowledge can exist in, and thereby being able to distinguish between various types of knowledge, is an essential step for Knowledge Management. For example, it should be fairly evident that the knowledge captured in a document would needto be managed in a totally different way than that gathered over the years by an expert craftsman. Over the centuries many attempts have been made to classify knowledge, and different fields have focused on different dimensions. This has resulted in numerous classifications and distinctions based in philosophy and even religion.

Knowledge Management and organisational learning theory almost always take root in the interaction and relationship between these two types of knowledge. This concept has been introduced and developed by Nonaka in the 1994 and remains a theoretical cornerstone of this discipline. Botha (2008) point out that tacit and explicit knowledge should be seen as a spectrumrather than as definitive points. Therefore in practice, all knowledge is a mixture of tacit and explicit elements rather than being one or the other. However, in order to understand knowledge,it is important to define these theoretical opposites.

Some researchers make a further distinction and talk of **embedded knowledge**. This way, one differentiates between knowledge embodied in people and that embedded in processes, organizational culture, routines, etc. Gamble and Blackwell (2001) use a scale

consisting of represented-embodied-embedded knowledge, where the first two closely match the explicit- tacit. Given below is an overview of these categories:-

- **Explicit Knowledge:** This type of knowledge is formalized and codified, and is sometimesreferred to as know-what. It is therefore fairly easy to identify, store, and retrieve. This is the type of knowledge most easily handled by teachers, which are very effective at facilitatingthe storage, retrieval, and modification of documents and texts. From a managerial perspective, the greatest challenge with explicit knowledge is similar to information. It involvesensuring that people have access to what they need; that important knowledge is stored; andthat the knowledge is reviewed, updated, or discarded. Explicit knowledge is found in: databases, memos, notes, documents, etc.
- **Tacit Knowledge:** It is sometimes referred to as know-how and refers to intuitive, hard todefine knowledge that is largely experience based. Because of this, tacit knowledge is oftencontext dependent and personal in nature. It is hard to communicate and deeply rootedin action, commitment, and involvement. Tacit knowledge is also regarded as being the mostvaluable source of knowledge, and the most likely to lead to breakthroughs in the organization. The lack of focus on tacit knowledge directly to the reduced capability for innovation and sustained competitiveness. Tacit knowledge is found in: the minds of humanstakeholders. It includes cultural beliefs, values, attitudes, mental models, etc. as well as skills, capabilities and expertise.
- **Embedded Knowledge:** Embedded knowledge refers to the knowledge that is locked in processes, products, culture, routines, artifacts or structures. Knowledge is embedded either formally, such as through a management initiative to formalize a certain beneficial routine,or informally as the organization uses and applies the other two knowledge types. The challenges in managing embedded knowledge vary considerably and will often differ fromembodied tacit knowledge. Culture and routines can be both difficult to understand and hardto change. Formalized routines on the other hand may be easier to implement and management can actively try to embed the fruits of lessons learned directly into procedures, routines, and products. Embedded knowledge is found in: rules, processes, manuals, organizational culture, codes of conduct, ethics, products, etc. It is important to note, that while embedded knowledge can exist in explicit sources (i.e. a rule can be written in a manual), the knowledge itself is not explicit, i.e. it is not immediately apparent why doingsomething this way is

beneficial to the organization.

In order to build skills, it is important that we know the different types of knowledge that exist in education. Viz.,

- **Procedural knowledge**: Information that is needed to accomplish certain tasks and participate in certain activities is consider to be procedural knowledge. In education, this is often generalized as a group of specific strategies and skills.
- **Conceptual knowledge**: When knowledge is based on concepts that drive factual pieces of information from the world around us, it is called conceptual knowledge and focuses on regrouping big understandings and corresponding relationships among them. Conceptual knowledge highlights connections between the concepts themselves. This type of knowledge can only be acquired through purposeful and reflective learning.

In order to progress through the levels of integrations in the curriculum, teachers must become proficient in articulating learning objectives based on conceptual knowledge, as well as being explicit in their teaching of the procedural knowledge. Understanding the different types ofknowledge in education is the first step in this process.

Knowledge categories selected in School Education

All curricula emerge from ideas about what should be taught and learned, and how such teaching and learning might best be undertaken and then certified. As a result the fundamental question lying behind the prescription and development of all curricula is often seen as "What knowledge is of most worth?"– Because it is the knowledge that is of most worth that education should, seemingly, reflect. In its ideological or philosophical aspect, much curricular thought seek

To articulate reasoned starting points for one or another form of curriculum. Such work can accept the framework of contemporary understanding of the scope and nature of education and schooling. It can be critical, seeking to articulate the hidden assumptions around such categories as race, gender, and class that have driven, and drive, schooling in inappropriate, even morally wrong,directions.

However, looked at more analytically, the curriculum of the school reflects layered cultural understandings of what is considered necessary for young people to know or experience if theyare to take their place in the social and cultural order. Thus, as the central component of a pervasive modern institution, the curriculum is necessarily a part of all of the sociological and cultural ambiguities within societies. As such, the scope and nature of the curriculum are viewed as critically important for teachers, parents, cultural critics, interest

groups, and the employers ofthe graduates of the school. As the curriculum as an idea is seen through the eyes of all such groups, it becomes a mirror that reflects different visions of the society and culture, and the tensions within the society around, say, the proper nature of the work of schooling and/or status- attainment and employment possibilities. As a result inevitable and unresolved differences of viewpoint characteristically surface around all discussions of the curriculum as a symbol of botha normative order for education and of the quality and character of what schools are understoodas doing.

For these reasons the history of curriculum thinking and practice is marked, on the one hand, by popular and professional conflict and debate about what the curriculum should be and how teaching should be undertaken and, on the other hand, by rationalization of the good and/or bad consequences of one or another curriculum. What, for example, should the curriculum thatis most appropriate for young people should be based on;

- The needs of the economy for human resources
- National or international ideals
- The need for societal and cultural change or preservation
- Ameliorating pervasive distinctions of gender and race
- The set of perennially "essential" and fundamental forms of knowledge and ways ofthinking.
- The forms of a life that is most worth living

As a result of the competition between such starting points, there is political, cultural, and policy conflict around what should be authoritatively prescribed in curricula, how teaching shouldbe undertaken, and how schooling should be organized.

2.3.2. School Knowledge- Its Reflection In The Form Of Curriculum

Teaching, learning, time-table, examination, etc. lead to acquire knowledge through the curriculum. So, knowledge acquired through curriculum in school context is school knowledge.

Let us see the aspects in school knowledge.

In school context, knowledge is the sum of conceptions, ideas, and prepositions established and tested as correct reflection of the phenomenon.

A school is one of the agencies which write down, transact, and transform knowledge and thereby, influence the life of children who attend school for a specified number of years. School facilitates and distributes knowledge among its inmates. Though human individual gets knowledge from every experience in life, the knowledge that a child receives in school decides his/her future lifeand place in society knowledge. Since a teacher as a professional

deal with knowledge, there is need to understand the concept of knowledge itself. School knowledge- learning happens when we connect new information to what we already know. With respect to school knowledge

- Students get experience in the classroom;
- Process being taught in schools and classrooms; and
- Knowledge is imparted through different subjects.

We come across the concept of curriculum in the context of school knowledge. Curriculum is the sum total of the school's efforts to influence learning whether in the classroom, on the playground orout of school. The real goal of education is learning to learn. Curriculum is taught in a school. It is a programme of studies. Curriculum refers 100 to lessons and academic content taught in a school. Its goal is to improve the learning opportunities. The curriculum is well- planned, designed, and guidedby the government of the educational institution. It is aimed at both physical and mental development of a student. Curriculum can refer to the entire programme provided by a classroom, school, or state. A classroom is assigned sections of the curriculum as defined by the school.

Curriculum includes the educational environment and programme of study. It focuses on the body of knowledge, information that a teacher and students are expected to learn in a given subject/content such as English, Science, etc. Students learn facts, concepts, and principles taught- learned in a specific course. A classroom curriculum is a sequence of activities jointly developed by teachers and students, and parents and communities that reflects their understanding of the potentialof a programmatic curriculum. Curriculum works on all sections of the students' psyche and aids in the total development of the student. It provides a structured platform, which gives every child an equal opportunity to excel.

Curriculum provides formal experience in the classroom. It includes the experiences of the students, and content and instructional methods. Here, school knowledge is the source of information. Knowledge and culture are organised and knowledge imparted through different subjects. Curriculumprovides the basic knowledge; tacit, explicit, and contextual knowledge related to classroom subject to real life. School knowledge is based on textual knowledge. Knowledge acquired here is incidentalalso.

2.3.3. Reflection of School Knowledge in the Form of Syllabus

Very frequently the terms 'curriculum' and 'syllabus' are used interchangeably, but there is a great difference. Curriculum is a wider term and includes syllabus Syllabus is defined as the documents that consist of a topic or portion covered by a particular subject. Syllabus is a teaching plan. It is the summary of the topics covered or units to be taught in a

class. Its meaning is narrow because it only develops specific competencies. The syllabus is provided to students by teachers so that they can develop an interest in a subject. It is fixed normally for a year. Syllabus includes knowledge aspect and curricular activities. The word 'syllabus' is derived from the Modern Greek word "syllabus" meaning list. In a narrow sense, syllabus holds the methodology, selection, and grouping of contents. Purpose of syllabus- It allows students to work their schedule for their maximum efficiency and effectiveness. Syllabus is an academic document that communicates course information and defines expectations and responsibilities. It is descriptive. There are essential components in an academic syllabus. Academic syllabus contains seven essential components such as instruction, information, general course information, course objectives, course policies grading and evaluation, learning resources, and the course calendar.

2.3.4. School Knowledge in the Form of Textbook

A textbook is one of the common resources used in a classroom. It is a guide for the teacher andthe students to mark the scope of knowledge they are supposed to deal with. It is a book used as a standard work for the study of a particular subject. It contains facts about a particular subject that is used by the people studying that subject. It is a collection of the knowledge, concepts, and principlesof a selected topic or course. It is usually written by one or more teachers, college professors or education experts, who are authorities in a specific field. Textbooks represent the syllabus of the course. India's school curriculum is extremely textbook centred. It is a course book, a formal manual of instruction in a specific subject, especially one for use in schools.

2.3.5. Textbook in the Context of School Knowledge

A textbook is written material including syllabus. It gives proper direction to implement the prescribed syllabus. Schools impart knowledge through textbooks and other source books. It may beprescribed for the course. School knowledge is in the form of textual knowledge. So, textbooks represent textual knowledge. We see textbooks at the elementary, High School, Vocational, and College levels. Ebooks are common nowadays and they can be regularly updated online. It incorporates video and online connectivity.

Few Facts about Syllabus and Textbook

Syllabus

1. It is concerned with the content part of the curriculum
2. Includes knowledge aspect
3. Confined only to classroom
4. Teacher gives to students

5. Includes only curricular activitiesTextbook

Textbook

1. Concerned with the written material and includes only the syllabus
2. Includes textual knowledge
3. Classroom work becomes more systematic
4. Easily available resource for teachers and students 5 Provides direction to implement the syllabus

UNIT III: FACETS OF KNOWLEDGE

3.0 Different facets of knowledge and its relationship such as : Local and universal – Concrete and Abstract - Theoretical and practical – Contextual and textual

3.1. Role of schools in knowledge development

3.2 Role of culture in knowing – Knowledge rendered into action

3.3. Knowledge reflexion.

Unit III: Facets of Knowledge

Learning Objectives

After going through this Unit, the student-teachers will be able to

- Identify the different facets of knowledge and their relationship;
- Explain the relationship between local knowledge and universal knowledge;
- Differentiate between concrete knowledge and abstract knowledge;
- Differentiate between theoretical knowledge and practical knowledge;
- Explain contextual knowledge and textual knowledge; and
- Explain school knowledge and out- of- school knowledge.

Introduction

Facts, information, and skills are acquired through experience or education. Knowledge is the awareness or familiarity gained by experience of a fact or a situation. It is deep and detailed idea on a particular thing. It depends on the individual product of raw material, which is the result of some kind of cognitive activity. Knowledge acquisition involves complex cognitive processes such as perception, communication, and reasoning. In a generalised way, knowledge is sum of human understanding of material and mental reality, given and constructed. According to NCF-2005, knowledge can be conceived as experience organised through language into patterns of thought thus, creating meaning, which in turn helps us to understand the world we live in. Knowledge has many facets. A holistic theory of knowledge and learning must acknowledge all facets of knowledge. In fact, each of the facets of knowledge provides a support needed for the other facets to exist. Let us understand these facets of knowledge in this Unit.

3.0. Different Facets of Knowledge and Relationship between Local Knowledge and Universal Knowledge

Local Knowledge Information or knowledge limited to a state or community or to a fixed area is called local knowledge. It is the knowledge that people in a given community

has developed over time and continues to develop. Local knowledge is practical common sense based on teachings and experiences passed on from generation-to-generation. Local knowledge is also known as traditional knowledge or indigenous knowledge. Local knowledge covers the knowledge of environment such as snow, ice, weather, resources, etc. It is divided into 3 kinds as common knowledge, shared knowledge, and specialised knowledge.

- Common knowledge is held by most people in a community. For example, how to cook the local staple food.
- Shared knowledge is shared by many people, but not by all community members.
- For example, villagers who raise livestock will know more about basic animal husbandry than those without livestock
- Specialised knowledge is held by only few people, who might have special training or apprenticeship. For example, only few villagers become healers, midwives or blacksmiths.

This type of knowledge is related to age, gender, occupation, division of labour within family, community, socio-economic status, experience, environment, etc. This has significant implications for research and development work.

3.0.1. Characteristics of Local Knowledge Local knowledge is

- Based on individual and community experiences,
- Tested over centuries, and • Based on local culture and environment.
- It includes community practices, institutions, relationship, and rituals;
- It is dynamic and changing;
- It is a collection of facts, concepts, beliefs, and perceptions that people have about the environment around them;
- It applies to knowledge possessed by rural, urban, migrants, etc.
- It is based on tribal, original inhabitants, and experiences of elder generations;
- It is observed, experimented, and experienced by people;
- It reflects people's behaviours, and the ability of problem solving in a specific situation;
- It includes processes whereby knowledge is generated, stored, applied, and transmitted to others;
- It is holistic, and cannot be compartmentalised. It is rooted in the spiritual healing, culture, and language of the people, and is a way of life; and
- It is dynamic and constantly changing as it adapts to a changing environment.

3.0.2. Universal Knowledge

Knowledge accepted by all the people of the world and is common to all is referred to as universal knowledge. Universal knowledge is a new approach, and is called as meta-science. It provides developmental answers to all questions. It extends to surrounding factors and influence of time. It refers to cumulative and complex bodies of knowledge, know-how, practices, based on science that are accepted and developed by people with extended research, inventions, experiences, and interactions with the natural environment. This universal knowledge streams from nowhere but it is within the being-ness that this pure untouched knowledge arises in its clearest form. For example, clouds bring rain and burning fuel provides energy.

Characteristics of Universal Knowledge

• It is related to knowledge and thought;

• It changes behaviour among human beings;

• It grows with time;

• It is a collection of facts and phenomena; and

• It helps to understand the originality of existence.

There are a few differences between local knowledge and universal knowledge.

Local knowledge	***Universal knowledge***
1. Is related to local region	1. Is the same for all
2. Has different opinions	2. Has a single opinion
3. Is document- based	3. Is truth-based
4. Is based on local knowledge experience, environment, and rituals.	4. Is based on knowledge and thought
5. Does not change the behaviour of beings human beings	5. Changes the behaviour among human

3.0.3. Concrete Knowledge and Abstract Knowledge

Concrete Knowledge

Concrete knowledge is as the name suggests. It involves only those things, which are visible to the human eye and are obvious to anybody looking at them. Concrete knowledge is empirical knowledge gained by one's own experience and observation. Sensory organs are the gateway of knowledge, with the help of which a child perceives by seeing, smelling, hearing, and touching. Such knowledge is called concrete knowledge. Philosophers opine that concrete knowledge is direct experience and is neither intuitive-experience nor probability.

There are two types of concrete knowledge

1. Worldly concrete knowledge (Subjective)
2. Non-worldly concrete knowledge (Objective)

Worldly concrete knowledge is direct knowledge based on the perceptions of the sensory organs.

Non-worldly concrete knowledge- When we look concretely at objects, something related to those objects comes to our mind. For example, when we look at a monkey, the behaviour of the monkey comes to our mind. Concrete knowledge only considers and emphasises the apparent meaning of something; it involves only those events and words, which have objective value and can be recorded and perceived.

Characteristics of Concrete Knowledge

• Concrete knowledge helps to understand the natural status of an object
• It is based on concrete experience;
• It does not have depth, and just refers to thinking in the periphery; and
• It is static and the same all the time.

In a classroom situation, while explaining fundamental facts to students, teachers should provide concrete knowledge. Otherwise, that knowledge does not remain for long and will not facilitate further knowledge. Teachers while providing concrete knowledge should bring natural objects/things to the classroom to give empirical knowledge/sensory knowledge.

3.0.4. Abstract Knowledge

Abstract knowledge can be explained as the manner of thinking, and its concentration is on conceptualisation or generalisation. Abstract knowledge involves the much deeper, wider, and multitude of meanings of a single concept or idea, which can arouse other issues that were never seen or discussed before. A normal person's abstract thinking may be vague and / or incomplete because abstract thinking goes beyond all visible things and depicts hidden thoughts about meanings and underlying implications of the existing things in nature. An abstract thinker can view a particular phenomenon from an angle that others might not be able to view. Religion and religious books of different countries depict this kind of knowledge. This belief itself is abstract knowledge. Here, belief is an important factor. This knowledge cannot be certified or rejected.

Characteristics of Abstract Knowledge

- It is based on logical thinking;
- It has a variety of perspectives;
- It is based on people's beliefs;
- It is a process of extracting the underlying meaning of concept;
- It is based on abstract thinking;
- It can be upgraded through research and experimentation;
- It cannot be verified; and
- It gives attention to hidden meanings.

Apart from these characteristics, we can also see some differences between concrete and abstract knowledge

Concrete knowledge	***Abstract knowledge***
1) Always objective, to the point, and very direct, meaning allowing any individual to observe and understand	1) Pays attention to hidden
2) No depth, just refers to objective reality	2) Goes beneath the surface
3) Can be directly experienced	3) Mental processing is involved
4) Sensory based experience	4) Refers to figurative description
5) It is specific, tangible	5) It is unclear, obscure
6) Based on what the person sees as well as facts related to concept	6) Based on ideas and beliefs
7) Probabilities are less	7) Probabilities are more

3.0.5. Theoretical and Practical Knowledge

Theoretical Knowledge Theoretical knowledge reflects the knowledge, abilities or skills possessed by a person. The study about any fact, incident, situation, context, person, and object is called theoretical knowledge. This knowledge may be from books, mass media, periodicals, journals, dictionary, encyclopaedia, etc. Theory teaches through the experiences of others. It can often lead to a deeper understanding of a concept. It helps to understand why one technique works, while another fails.

- Theoretical knowledge is understanding a concept in a context as a whole and understanding the why behind it.
- It is all about why this is there and to show true is true.

Characteristics of Theoretical Knowledge

- It is based on theories;
- It is gained by study and research;
- It involves all units of an incident;
- It involves different dimensions of a concept; and
- Its scope is wide.

Theoretical knowledge can be acquired through study, research, observation, and experience. Theoretical knowledge involves the elements of what, why, when, and how, and also answers all these directly. It provides a full explanation of the content. For example, air is important to burn anything.

3.0.6. Practical Knowledge

Practical knowledge means knowledge which is applied to do something or that which directs how to perform a specific skill. It is more directly useful in our life. The process of applying knowledge to some act is practical knowledge. There are many activities we can learn only through doing and experiencing. Practical knowledge can often lead to a deeper understanding of a concept through the act of doing and personal experience

The Dimensions of Knowledge are

- Theoretical knowledge,
- Observational knowledge,
- Suggestions,
- Practice or repetition, and
- Experience.

For example, learning to play the piano

In the beginning, one has to understand the basic through theoretical knowledge of the piano. Then observing others playing the piano, getting suggestions, and learning through practice and experience, we can learn to play the piano. With the support of these dimensions, we will get practical knowledge about playing a piano

In the education field, practical knowledge is very useful. The main aim of education is to impart theoretical knowledge, develop skills in students, make them use these in their daily life. In brief, practical knowledge is a combination of theoretical, factual, and experiential knowledge

Practical knowledge is more important than theoretical knowledge in everyday life.

1. Interactive education creates a deeper impact Practical knowledge is more interactive than theoretical knowledge. Interactive sessions, experiments, and interactive exercises are important features of practical education.
2. Motivates team work while imparting practical knowledge to students, most of the activities should involve team projects or activities whereby students are required to work in a group or a team. It improves their ability to interact with fellow students and also make the learning process more interesting.
3. It is easy when learning through practical activities, instead of only theoretical explanation, the learning process become comparatively easy.
4. Involves application and deals with real- life situations merely learning about theories and facts is of no use unless theoretical knowledge is applied to real- life situations through practical experiments.
5. Practical knowledge retains in our mind for a longer time both theoretical and practical knowledge are important. You will not survive in any career unless you can bring results, and to do that, you need practical knowledge.

Both theoretical and practical knowledge are important and both make you better at whatever you do.

3.0.7. Contextual and Textual Knowledge

Contextual Knowledge

Knowledge in context, information or skills that have particular meaning because of the conditions that form part of their descriptions. Knowledge acquired during an incident that provides information about the development of the event is contextual knowledge. Contextual knowledge is knowledge on specific and general events, situations, or general content of an event/text.

Characteristics of Contextual Knowledge

- It is related to the context of information;
- The context gives meaning to a situation or event;
- Connectedness within and outside society, it is a linkage between individual and groups and organisations;
- Relationship between factors leads to knowledge;
- Relates classroom subjects to everyday life;
- Knowledge may extend beyond the boundaries of conventional classrooms; and
- High order thinking and problem-solving skills are encouraged.

Factors favourable to acquire contextual knowledge are-

- Culture of the student; and
- Socio-economic level of the community
- Contextual Knowledge is Related to School Knowledge

Context is important in teaching and learning. It is as important as content in a classroom. Who, what, and where are important in providing contextual knowledge to students? Contextual factors like the socio-economic level of the community and the culture of students play a key role in a classroom. So, the teacher should have an idea of these factors in providing contextual knowledge to students.

Learning by doing, hands-on learning is included in contextual knowledge, which is helpful to students for learning. Students are actively engaged and they learn from each other. Students should learn in teamwork, through discussion, co-operation, and self-reflection to acquire contextual knowledge. Students will understand this information better and be more willing to learn. In this way, contextual knowledge is linked to school knowledge.

3.0.8. Textual Knowledge

Text refers to words which are written. It is the most common form of knowledge storage. It is an entity. Textual means that which relates to a text, or which is based on a text. For example, in history illustrations are placed as close as possible to their textual descriptions. The word 'textual' is commonly used in the study of religion, literature, philosophy, science, and law.

Textual knowledge is familiarity with a range of media, textual code, conventions, forms, and contents along with social context. It is an essential resource for inferring the preferred meaning of texts in their reading and interpretation. Textual knowledge is reading the words and understanding them exactly as they are stated. It is teaching, reading, and research for the preservation of knowledge in writing. This knowledge is relevant to the understanding of grammatical aspects of language. Information is usually stored in textual form. An idea in the form of words or an image existing in the mind can be written down as textual information. A vast amount of information is stored in textual form.

School knowledge is textual and begins with words, and so, in a way it is recorded in a verbal form. Textual knowledge can be used in all subject areas, but is best in languages, history, literature, science, and mathematics. It is used in newspapers and textbooks in the form of print and other forms, which are very helpful.

Characteristics of Textual Knowledge

- It is a major source in teaching and learning;
- It provides logic and comprehensiveness to information;
- It provides more knowledge;
- It provides direct and indirect experiences;
- It provides textual evidences to support an idea or to answer a question;
- It enhances the appropriateness of the information;
- It arouses interest in students to acquire more information;
- It involves students in higher level thinking, problem solving activities, and extending activities, which lead to acquire more information;
- It is a source of information to both teachers and students;
- It is used in formal and informal education;
- It is helpful to students in self-learning;
- It makes students to think deeply about the text, source, and the authors; and
- As a source of knowledge, it is readily available to teacher and students

There are some differences between contextual and textual knowledge. Both contextual and textual knowledge are important in the context of school knowledge. The differences between them provide clarity

Contextual knowledge

1. Knowledge on specific and general events and situations or context
2. Refers to surroundings of the text or events related to describing the situation.
3. Textual knowledge may extend beyond the boundaries of conventional classrooms.
4. It is related to everyday life.

Textual knowledge

1. Preservation of knowledge in text form.
2. Refers to words and understanding them literally.
3. Helps in self-learning
4. Knowledge is limited to text or written form.
5. Learning related to a specific text of context of a specific period.

3.1. Role of School in Knowledge development

To achieve its purpose, society has organised schools, religious institutions, library, entertainment institutions, etc. Among these agencies, the school is important in providing

education to children. The school is a miniature of society or an active institution for teaching and learning. It prepares children in various competencies or skills and attitudes and values. School knowledge is –

• Knowledge imparted by school/formal institution;

• Knowledge that is provided in a classroom; and

• A school provides learning spaces and learning environments to the students under the direction of teachers.

In a school context, knowledge is the sum of conceptions, ideas, laws, and propositions established and tested as correct reflections of the phenomena. A school has specific aims and objectives to impart knowledge. The students' educational age is considered for educational period. The school is a mediator for formal education. In school, knowledge is imparted in modern science, arts, languages, commerce, social science, etc. Wisdom and sufficient life experiences are imparted through schools. Schools provide specified, pre-set, international, and planned curriculum devised by educational authorities. Compulsory education is offered from primary to secondary levels. Teachers are trained with effective strategies to teach based on their competencies, classroom management, and planned content organised in schools. School knowledge changes the behaviour of students in a desired way. Students can get job opportunities on the basis of this knowledge. Schools are recognised by the government.

In reality, knowledge in the general sense knowledge acquisition from formal institutions [Schools and Colleges] and informal/out-of-school (family, neighbours, community) are all aspects of educational process. Out- of- school knowledge is that which the learner acquires from agencies like home environment independently or guided by adults. Knowledge gained through everyday experiences is self-driven. Here, knowledge is incidental and informal.

Outcomes of education is experience in science, mathematics, and technology, which includes a sense of fun and wonder, in addition to a better understanding of the concepts, topics, and process of thinking in scientific and technical disciplines leading to increased career opportunity in their fields. Activities organized here are often short, completed within a few minutes or by the end of the programme day. Learners are not always in the same group of peers as attendance is not strictly required.

3.3. Role of Culture in Knowing

Culture- Meaning

Culture is the characteristics and knowledge of a particular group of people encompassing language, religion, cuisine, social habits, music, and arts. It means good manners and good behaviours. Every culture has its own patterns, socialisation and particulars, and standards of personality like an ideal adult image.

Culture refers to something collective artistic and intellectual. It is the world we inhabit as well as a choice we make or a preference that we have. It influences our life. It cannot be forced as every individual experience it. Culture is often understood as the ultimate paradigm. If a paradigm is a knowledge filter or a model for understanding, then it follows that the culture we inhabit shapes the narratives that we tell ourselves.

Definition of Culture

Tylor R. - The complex whole which includes the knowledge, belief, art, law, custom and any other capabilities and habits acquired by man as a member of society is called culture.

R. Leeton - Culture is cultural heritage which is easily transferable from one generation to another.

Characteristics of Culture

- It refers to the attitudes and behaviours of a social group. For example, consumer culture and corporate culture. Each of them connotes certain attitudes and behaviours.
- The first characteristic of culture is to give happiness to others
- Culture is a social process;
- It is acquired by learning;
- It is dynamic and transferable from generation- to- generation;
- It is imitational, continuous, changes from place- to- place and from period-to period;
- Has comprehensive scope;
- Has historical heritage and affects the behaviour of man;
- It is not measurable or universal;
- In a broader sense, it a cultivated behaviour;
- Culture is communication and communication is culture; and
- Involves value-based principles.

Role of Culture in Knowing

Culture has often been understood as a body of knowledge that people have about a particular society. This body of knowledge can be seen in various ways as knowledge about cultural artefacts, and as knowledge about places, symbols, and ways of living. It is possible to teach this aspect of culture in terms of information, which can be mastered by students. It can also be instrumental in influencing and shaping both thought and language. Culture is not however simply a body of knowledge, but rather a framework in which people live their lives and communicate shared meanings with each other.

Culture and Education

Culture and education relate to each other. Culture plays its role in developing good attitudes, social qualities, critical thinking, and ethnic and cultural literacy among children, and promotes effective relationship between home and school. One of the fundamental goals of education is to preserve culture and to impart cultural heritage from one generation to another. Knowing the cultural background of student education can frame the structure of classroom to provide effective instruction. The school has to shape individuals through shaping culture. The school imparts values such as co-operation, team-spirit, discipline, and skills. Later, these skills and values are incorporated within the culture of society. In celebrating national or international festivals, the cultural approach is used. Culture in these contexts influences the various norms and ideas of the society and of the country

School Culture- A school has its own culture. It is characterised by the presence of a set of norms and values that focus everyone's attention on what is important and motivates them to work hard toward a common purpose. It fosters effort and productivity. Improving collaborative activities promotes better communication and problem solving. Schools approach curriculum building with culture in mind. A curriculum that builds on a student's cultural understanding proves to be more effective because students can relate it to their own lives.

Teachers' Role in Cultural Context

Teacher, before teaching, should understand the country culture, value problem and see that taught values are transferred in student's life. Teachers should teach on scientific basis and honestly. Nowadays culture conscious education is becoming common.

The very function of culture is to foster values, and the task of education is to make this process more conscious and practically defensible, and the role of curriculum is making it effective. As culture changes, so also our educational system's major factors such as educational objectives, curriculum, teaching method, evaluation techniques, school activities,

teacher attitudes, and school environment change. Culture gives holistic learning and connects to other disciplines and determines the usage of education in society.

The role and influence of education in culture leads to the following changes. The traditional classroom is replaced by communication and technology. Child centred education comes in to existence. Adult education takes place in the field of education through the scheme of educating the illiterate.

3.3. Reflection on Knowledge

We know of many educational thinkers and philosophers. Along with eminent western educators, India has also produced a number of masters in the last century. Notable among these are Swami Vivekananda, Rabindranath Tagore, Mahatma Gandhi, Dr. Radhakrishnan, Sri. Aurobindo Ghosh, J. Krishnamurti, etc. They gave us new ideas about education. Among all these educationalists, we will discuss the ideas of Mahatma Gandhi, Rabindranath Tagore, Aurobindo, and J. Krishnamurti.

Girls, who had no opportunity of education, now achieve higher levels of education. Diffusion of good culture by quality education makes it possible for culture to maintain its place in society. Culture strongly influences how an individual approaches education, and a society's culture determines how that society educates its citizens. Thus, we see how culture plays its role in knowing and knowledge.

Views of Mahatma Gandhi on Education, Knowledge, and Curriculum

Definition

"Education is the all-round drawing out of the best in child, man, body, mind and spirit". Education is not making everyone literate but development of intellectual and spiritual man.

Curriculum

Gandhi advocated a complete overhauling of the curriculum. He proposed that education should be related to the environment of the child. Our emphasis should be upon all those subjects, which concern our own country, our people, our life, our physical and social environment. In curriculum, importance should be given to practical work, that is, learning by doing. Activities will lead not only to knowledge, but also to mental changes.

Basic Education

To put his educational ideas into practice, Gandhi placed before the country his Wardha Scheme of Education in 1937. It is also known as the Basic Education Scheme. It is

the outcome of Gandhiji's firm belief that only a Swadeshi system of education can meet the needs and aspirations of the Indian people. He was a great idealist, as well as a pragmatist. He wanted the system of education to be Indian in origin and Indian in setting. Gandhiji felt that a new pattern of education was needed for a child's future progress, so he advocated the basic education. Basic education is based on the national culture and civilisation of India. It aims at making a child self-reliant by enabling him to use his acquired knowledge and skill; the practical affairs of life.

Its outstanding features are Non-Violence Cult, Ideal of Citizenship, and Co-operative Living. In Gandhiji's view, sound education must be rooted in the culture and life of the soil and therefore, he pleaded for relating education to the environment. The scheme of basic education does not stand for mere technique, it stands for a new spirit and approach to all education.

The syllabus in basic education includes craft, mother-tongue, mathematics, social studies, and general science. Drama and music were included for both boys and girls. The procedure of teaching was correlation. The subject matter must be correlated with the craftwork, life problems, as well as the physical and social environment of the child. It is Indian and a scheme suited to the needs, genius, culture, as well as to the social, political, and economic background of the Indian people.

Characteristics of Basic Education

- Free and compulsory education should be given to all children for a period of seven years;
- Medium of instruction should be mother-tongue;
- Education should be based on the principle of learning by doing and learning by earning;
- Education should be self-supporting to some extent; and
- The process of education should be centred around some form of manual production work in the form of craft.

Views of Rabindranath Tagore on Education, Knowledge, and Curriculum

Rabindranath Tagore was popularly known as Gurudeva, and was one of the greatest prophets of the educational renaissance in modern India. He was a naturalist and humanitarian. Education is a continuous process. Education means enabling the mind to find out the ultimate truth which manipulates us from the bondage of the dust and gives us the wealth, not of things but of inner light, not of power but of love, making its own and giving

expression to it. According to Tagore, the highest education is that which doesn't merely gives us information but makes our life in harmony with all existence.

Curriculum

Tagore emphasised on religious education, women education, vocational education, national education, and mass education. Tagore wants child to learn from direct sources, from life and society. According to him, curriculum should not be narrow, but should be structured with future perspectives. Science should be the basic part of a curriculum. The development of all aspects of a child such as physical, intellectual, social, economic, moral, aesthetic, and spiritual should be in the curriculum. Co- curricular activities and contents which prepare a child to the feelings of national and international should be given a place in the curriculum. Education and life is inseparable; life itself should be the curriculum, so these should be considered in the curriculum- Indian language, mother tongue, other regional languages, mathematics, nature, health education, social science, agriculture, technical, art, music, dance, philosophy, religion, and psychology. Craft work and mother tongue should be main and compulsory

Tagore wanted to bring a balance between education of nature and education of man through art, music, and dance. He set a high value on creativity. He emphasised the study of World History as a common heritage of all children. He pleaded for universal outlook in history, and a critical appraisal of the national culture; he pleaded for manual training, not for its utilitarian and social aspect, but for its spiritual aspect. In short, Tagore recommended a curriculum for the full man, satisfying the spiritual, the creative, the aesthetic, and the vocational aims of education. Tagore's contribution can be seen through the institution he started known as Shanthi Niketan or Abode of Peace. Here, the atmosphere of joy and freedom, love, peace, sympathy and nobleness of spirit was emphasised. In this school, there was homely environment. The school was run under the shadows of trees. Admission was open for both girls and boys. Teachers-students lived together. General subjects were taught with professional subjects of different kinds such as dance, music, drawing, etc. through activities. Knowledge was imparted through mother tongue and art forms. In later years, his school Shanthi Niketan was expanded to international university and renamed as Vishwa Bharathi. It is a public central university. This university holds two campuses, one at Shanthiketan and the other at Sriniketan, where the focus is on agriculture, adult education, village, welfare, cottage industries, and handicrafts.

Views of Aurobindo on Education, Knowledge, and Curriculum

Meaning of Education

Concept of Education - According to Aurobindo, education should be in accordance with the needs of our real modern life. He writes, education to be true must not be a 61 machine-made fabric, but a true building or living evocation of the powers of the mind and spirit of human being.

Education means giving creativity to inner powers, developing the mind and soul intelligence in a child. Sri Aurobindo's concept of education is not only acquiring information, but acquiring various kinds of information. Education means not teaching, not suggesting, but motivating a child to develop according to his nature. Parents should allow a child to develop according to his desire and interest, to develop a good personality. In devising a true and living education, three things should be taken into account such as the man-his uniqueness, the nation, and universal humanity

Curriculum

Aurobindo prescribed free environment for a child to develop all his faculties to the maximum and suggested that all subjects and activities should possess elements of creativity and educational expression. He wished to infuse a new life and spirit into each subject and activity through which the development of a super human being could become possible. Moral and religious education should be compulsory in school education. Education should have religious foundation, instead of blind, prejudiced traditions and customs, to develop scientific thoughts.

He laid down a few principles for curriculum construction as follows –

- Curriculum should be in such a way that a child finds as interesting;
- It should include subjects, which promote mental and spiritual development;
- It should motivate children towards the attainment of knowledge of the whole world; and
- It should contain creativity of life and constructive capacities.

On the basis of the above principles, Aurobindo prescribed the following subjects in the curriculum for different stages of education.

At Primary Stage Mother tongue, English, French, Literature, National History, Art, Painting, General Science, Social Studies, and Arithmetic

At Secondary Stage Mother tongue, English, French, Literature, Arithmetic, Art, Chemistry, Physics, Botany, Philosophy, Health Education, and Social Studies

At Vocational Level Art, Painting, Photography, Sculpture, Drawing, Cottage Industries, Nursing, and Mechanical-Electrical Engineering Three important aspects to be considered in curriculum, according to Aurobindo are,

- Education in mother tongue of the child;
- Training the sense organs to develop understanding and knowledge; and
- Helping in developing logical attitude and scientific intelligence.

Aurobindo's Views on Knowledge Sri Aurobindo located the secret of human knowledge in the depths of our being that may not be directly experienced by all of us. He distinguished four types of knowledge.

1. Knowledge by identity (atmavidhya) - Knowledge of one's own existence. This knowledge plays a central role in the Vedas and the Upanishads.
2. Knowledge by intimate direct contact (experimental knowledge) -Awareness of one's own inner states by being with them.
3. Knowledge by separate direct contact (introspection) - Looking at one's own mental processes as if from outside.
4. Separate knowledge by indirect contact (scientific knowledge) - Sense based, constructed knowledge of the outer world. Aurobindo's concept of 'Comprehensive Education' is a unique contribution to the education field.

Auroville is an important organisation inspired by Aurobindo's vision. It is Aurobindo's university in Tamil Nadu, an international township. It is famous as a city of universal culture. Its aim is the unity of mankind, universal culture, making people karmayogi. Everyone must involve in their duty/work— that is their achievement. Auroville has a wider concept where all males, females, of all nationality forgetting their political differences live with peace and prosperity. 120 nations have taken the membership of this organisation. Aurobindo conceived education as an instrument for the real working of the spirit in the mind and body of the individual and the nation.

Views of J. Krishnamurti on Education, Knowledge, and Curriculum

Education

As a philosopher, Krishnamurti looked at education as the ultimate basis of all learning in the innermost workings of the human mind. According to him, Education is preparation of the whole life. He advocated holistic education. Education in the true sense is helping an individual to be mature and free, to flower greatly his love and goodness. That is what we should be interested in and not in shaping the child according to some idealistic pattern.

Education is important for changes in the mind of man and giving birth to culture. According to Krishnamurti, education is to help us from childhood not to imitate anybody, but to be ourselves all the time.

Krishnamurti's Views on Knowledge

Concept of Knowledge According to Krishnamurti,

- Thought is born of experience and knowledge which are inseparable from time and the past.
- Learning is not the accumulation of knowledge. Learning is movement from moment to moment.
- Without love the acquisition of knowledge only increases confusion and leads to self-destruction. Not to know is the beginning of wisdom. Knowledge about yourself binds, ties you down there is no freedom to move and you act and move within the limits of that knowledge.
- Learning is active present and knowledge is the past. Knowledge is static more can be added to it or taken away from it.

Knowledge is of 3 types such as scientific knowledge, individual knowledge, and collective knowledge. Scientific knowledge is from genetics, biology, geography, etc.; Individual knowledge comes from personal experiences; and Collective knowledge from ancestors and society. Intelligence uses knowledge. Krishnamurti did not expound any philosophy or religion, but rather talked of the things that concern us in our everyday lives; of the problems in modern societies. He explained with great precision the subtle workings of the human mind and pointed to the need for bringing to our daily life a deeply meditative and spiritual quality.

Few characteristics of integral learning

- Provides integrated experience;
- Freedom from ready-made ideas and development of a free and mature human being;
- Right understanding of environment;
- Development of international understanding;
- Enable learners to develop capacities to face challenges;
- Development of self-knowledge; and
- Importance not to the system and as long as individual doesn't understand the total process of himself, no system can bring order and peace to the world.

UNIT IV: CONCEPT OF CURRICULUM AND CURRICULUM DESIGNING

4.0. Understanding the meaning and nature of curriculum

4.1. Curriculum and Syllabus

4.2. Need for curriculum in schools

4.3. Curriculum determinants

4.4. Systems approach in curriculum development

4.5. Types of curriculum.

4.6. Principles of curriculum development - Assessing needs – Formulating objectives – Selection of content – Selection of learning experiences – Organisation of learning experiences

4.7. Curriculum visualized at different levels: National – state – school – class – levels and related issues. Balanced curriculum

4.0. Concept of Curriculum and Curriculum Designing:

A student of education is often concerned with the word 'Curriculum'. Let us see what we mean by curriculum. Curriculum can be called pivot around which various classroom activities and the entire school programmes are developed. Think of various activities that you carry out with your students and ask yourself why teachers carry them out with students. You may also think of the various activities that other teachers in your school carry out with their students while teaching languages, sciences, mathematics and social sciences. These educational activities are intimately connected with curricular studies. Thus this unit will help student teachers understand the concept of curriculum will help you to achieve the intended goals/objectives of education better.

Understanding the Meaning and Nature of curriculum:

The literal meaning of curriculum is derived from a Latin word 'currer' that means a chariot race, runway or path, laid way i.e laid to reach the goal. It is the sum total of all the good learning experiences that pupils have in order to achieve the goals of education which determine the direction of these experiences. A curriculum is considered the heart of any learning institution which means that schools or universities cannot exists without a curriculum. With its importance in formal education, the curriculum has become a dynamic process due to the changes that occur in our society. Therefore, in its broadest sense, curriculum refers to the 'total learning experiences of individuals not only in school but society as well'

Definitions of Curriculum:

'Curriculum is a strategy by which schools attempt to fulfill the goals of education'.

- Spalding

'It is a plan for action or a written document that includes strategies for achieving desired goals or ends' - Ralph Taylor & Hilda Taba

'Curriculum is defined as totality of experiences the pupil receives through the manifold activities that go in the school. In the classroom, library, laboratory, workshops, playground and in the numerous informal contacts between the teacher and the pupil'

Secondary Education Commission (1952-53)

4.1. Need for Curriculum Development:

Curricular development is defined as a planned, purposeful, progressive and systematic process to create positive improvements in the educational system. Every time changes or developments happening around the world, the school curricula are affected. There is a need to update them to address the society's needs.

Curriculum development has a broad scope because it is not only about the school, the learners and the teachers, but it is also about the development of society in general. There must be a chain of developmental process to develop a society. First, the school curriculum, particularly in higher education, must be developed to preserve the country's national identity and to ensure its economical growth and stability.

Curriculum experts or specialists should work hand in hand with lawmakers such as government officials, governors, educationists, social workers, parents and students. Hence, curriculum development matters a lot in setting the direction of change in an organization, not only at the micro but also at macro levels. As long as the goals and objectives of curriculum development are clear I the planner's mind, cutting-edge achievements in various concerns can be realized.

4.2. Determinants of curriculum

Curriculum for any level is determined by many factors. It is important that these factors must be understood as they help in providing direction to curriculum development. Let us have a discussion about these determinants and understand their implications.

Psychological Considerations: While deciding curriculum, various factors related to growth and development of learners, their Psychological needs, interests and problems are to be kept in mind. Each area of growth and development (such as physical development, emotional development, social development, and intellectual or cognitive development) are marked by distinguished characteristics. Environment around the learner, manipulation of learning experiences to enhance capacity and ability to learn, etc. are other factors which influence the child's readiness to learn. The readiness principle suggests that for learning a particular task or unit, the learner has to achieve a minimum level of maturity. It implies that learning should not be too early, too much or too fast. However, it must also be noted that readiness to learn does not depend solely on the age and maturity of the child but also on the learning experiences, school environment etc. Hence, what the curriculum has to offer and to whom should be decided by taking into account all these factors and their influence on one another.

Social Considerations: Education of the child is a social undertaking and it is always carried out in a social situation. The social forces in a society also determine the objectives of education; therefore, it is necessary that while planning the curriculum, we must have a thorough knowledge of those social forces that have a bearing on the educational system of the society. There are several theories that attempt to explain the relationship between the curriculum and the wider social environment. Apple's (1982) work suggests ideology as the thread that relates the levels of base and superstructure. In order to perceive the organisation and practices of curriculum, it is necessary to investigate the ideological root of what counts as valid knowledge in a given curriculum. Ideology refers to the process of production of ideas and values of a dominant group in social life, and the legitimating and promotion of these in society. It is about how a dominant group uses power to shape its notions into a mainstream trend. A good curriculum ensures that the unique character and integrity of the society is preserved and the quality of life of social groups is also improved. The social forces influence the decisions regarding what is to be taught, and how it is to be taught. What is to be added to or deleted from the existing curriculum to accommodate the change(s) in society is also decided by social forces. Social forces exert their influence on curriculum through different organizations and groups of people operating at regional, national and local/community levels. These forces are discussed under four categories: governmental forces, quasi-legal forces, professional organisations, and special interest groups operating in a community.

Economic Considerations Economic considerations basically relate to the practicality of a curriculum. The implementation of a curriculum entails several actions including provision of

physical facilities, development of learning materials and recruitment of untrained teachers. All these provisions involve recurring costs. These costs are borne by the government, and also by the community and other institutions. The planners always weigh the cost of providing certain learning opportunities. The alternative modes of providing educational opportunity have varying cost. A curriculum planner has to ascertain whether the community around the school will be able to bear the expenses of proposed curriculum. In spite of the states support at all the levels of education; the community too has to bear certain expenses of education. It is the community which will send its children to the school. If the financial condition of the society is not sound enough to share the cost of education. it will not be in a position to serve its people. The curriculum planner has to keep four kinds of costs in mind while proposing a curriculum. These include initial cost, maintenance cost, supplementary cost and personnel cost. For example, if a vocational course in typing is being proposed, it will involve the initial cost of purchasing typing machines, the cost of maintaining the machines in working order, the cost of supplementary materials like paper, carbon ribbons, etc., and the cost of acquiring a mined teacher well versed in typing.

Environmental Considerations The environment includes the physical and social conditions around an individual, an institution or a community. The environment is both natural as well as manmade. Human beings' survival and sustained development depends on the sensible and planned development and use of the natural resources and environment. Advancements in science and technology have helped us gain control over the environment and reach unprecedented levels of development. Industrialization, automation, communication revolution, urbanisation etc., have posed innumerable challenges for human beings. The revolution in communication technology has transformed the world community into a global village. Science and technology have made a tremendous impact on health and hygiene conditions and have been helpful in controlling many dreaded diseases. However, the advancements in science and technology and consequently their impact on society have also caused serious environmental degradation, depletion of natural resources, expansion of slums. Outbreak of new diseases, misuse of new technologies by nations in armed conflicts, etc. The education system through its curriculum should introduce the student with the achievements of human beings. But at the same time the learner must also be made fully aware of the challenges one has to face due to fast-paced development. The curriculum planners should consider ways and means to equip the student with appropriate knowledge and skills to harness the environment of resources. This will enable the learner to carve out a place for himself in the world of the future. The most important function of the curriculum in

this context is to develop a concern for the environment, human welfare and personal morality that will enable the student to use the resources available for the benefit of mankind. The curriculum of sciences, social sciences and languages can effectively inculcate an attitude of concern towards the environment and mankind, and peaceful co-existence of nations, communities and individuals. The curriculum planner should keep these emerging needs in view while developing a curriculum.

Institutional Considerations: Institutional considerations are especially taken into account when the curriculum planner is given the responsibility to develop curriculum for an institution. As you know, an institution is a unique sub-system of a society for achieving special institutional. objectives. The curriculum planner must keep in mind the nature of the institution, particularly its manifest purposes. The institutional purposes will be helpful in the selection of an appropriate procedure for formulation of course objectives and organization of content, etc. For example, vocational and technical schools are expected to train students for specific jobs. Hence, for formulating the objectives of a vocational programme the technique of job analysis will be used and these will be helpful in selecting appropriate instructional materials. However, the job analysis technique will not work for an institution with humanistic goals. For formulating objectives for such institutions, another technique which is more consistent with the process of self-actualisation for individuals i.e. learners will have to be used; and curricular materials based on it will be developed. Similarly, while planning a course for a specific institution one has to know the attitude of the school authorities, particularly of those who are involved in planning and management, towards a discipline e.g. attitude towards Commercial Business education as a whole and towards certain business subjects in particular. Availability of necessary facilities, such as library, equipment, staff, space, etc., in the institution should also be considered while taking decisions on curriculum planning in a particular area or discipline.

Cultural Diversity Culture, to the sociologist, is a natural term that includes everything that is learned and manmade. Schools are formal institutions specially setup for the preservation and transmission of culture. Schools seek to discharge this function through the curriculum which is the sum total of learning experiences provided through it. However, it is observed that society is now moving away from a homogenous culture towards one of diversity and plurality. The shift in trend can be attributed to the following phenomena: Diversity in values and lifestyles (being different is now a socially sanctioned idea); Renewed interest in ethnic history (people have developed a new interest in their own history and personal heritage): and Development in tele-communications (people have been reminded of their links with cultures

in other parts of the world). However, the important feature of curriculum development is how the curriculum portrays cultural values. It has been taken for granted that school curriculum represents a class-free, noncontroversial fund of knowledge, which is good for all children in that particular school. Certain schools have tried to transmit what they have assumed as "culture free knowledge, language, sciences, mathematics, arts and crafts, physical education", and so on -which is believed to be needed by one and all for the all-round development of one's personality. It is also accepted that those who failed to respond to such curricular treatment, either because of poor home background or other socio-economic reason is, should be given compensatory education to make up for their cultural disadvantages and deprivations. For example, in India, children with diverse cultural backgrounds study in the same class and follow the same curriculum. They speak different languages, have different food habits and practice different religions, etc. Hence, the curriculum planner has to derive a curriculum that cater to the needs and interest of the different sections of people while at the same time pursuing worthwhile knowledge, values and skills. In a pluralistic society a common culture cannot be forced on all, since it is accepted that one sub culture or culture is as good (or as bad) as any other. Hence we see that social changes have their impact on curriculum planning. As long as a society is dynamic, the debate over the aims of education will stir up changes, which is the sign of a healthy society. (Beane, et. al. 1986).

Teacher-Related Considerations: The process of teaching is performed by the teacher who transacts a specific curriculum. She/he is an integral part of the teaching-learning system. Her/his functions include interpretation, explanation, demonstration and guidance in various activities and experiences incorporated in the curriculum. Therefore, while planning a curriculum the planner should consider the teacher-related factors as well. Every curriculum will require a certain group of teachers equipped with appropriate education, training and experience to successfully transact the curriculum and to help the students in achieving its (curriculum) objectives. The type and the level of content and activities included in the curriculum will determine the type of teachers, their level of education, and the kinds of teaching behaviour expected of them. Similarly, whether the type of teachers we need are readily available or they have to be prepared or they have to be provided inservicetrainingnecessaryforworkingteachersforimplementingthecurriculum, etc., should be the basis of decisions on curriculum planning. Besides, we have to consider whether pre-service training of the teachers is necessary and what type of training should be provided in order to enable them to transact the curriculum and also how long it will take to develop

them. Provision of qualified and competent teachers, thus, is a basic factor to be considered in curriculum planning. Hence the teacher-related factors must be given due consideration by the curriculum planner.

Difference between Syllabus vs Curriculum

The curriculum contains the overall content as provided by an education board for a particular course spanning across a stipulated time period. Whereas the **syllabus explains the summary of different topics covered or units that will be taught in a specific subject** or discipline under that particular course.

Syllabus Vs Curriculum: Key Differences

Syllabus vs Curriculum	Curriculum	Syllabus
Meaning	A set of guidelines of the different academic contents and chapters that are covered during a program offered by a particular educational institution.	A document that has all the information about different topics or concepts that needs to be covered for a particular subject.
Nature	Prescriptive	Descriptive
Structured For	Complete Course	Each Subject Under the Course
Changes	Cannot be easily changed	Can be easily changed
Determined By	Administration of College, Institute or School or the Government	Exam Board
Scope	Wide	Narrow
Uniformity	Uniform for all the teachers	Different from one teacher to another
Term Duration	Until the course lasts	A fixed-term, can also be a year

- **Curriculum remains prescriptive in nature** as its structure needs to be followed in the specified manner while **syllabus is more descriptive and flexible in nature** and can be covered in a non-prescriptive manner.
- Curriculum is meticulously **designed by the school or college administration** while **syllabus gets created by teachers by the educational board**.

- **Curriculum stays the same for every teacher** while **syllabus can differ and it can be covered in a distinctive manner** as per their own individual teaching style.
- Another important point of difference between syllabus vs curriculum is that the term **curriculum originated from Latin *"curricure"* which means to run or course**. On the other hand, the term syllabus finds its origins in the **Greek *"sittuba"* meaning title slip or label**.
- **Curriculum encompasses more extensive scope than syllabus.** This is because **syllabus remains confined to a particular subject** while **curriculum provides the structure for the whole course**.
- Syllabus is only **provided for a year** while the curriculum covers the **whole course**.
- **Curriculum contains all the subjects and outlines how they will be studied** during the course while **syllabus is more detailed version for each subject** under the course.

4.4. System Approach in Curriculum Development:

System approach is a systematic, logical, proper way or method of achieving certain objectives.

Curriculum: Too much matter crammed into the curriculum leads to frustration. Also, if students do not understand the relevance of what they are learning, Also, if students do not understand the relevance of what they are learning, they will not be ready to learn. Following system approach will greatly help to prepare a balanced curriculum that is broken down and arranged into rational parts. The term "system" means systematic analysis and development of any task/activity to take appropriate decision. Systems approach brings to the teaching-learning process a scientific approach for solving instructional problems and accomplishing desired objectives. In other words, systems approach is a problem-solving method of analysing the educational process and making it more effective.

System: Meaning and Concept Let us try to understand the concept of a system with the help of some concrete examples. A watch is a system but the parts of the watch separated and kept in a tray do not constitute a system. Similarly, the human body has a digestive system for digesting the food and converting it into nutrients. Various parts of the digestive system put separately do not constitute the digestive system. Let us study various characteristics of system with the help of these two examples. You must have studied various those parts of the digestive system. They are also called components of the digestive system. You are aware

that every part i.e. component of the digestive system contributes to and supports the functioning of the digestive system as a whole. Thus one may say that a system consists of some components; each of these components contributes to and supports the functioning of the system.

4.4. Systems Approach: The input-process-output model of a system also brings out another dimension of the systems approach. It is a way of looking at things, processes or problems. Instead of attacking the problem in an arbitrary manner, the systems approach helps solve the problem systematically. So the systems approach is a tool to be used for solving educational problems more efficiently and effectively, Systems approach can also be looked upon as a mode of thinking that emphasis problem identification and problem resolution. It enables an individual to define the problem precisely, consider the alternatives available and to choose the most efficient alternative (on the basis of the performance criteria) to solve the problem and achieve the goal(s). As systems approach is basically a process of problem solving, it can be applied to many areas in the field of education, such as instruction, research, management of educational institutions, curriculum development and so on. One may apply it to any problem situation as the process and the mode of thinking remains the same. Though systems approach can be used in solving educational problems, we will study the application of the systems approach specifically to the area of instruction.

Input-Process-Output Model of a System: The system that we are concerned with includes the aspects and components of the educational process, viz., students, teachers, curriculum/syllabus, teaching methods and media, school/classroom environment, and evaluation procedures. The systems approach helps both the teacher and the students to achieve terminal objectives in the most effective way. Let us now study how a system works. You have seen that every system has specific function. to perform or goals to achieve. These can be termed as outputs. In the case of a clock, the function or the goal is to show time accurately. Similarly, the school library may aim at providing its students one book per week.

4.5. Principles of Curriculum Development

Curriculum refers both organized and informal activities of school life. School life need not imply life of the child within the four walls of the school alone, but extends beyond that. The place and importance of the curriculum in the educative process needs no reemphasis. The general aims of education receive concrete expression through the curriculum. It translates ideals into action. It is the crucial link between objectives and outcomes. As King and

Brownell write "Deliberately Designed activity of life is education, deliberately designed portion of education is schooling, the heart of schooling is curriculum." The following are the basic principles of Curriculum Development.

- The curriculum should be Productivity Oriented.
- The curriculum should be Activity Based.
- The curriculum should be New Knowledge Oriented
- The curriculum should be Child-Centered
- The curriculum should be Human Development Oriented
- Principle of Conservation
- Principle of Forward Looking
- Principles of Creativity
- Principle of Flexibility
- Principle of Maturity
- Principle of Utility
- Principle of Totality
- Principle of Significance
- Principle of LPG (Liberalization, Privatization and Globalization)
- Principle of Values

I. Principle of Activity Programmatic thinkers lay particular 1hasis upon the principle of activity, for they believe it to be the most important factor in learning. In the words of Wm. Ryburn, "One of the most important facts about children, which we have to remember throughout our teaching work, is that children are naturally active..... Thus our first general principle of teaching method is the principle of activity." Most of the recently evolved teaching methods, such as the project method, method of basic education, Dalton Plan, Montessori and Kindergarten methods are based on the principle of leaning by doing. The process of learning is an active process, and nothing can be rally learnt by inactively listening or looking on as a mere spectator. Hence, in the school, the child should be given every chance to be active this also has another advantage. When the child is active physically, his mind is also more active than otherwise and hence he acquires thinking more easily. Knowledge increases only when it is used. In the words of Comenius, "What has to be done must be learned by practice". All kinds of artistic skill, such as dancing sculpture, music, painting, etc., are all learned through actual practice.

ii. Principle of Motivation Educational psychology has made educators aware of the fact that motivation is the most significant factor in the process of learning. In the absence of motivation, the educator cannot elicit any useful -response from his pupil. There is a lot of wisdom in the proverb that you can take the horse to 235 water but you can't make it during. In much the same way, the pupil learns something only when motivated to learn it, because it is motivation alone that can awaken interest in him. Once interest has been aroused in a particular direction, the learner is motivated to learn it. Creation of a strong motive for learning is more than half the educator's task. If this motivation is absent the educator can try his best, but it will be remarkable if he drives anything is not his pupil's head. Motivation for learning can also be induced by making use of such tendencies in the child as dedicating himself, assertiveness, conflict, competition, etc.

iii. Principle of Linking with Life Dewey, the famous educationist, expresses the opinion that education and life are two aspects of the same fact. In tribal societies, the processes of living and education are not separated but as social structures become more complex, the process of education tends to be separated from life. At times, it can move so far away from life that whatever happened inside the school seems to bear no relation to the life outside the school. That is why educationists keep on reminding people that life inside the school must keep in contact with life outside it, for education to relation any meaning. Hence, one of the important principles of education is that it must have relations link with life. All that is taught to the child can remain in this mind only if it establishes some satisfaction with all that he has learnt before the teaching of arithmetic, for example, can be made more meaningful if it is linked to the child's everyday activities outside the school.

iv. Principle of Interest Another important principle underlying teaching is the principle of interest. Educational psychology tells the educator that he cannot make his teaching effective unless he arouses the pupil's interest in the subject being taught. Hence, the educator must begin his task by arousing this interest, because this will create the necessary inspiration in the child. He will be willing to learn and thus facilitate the teacher's work.

- There are certain disciplines which naturally interest the learner, but where there is a question of choice among alternatives, as far as possible, attention must be paid into the learner's own inclinations and interest.

v. Principles of Selection The principle of selection also play a significant part in the teaching process. The successful teacher always determines before handle the subject that he wishes to teach a particular class the extent to which he would prefer to teacher and the method he would like to adopt. Hence, the technique of teaching and the limits up to which a

general subject like geography, history, civics, agriculture, painting, language, or mathematics, etc., is to be taught are determined well in advance. The rules governing this selection are determined by the educator's own judgment and understanding of his pupil's psychology. And, the greater his knowledge of psychology, the better will be his selection.

vi. Principle of Definite Aim Just as education in general must have an aim each different lesson taught to the pupil should also have its distinct objective. This helps to achieve clarity and precision in teaching and also focuses the learner's attention. It is the objective of the lesson which determines the technique of teaching. The learners should also be aware of this aim of education so that they tend to ignore many of the important aspects of the lesson, because they fail to attaché due importance to each part. Hence, in order to givdefinite and clear form of teaching, it must also be given an aim.

Views of Secondary Education Commission (1952-53) on Curriculum Construction:

The Secondary Education Commission has suggested the following principles for curriculum construction:

a) Principle of Totality of Experiences: Since total experiences of the child are needed for calling an individual fully grown and developed personality, therefore, all experiences will form the bases of a good curriculum. Whatever experiences take place in the class, I the library, in the play ground, in the canteen, outside the school – all that should come under the purview of curriculum.

b) Principle of Variety: The curriculum should have a variety of subjects and activities so that all types of learners are satisfied. It gives recognition to individual differences.

c) Principles of Elasticity: Maximum of flexibility is provided in the curriculum. It is in no way a rigid one. Any type of changes can be made I it as per changing needs and requirements of the individual Modifications are also possible wherever need is felt.

d) Principle of Community Centeredness: Curriculum takes the child nearer to the community. It helps him understand the community and makes efforts through the learners for a better community.

e) Principle of leisure time utility: The curriculum should give training to the youth for using leisure time rightly.

f) Principle of Correlation: The different subjects should not be isolated. They should be correlated with life. That way the curriculum is better and it serves the purposes fully.

g) Principle of Social needs: The curriculum should be related with the needs of the society. It should be the real outcome of the society.

4.5. Types of Curriculum:

Klein (1985) has identified three basic curriculum designs. They are

1. Subject centered curriculum
2. Student centered curriculum
3. Life centered curriculum
4. Society centered curriculum

1. Subject Centered curriculum: The subjects that are presented in the school are few, but these subjects are found to be fundamental to the learner, and help him with a basis to proceed further.

Features of subject centered curriculum

a. **Objectives:** The objectives of subject centered curriculum are stated as 'learning outcomes' expressed in behavioural terms. The objectives determine the content that the student must learn. Emphasis is on the process of absorption, memorization and drill to learn the content and retain it in mind for long.

b. **Contents:** Contents are selected and organized prior to instruction by the experts. Contents may be concepts, generalizations, ideas, processes or skills within the subject area. As contents chosen are universally true, they are not affected by the local situation. That is to say a uniform curriculum could be presented for all learners of the same age by the experts.

c. **Structure:** Each subject is in its own 'compartment', with littlegenuine concern for things outside its wall.

d. **Instructional materials:** The text book is the most commonly used learning material both by the teacher and the students.

e. **Activities** The traditional verbal activities such reading, writing and listening are usually employed for the learning contents.

f. **Grouping:** Mostly instruction occurs in the class or in the large group.

g. **Time and Space:** Time spent in the classroom is viewed as most valuable. Time is divided into blocks so that subject is taught at specific time called 'period'.

h. **Teacher and Methodology:** The teacher chiefly uses lecture, demonstration and discussion methods to present the contents. The teacher is considered to be an expert in the subject area.

i. **Evaluation:** Evaluation is done to know whether the student has achieved the behavioural objectives or learned the body of the content. Periodic evaluation is often done. Marks and grade indicate the degree of Achievement.

2. Student Centered Curriculum:

According to Kelly (1977), a child centered curriculum put emphasis on:

1. Needs of the learner
2. Growth of the learner
3. Interest of the learner

Features of Student-Centered Curriculum

a. Objectives: Objectives are not predetermined by the teacher. Instead, the purposes of the student are used for learning process.
b. Contents: Contents are selected in accordance with the needs, interest, abilities and past experiences of the students.
c. Instructional materials: Textbooks are not highly valued, since students organize contents by themselves. A wide variety of learning materials are used by the students.
d. Instructional activities: Activities for learning are planned and selected by students. Teachers are just consulted.
e. Grouping: Instructional groups are formed on common interests or needs of students. Groups are flexible, short – term and spontaneous.
f. Time and Space: Instructional time is not fixed but flexible. Students learn whenever time is available. The space for learning is unstructured. The classroom serves as a central meeting place for conducting discussions.
g. Teacher Methodology: The teacher is a co-learner and a facilitator in the learning process. He encourages natural approach to student's learning.
h. Evaluation: Both teacher and student jointly evaluate the learning outcome. Self-evaluation is done by the students. Evaluation is done to determine how the student learn rather than how much he learns.

3. **Activity curriculum:** In activity curriculum, the learner acquires knowledge through activities. The learner participates physically in the activities. Activity curriculum encourages group activities.

For example, the learner attains cognitive, attitudinal and behavioural changes through

a. Role plays
b. Games and simulations
c. Value exercise
d. Socio- ad psychodrama

Other activities include the use of

a. Audio – Visual methods
b. Art, drama, music, dance and play

1. Life Centered Curriculum: Life centered curriculum also known as society-centered curriculum is a variation of the problem centered design. It was proposed by Florence Stratemeyer and her colleagues.

Importance of life centered curriculum

Life centered curriculum is based o

- Social problems
- Social processes
- Life function
- Persistent life situations

The content of the curriculum is based on the fact that school learning will be meaningful, if the problems studied in school curriculum are directly applied to human life.

2. Society Centered Curriculum:

Instructional materials

A great variety of materials and resources in the community are used. Original documents are preferred to text books.

Learning Activities

Learning activities are planned by both teacher and students. Student's active participation is emphasized.

Grouping

Group work is essential in this design. Grouping of students is done on the basis of student needs and desires.

Time space

Instructional time depends on the nature of the project undertaken by the students. Rigid allocation of time is minimized. Space for learning includes all the resources of the school and community which are related to the problem or topic or project under study.

Teacher Methodology:

The teacher is the facilitator of the learning process. Direct observation, field study, direct experience are the methods used by the teacher.

Evaluation

Evaluation is jointly done by the teacher and students. Evaluation puts emphasis on the performance or actions related to the social problems.

1.5. The Curriculum Process and its stages have been described below:

Selection of Aims, Goals and objectives: A curriculum is essentially a planned educational programme. It has definite objectives and it facilitates their attainment. When we talk of educational objectives, we should remember that these objectives are derived from goals. These goals are again conceived at three levels viz; ultimate (or long term) goals, mediate (or short term) goals and proximate (or immediate) goals.

In India we have the 10+2 year pattern of schooling. These twelve years of schooling fall into four clear stages, viz; the primary, the middle, the secondary and the senior secondary. The ultimate aims could deal with the outcomes of 12 years of schooling or they could be about any of the above mentioned five stages. In other words, these ultimate aims describe the end-products of education spread over a period of time. They are usually expresses in terms of statements of desirable knowledge, attitudes, feelings and actions, integrated in terms of personality pattern in appropriate situations of life.

Mediate aims may refer to a stage of education or a particular content area, e.g., languages, sciences, etc. The mediate aims are derived from ultimate aims and they promote them. Mediate aims are usually expressed in terms of intended behaviours in a class of situations at given stages of education. These stages of education usually mean various grades e.g. Grade VII, Grade IX, etc.

The proximate aims are also called specific objectives. The deal with classroom level behavior. These may be expressed as what the teacher wants to attain through teaching a lesson or a unit or what the students will be able to do after learning a lesson or a unit. In the first case, they are called instructional objectives; in the second, they are called behavioural objectives or learning outcomes.

Selection of Learning Experiences

Learning experiences facilitate change in behavior and, as a result of this, attainment of aims and objectives. Various learning experiences deal with the human being's functioning in particular situations, their interests or problem solving. These learning experiences provide physical; mental or emotional experiences or their mix. The role of learning experiences is reflected in the following proposition. If X is the intended objective, then A, B and C are the necessary learning experiences to be provided for it. Teaching various subjects, various

activities in a laboratory, on the playfield or through projects, discussion, group work, etc., are examples of educational learning experiences. Care has to be exercised in order to ensure that the selected learning experiences indeed help in the attainment of a specific educational aim/objective.

The selected learning experiences should be relevant to learners in terms of their maturity level. Since there does not exist any sure way of determining whether the selected learning experiences indeed match the learner's maturity level, there is always an element of tentativeness about them. The teacher, if she is involved in selecting learning experiences, will invariably be guided by her own experiences of dealing with and observing children. She may also depend upon her recollections of how she behaved when she was of the age of the learners for who the curriculum is being developed.

Yet another criterion to observe is the extent to which the ordinary teacher can translate these learning experiences into classroom activities. The greater the possibility, the more fruitful the learning experience.

Selection of Content

The content is usually considered to be the most important component of developing curriculum. However this exclusive importance given to content is educationally misplaced and indefensible. To put content at the Centre of the curriculum is to put the cart before the horse. The overall approach to the curriculum shall determine our approach to the task of selection of content.

For example, in a process-based approach, only such content will be selected which supports the chosen process (es). Even in a subject-based curriculum, one has to be clear about knowledge, principle, generalizations, theories, techniques and procedures that can be developed through the chosen content. The content is thus a powerful means to attain the aims of teaching a particular content.

The process of selection of content can be viewed at three levels. The first level deals with selection and clarification of the conceptual framework related to the content area. The so called modern mathematics of the 1960s and the conventional mathematics provide a good example of this.

The second level is concerned with selection of basic themes or key concepts with along with other basic themes or concepts constitute the framework of knowledge in a given subject. Basic operations, the number system, the set theory are some of its examples. These themes/key concepts have a hierarchical relationship with each other. Some of these have broad connotation (e.g the number system) while others have limited connotation (e.g prime

numbers). The third level is the most specific. At this level content items are matched with the basic theme/concept they belong to and also with the objectives of the curriculum.

Organization and Integration of Learning Experiences and Content

The essential task at this stage is to develop sequences of educational activities based on selected experiences and content. This fusion of selected experiences and content has a definite purpose which is derived from educational objectives. Hence it is called a sequence of learning experiences. The organizing principles for this integration and sequence should ideally be derived from the learning situations available in schools and classrooms, inputs needed for effective classroom interaction, the developmental levels of learners, and principles of learning by children for whom the curriculum is meant.

Bruner talks of three modes of leaning viz; enactive, iconic and symbolic.

- Enactive mode of learning is activity based the learner cays and learns as a result of action process. 'Learning by doing' is a very familiar example of the enactive mode.
- Iconic mode of learning is based on the use of images and diagrams. It is often said that an image or picture is more effective than a thousand words. Images help the teacher illustrate and young learners find these graphic illustrations a powerful means of learning.
- Symbolic mode of learning is based on the use of a symbol system. Language is a very powerful set of symbols. One can express almost everything through language. Symbolic 'mode of learning is largely verbal in nature. In addition to language, the mathematical symbols also mark as language. All learning beyond a particular age, 10 years, becomes more and more language mediated and therefore symbolic. Each of these modes of learning has certain distinguishing characteristics which are determined by developmental stages of children of a particular age-group.

It must be remembered that there are alternative ways of sequencing and integrating content and learning experiences. A particular approach to sequencing and integration of content shall have certain implications for classroom methodology and administration of school. A change in sequencing and integration of content and learning experiences is bound to affect classroom methodologies or school administration or both. It must be understood that the most effective sequencing and integration of learning experiences and content depends upon certain and dependable knowledge about how knowledge is acquired and how it accumulates over time and how this accumulated knowledge can be best organized for easy

recall and use letter on. Unfortunately, we do not have dependable answers to these questions. Yet the task of sequencing and integration of content and learning experiences must somehow be accomplished as best as it can be.

Quite often, this sequencing and integration is determined by the size and scope of units and the overlap and interrelation among units. If modular units are to be developed, the scope would be more specific and overlap with the proceeding or the following unit would be minimal if not absent. Sometimes the entire curriculum has a built in overlap and interrelation even though at surface level it may be divided in chunks of units, lessons, activities and projects.

Evaluation

This stage is the last one in the curriculum process. Evaluation is a process of judgment based upon relevant evidence. This evidence may be quantitative (e.g. marks awarded in various tests) and/or qualitative (e.g. observation — based information). Evaluation may be based on aims, goals or objectives of the curriculum. Objectives based evaluation is more specific and usually more useful for teachers. Surely evaluation should be treated as a micro level concept as well as macro level concept. At micro level, evaluation deals with intended objectives, actually attained objectives and an analysis of the gap between these two and how it can be reduced. Such analysis is usually based on measurable objectives. But there are, what Eisner (1979) describes, expressive objectives which cannot be measured but which are otherwise quite as important.

1.6. Balanced Curriculum

A balanced curriculum is the need of the times now. Gone are the days when anything could be taught to the school children in any way. The traditional way of life has to be replaced by the modern one. The old concept of Education has to face an operation for shedding off ideology of the gone by times. The needs and requirements of the individual and then the demands of the society have to be cared for in the education of the child.

A balanced curriculum is the most suitable type of curriculum. Such a curriculum leads the pupils to functional activity. This type of curriculum is prepared keeping in view the principles for the construction of a good curriculum and also the teaching learning process. Moreover, in a curriculum, good points of different types of curriculum are given importance. Generally a balanced curriculum has the following constituents:

a. Core Curriculum ii. Diversified Curriculum

i. Core Curriculum: The Core may be regarded as that aspect of the total curriculum which is basic for all students, and which consists of learning activities that are organized

without reference to conventional subject lines. In core curriculum, subjects which are basically of great importance for every student are included. In this contexts R.W.Taylor says, "If a school wise programme of curriculum reconstruction is undertaken, it is necessary that there will be wide spread faculty participation. The instructional programme actually operates in terms of the learning experiences which the students have." In core curriculum, 'Common Learning' course is the basis. 'Common Learnings' imply learning experiences which are common for all type of students. Such a learning prepares the individuals for their present and future life.

ii. Diversified Curriculum: Diversification in the curriculum is the second major constituent of a balanced curriculum. Naturally individual differences of the students in areas like needs, interests, attitudes, aptitudes etc. are fully cared for. Specialisation of a field begins at the senior secondary/ higher secondary stage. Such a curriculum helps in producing a balanced personality.

Salient features of balanced curriculum

Balanced curriculum helps I the development of essential aspects on an individual's life. There is academic growth and development along with social efficiency of the individual. It lays down the foundation firm and strong with which the individual is able to stand with all confidence and face any type of challenges of life.

1. **Integration of studies**: The different subjects may look like separate entities but they are not made to stand separately when dealt with. Knowledge is one complete whole which is made by putting together large number of segments. Each subject may be named as Physics, Chemistry, Mathematics, language etc. But the result of studying all these subjects is ultimately one i.e all round developed personality of the child.
2. **Liberty for the teacher and the learner**: This type of curriculum provides sufficient freedom to the teacher. A teacher may continue to teach a topic of study for a longer period keeping view the interest of the learners. Teachers enjoy the liberty from subject matter patterns in the rigid sense and lead the students to have experience.
3. **Activity centered**: It centers round the different activities which are capable of sustaining interest of the learners. All learning is in natural setting and is thus more meaningful. The learners remain active throughout. The interest is also sustained.
4. **Child centered**: This type of curriculum is child centered. Here learner's interest, his attitude, aptitude, capability and capacity form the basis of teaching and learning. It being child centered gives primary importance to the child.

5. **Mutual Co-operation**: A group of students works on a problem and tries to solve it with combined efforts. They learn mutual co-operation and combined planning.

6. **Teacher background:** Guidance provided by the teacher is a sort of guidance or hints given by the teacher when the learners find it absolutely necessary. The teacher remains there in the background. This curriculum is a more useful type of programme for the students. The learners find themselves I real life like situations where they learn how to solve the problems with their combined efforts and with mutual co-operation. It makes them independent and ever ready to face the problems with confidence.

UNIT V: CURRICULUM TRANSACTION AND EVALUATION

Unit V: Curriculum transaction and Evaluation

Curriculum transaction – Strategies, approach, methods, techniques for curriculum transaction – Organisation for instruction – Resources for curriculum transaction instructional materials – Computer and the internet. Meaning of educational evaluation – Evaluation as comparing objectives and outcomes – Focus of curricular evaluation: Subject, content, organization and mode of curriculum.

Curriculum transaction

Change is the law of nature. Nothing is static ad constant. Things keep changing especially the social phenomena, social needs. Social demands the aspiration of people. It is also obvious that human beings always look for a change. The pace of change is varying from ancient to modernity because of the technological advancement and modernization and also explosion of knowledge and aspirations.

Generally curriculum change and curriculum improvement are used unchangingly and do not distinguish between the two. Curriculum transaction is a kind of change in an institution i.e., changing the goals and means. Curriculum transaction, as we have already pointed out, involves planning. In the planning process, curriculum is transformed and adapted by additions, deletions and interpretations and by decisions about place, sequence and emphasis. The process of planning and developing is to develop a step-by-step procedure for teaching that takes into account the variables of learners, resources and facilities that lead to attainment of predetermined objectives.

Curriculum is the backbone of all levels of education or preparation programme. It is the sum total of all learning activities or experiences, within or outside the classroom, that are to be provided to the learners, in order to achieve the goals of teaching learning process in particular and of education in general and for the continuous and wilful growth of learners in every sphere of life whether personal, social, professional or vocational. Curriculum transaction is the effective and desired implementation of the curriculum contents on the basis of aims and objectives specified in the curriculum. It incorporates decisions about the contents and effective planning for providing learning experiences to its learners on the basis of content, organization of planning, administration/implementation of the organized planning and evaluation of the implementations by the implementer and the experts in the relevant field (Sharma, 2013).

Need and importance of curriculum transaction

Education leads from darkness of illiteracy to brightness of intellect. Education is the right of a human being in the world which is required to develop all of their attributes and skills to achieve their potential as human beings and members of society. In all aspects of the surrounding education community, the focus is on learning which strengthens the capabilities of human being to act progressively on their own behalf through the acquisition of relevant knowledge, useful skills and appropriate attitudes; and which creates emotions of safety, security and healthy interaction in the human.

Curriculum is a systematic and intended packaging of competencies (i.e. knowledge, skills and attitudes that are underpinned by values) that learners should acquire through organized learning experiences both in formal and non-formal settings. A noble curriculum plays an important role to the development of thinking skills and the acquisition of relevant knowledge that learners need to apply in the context of their studies, daily life and careers.

Major emphasis should be given on effective transaction of curriculum in any educational program. The main responsibility of the curriculum transaction lies on the teachers and trainers who may use different types of pedagogies to create a nice academic environment in the institution and students can be benefited in gaining knowledge and developing skills as per industry demand. Curriculum is implemented by teachers, and depends moreover on the quality of teaching and learning strategies, learning materials and assessment. Quality education should not be regarded as a process of consumption, but as a process of interaction between teachers and students. A wide range of teaching techniques is used in institutions. The set of teaching techniques strongly depends on the instructional form of education. Apart from the ubiquitous lecture, the additional consultation teaching elements may be Seminar (small group teaching), Tutorials, Research seminar, Exercise classes or courses, Workshops (classroom based practical classes), Problem-solving sessions, Laboratory teaching, Demonstration classes, Placement (internship/traineeship), Work based practice, Fieldwork, Online / Distance or e-learning. Use of teaching elements depends on the focus of the teaching and the intended learning outcomes for the students.

Strategies of Curriculum Transaction

Whenever it is planned to develop curriculum the curriculum framers or the personnel involved in the process take the stock of the situation. They examine the existing curriculum and the core elements in it. Renovation of curriculum includes basic elements and classroom teaching units. There should be a procedure in development of curriculum and sequence in transacting the curriculum. The different steps involved are:

a. Producing pilot units:

Group of teachers are involved I creating pilot units on experimental basis. O the basis of the needs and requirements, grade level, level of education, a particular subject like languages, maths, science etc motivating part as introducing the subject, where to start etc. and a model unit is prepared on the basis of available research and local research. These units include theoretical principles and practical objectives.

b. Testing experimental units:

As these are prepared by the teachers with their own experiences and in their own local classroom contexts, they need to be tried out in a new classroom situation before their finalization.

c. Revising and Consolidating:

After trying out in the field and collecting the feedback from the field, the necessary criteria like its appropriation, consistency, relevance etc will be checked and all the aspects required will be consolidated by the Curricularists.

d. Developing a framework:

Once the revising and consolidation takes place, the principles related to curriculum like its scope and other are taken care of. The core subjects, content, scope etc. will be taken into consideration and a framework is developed.

e. Installing and disseminating new units:

Once the final approved curriculum is prepared it needs to be implemented into the larger field, while installation of program gets initiated. The implementation needs the field workers. The teachers, who are involved in the process, need training. So as a part of implementation the information is disseminated to the teachers. After several years the curriculum may become outdated and needs revision. Thus curriculum transaction includes age of the children, levels of learners, and international, national, state, regional and local needs, interest of the learners and current issues of the society

Role of computer in curriculum transaction

Today computer play a significant role in training as well as re-training of teachers, and thereby updating their knowledge and skills to provide quality support to the learners. With rich media inputs, computer can enable learning experiences more situated as well as authentic to improve the quality of learning. ICT is a broader term for Information Technology (IT) which refers to all communication technologies, including the internet, wireless network, cell phones, computers, software, middleware, video conferencing, social networking.

Curriculum planning that is considered the warp of education system originally, is in mutual relationship with other domains of education, and today, globalization in addition to ICT have influenced curriculum, thereby, this process is experiencing a new transformational trend. The system of curriculum planning should provide appropriate curricula with meticulous attention to these new formative changes implicitly with prognostication of those change that are supposed occurred. In curriculum compile, formation and design, information and scientific findings which are resulted from fundamental studies on curricula are used and the more these information and findings are authentic and reliable, the more the curriculum would be scientifically valid and exact With its emergence, ICT has influenced the community in general and training activities and factors in particular, as well as curriculum as a process for compile and format the components and the elements of learning, so this effect can be seen in each element of curriculum and if this effect is not being designed in a desirable scientific manner, it can unbalance the curriculum at hand. The ICT-based curriculum is a systemic conceptual pattern that has five main elements:

1. Input, process, output, environment and evaluation, and feedback.
2. data origin that consists of all the environments such as education system as a whole, organizations, ministry of education and the environments from which necessary data are gathered.
3. Data resources that consist of ICT centre.
4. Institutions and organizations.
5. Human, financial, material and educational resources.
6. Fundamental and research data.

Advantages of the use of computer education

• Quick access to information

• Easy availability of updated data

• Connecting Geographically dispersed regions

• Catering to the Individual differences

• Wider range of communication media

• Wider learning opportunities for pupils

Use of computer in day to day life of students and teachers

• Students use ICT as reference tool. They use computers to browse the internet to look information, project information and literature survey.

• Teachers use ICT in research for preparing teaching material; participate in online forums and online conference.

• Researchers use ICT tool to collect, process and analyze data.

• School administrators use ICT tool for administrative purpose to make sure that the entire operation runs smoothly.

Promotion of curriculum transaction through computer

Enhancing quality of learning:

Though quality is a slippery term, and can be interpreted in different ways, quality learning occurs where the learners are motivated, learning resources are available and accessible, support of trained tutors is available on demand, and the education processes are geared to prepare the learners for the real world. ICTs can enable learning experiences more situated as well as authentic to improve the quality of learning.

Expanding educational opportunities:

Increasing access to educational opportunity is a major problem faced by developing countries. With the enhanced access of ICTs, educational institutions and programmers can reach remote areas, thereby making quality teachers available to learners at a distance. Use of radio and television are examples in this direction. Not only can technology reach the remote areas, it can also address the needs of those who are traditionally excluded from mainstream educational processes, such as women and socially disadvantaged groups.

Promoting efficiency:

Efficiency of an educational system is measured by its ability to deliver quality education in cost-effective manner. The use of ICTs can reduce cost of education drastically as learners may not have to congregate at a place called School. It is also possible to think of using the existing resources in shift system by reducing the contact time between the student and teacher. There has been an erroneous notion of class time as equivalent to learning time, which if questioned can lead to use of ICTs in ways that can reduce the class time and also increase students' use of ICTs from places other than the classroom..

Improving management systems:

Use of technology can improve educational practices in terms of both the policy making and monitoring of the system. Use of computerized databases to keep records of student attendance, teacher presences, student achievements and other related information can lead to policy planning and evaluation of the system. It is more useful for day to day institutional management in general, and to classroom management, syllabus preparation and student engagements though diverse activities.

USING ICTs FOR ADULT EDUCATION

In order to have a better discussion on the use of ICTs in adult education, we will illustrate some examples as a showcase for technology use.

Radio:

Radio is by far the cheapest and most easily accessible technology available to us. Radio broadcast requires low capital investments, and if used appropriately can enhance the pedagogic value of adult literacy/education programmes. Besides wide coverage, and low cost, radio also improves thought process and helps in direct teaching through use of interactivity. Though radio has been used successfully, there a, there are some problems associated with reception, broadcast schedules and access.

Television:

Television is considered to be a much stronger medium because of the visual images. At the same time, it has inherent advantages and limitations as well of the symbol system it uses. Like radio, it is also cost-effective, and transcends barriers of distance, and geographical location. It combines both audio and video and therefore it is also highly suitable for mass education. The limitations of one-way communication are removed through the use of telephone. However, it is still a complex system that requires media literacy and sometimes the visuals become distracting elements, if not appropriately planned and scripted. Applications of television and teleconference for literacy and adult education programmers have proved very useful and met with success in countries like India, Australia and Mexico, among others.

Computers and Multimedia:

Use of computers ac 4 multimedia applications in adult education programmers bring in learner autonomy and interactivity. The Commonwealth of Learning Literacy (COLLIT) project in India and Zambia used learning centre equipped with computers, multimedia subject-based CDs, audio and video cassettes, video camera, etc which created a sustainable model of adult learning and resource centre. However, progress in the acquisition of literacy skills was variable in different centre and where the community is more involved and the instruction is more individualized, the acquisition of literacy skills was faster. The use of ICTs, in this case computers and multimedia, motivated the learners significantly.

Advantages of the use of computer education

• Quick access to information

• Easy availability of updated data

• Connecting Geographically dispersed regions

• Catering to the Individual differences

• Wider range of communication media

• Wider learning opportunities for pupils

Use of computer in day to day life of students and teachers

• Students use ICT as reference tool. They use computers to browse the internet to look information, project information and literature survey.

• Teachers use ICT in research for preparing teaching material; participate in online forums and online conference.

• Researchers use ICT tool to collect, process and analyze data.

• School administrators use ICT tool for administrative purpose to make sure that the entire operation runs smoothly.

Role of internet in curriculum evaluation and transaction

It can improve the quality of education in many ways. It opens doorways to a wealth of information, knowledge and educational resources, increasing opportunities for learning in and beyond the classroom. Teachers use online materials to prepare lessons, and students to extend their range of learning.

The Internet as an information medium in the education process

There is a widespread belief in the power of the Internet. Today, the media and the Internet are the main components of information and communication technology. The development of information exchange is progressing by leaps and bounds. The message can easily flows between people thousands of kilometers apart in less than a few seconds. Every year we observe a new, more effective, and more efficient electronic devices which increase circulation and exchange of information. Wide opportunities offered by the network led to increased interest in the various institutions. They developed a number of programs for teaching through the network. Network mode of action of universities refers to the tradition of distance learning successfully used in Western countries which created a lot of centres, institutes, and organizations supporting this process. Many of them have impressive achievements in the field of multimedia education and developed materials. There are many new concepts like virtual classroom, virtual university, “school without walls”, global university. All these terms point to the detachment of the education process from a traditional class with tables and blackboard. Learning via the Internet does not require a constant presence in front of a computer because all instructions, answers, assignments, and papers may be found in student’s inbox. Education using the Internet as a medium of the teaching process due to its specifics must be characterized by a strict definition of the course outline

and must have a script of further actions. The Internet is a very popular phenomenon so using it for educational purposes appears to be fully understood: correspondence courses, distance learning, video conference systems linked computer network, teaching by radio and television.

Use of Internet in teaching

- Teaching at School as well as Higher Education, mostly, concentrates on giving information which is not the sole objective of Teaching.
- Developing understanding and application of the concepts
- developing expression power
- developing reasoning and thinking power
- development of judgment and decision making ability
- improving comprehension, speed and vocabulary
- developing self-concept and value clarification
- developing proper study habits
- Developing tolerance and ambiguity, risk taking, capacity, scientific temper, etc.

Requirements of effective curriculum transaction are

- Planning
- Clarity of thought
- Organizing
- Knowing how we will transact
- Review of the work
- Team responsibility
- Clarity of communication
- Addressing different levels of children
- Knowing, observing and understanding children at all times
- Time management
- Alertness
- Material organization

Internet as a basic means of mass communication has a wide field of application, and it will increasingly gain in importance in the field of institutionalized and non-institutionalized education in the future. Some bold assumptions about the importance of the Internet in this area are aimed at predicting that the Internet will play a key role in this domain, which in particular refers to the emphasis on the importance of future distance education. The role of the Internet will increase in the future in all area of education, at all level of education, and also in domain of existing of different form of individual informal learning.

Curriculum Transaction incorporates:

*Effective planning for providing learning experiences for its learners,

*Organization of planning,

*Administration/implementation of the organized planning

*Evaluation of the implementations by the implementer and the experts in the relevant field.

Some of the requirements of effective curriculum transaction are:

*Planning

*Clarity of thought

*Knowing how we will transact

*Review of the work

*Team responsibility

*Clarity of communication

*Addressing different levels of children

*Knowing, observing and understanding children at all times

*Time management

*Alertness

*Material organization

*Room set up

*The way we reach out to the children

*Ready alternatives

Curriculum Transaction approaches is:

*Group work

*Project work

*Seminar presentations

*Assignments

*Symposia

*Discussions

*Workshop practices

*Preparation of learning materials

*Self and peer evaluation

*Micro teaching sessions

*Club activities

*Citizenship training camp

*Study tour

*Buzz sessions

*Use of ICT

*Portfolios

*Quiz

*Debates

*Peer teaching

*Brainstorming

*PowerPoint presentations

*Book reviews

*Research Colloquium

*Note making

*Note taking

*News reading in the morning assembly.

*Verse Recitation

*Thought for the day presentation by the students.

*Gardening

*Extension activities

*Panel discussion

*Extempore Speeches

*Paired leaning

*Criticism and discussion classes

*Album preparation

*Role play and simulation

*Black board sketches

*Co-operative learning

*Study circle

*Tutor-ward system

*Remedial Teaching

Curriculum Revision and Evaluation

The process of evaluation is undertaken in order to determine the strengths and weaknesses of an existing or an under-construction curriculum so that improvements can be made in curriculum design. Evaluation results are primarily a function of judging the effectiveness of the curriculum.

10.6.1 The Concept of Curriculum Evaluation

In the previous units of this block, you have studied how a curriculum is planned and developed. An integral part of such a development process is evaluation and that is what you will study in this unit. Here, evaluation means both assessments of students to find how much of the intended curriculum has been transacted and also what actually happens in a classroom as experienced by the students when they are involved in learning activities. These experiences of the students need not be confined to the four walls of a classroom and within the stipulated time frame of a rigid school schedule. These could also include activities which form part of hidden curriculum like wearing a school uniform, standing up when the teacher enters the class and Helping each other in organizing an exhibition in the school. Thus we are interested in looking at evaluation not just as the evaluation of activities inside the classroom but also as the evaluation of the school as a whole against the curriculum issues. There are differing views on this among teachers, parents and school authorities. There are geared towards that. There are other schools where emphasis is on the realization of hidden curriculum and overall development of the child.

Existing educational programmes are criticized not only from the point of view of their content, but also from the point of view of the mode of instruction. Although there is research evidence to prove that memorizing factual information contributes very little to the intellectual development of a student and does not improve his ability to solve problems, most textbooks are still crammed with factual information that students are required to memorise. Our team end-examination questions are also directed towards testing the memory power of the students. Both these aspects determine to a large extent the activities of a teacher in a classroom. As a result the teachers devote most of their time in a classroom in explaining difficult issues contained in a textbook. The textbooks or the examinations do not provide much opportunity for mental faculties like analysis, synthesis, discovery, problem solving and creativity. It is the process of curriculum evaluation which can provide a way to improve the system. Thus, curriculum evaluation is the collection and provision of evidence, on the basis of which decisions can be taken about the feasibility, efficiency, effectiveness and educational value of curricula.

Curriculum Evaluation Process

The curriculum evaluation process is not a one-shot affair. It is rather a dynamic and cyclic process. Curriculum evaluation plays its role in all stages of the curriculum cycle.
The curriculum cycle shows that curriculum evaluation is a comprehensive activity. It should be frequent and recurrent. It is needed at almost every stage of curriculum design and implementation. Though frequent evaluation of curriculum we show whether we are really moving towards the pre-fixed goals.

10.6.2 Need for Curriculum Evaluation

What would happen if the curriculum for a particular grade is not revised for a long time? Almost any one of you can guess the answer. It would become obsolete, recent developments in the field will not find a place in it; it will not be effective curriculum what should we do? We should evaluate the existing curriculum and modify it to make it more relevant. Thus the need for evaluating a curriculum emerges from the field. In any content area there would be developments taking place periodically and if the current changes are not incorporated, the students would be unable to know the reality. In order to incorporate recent developments and to fit them into the structure of the course one requires to analyse curriculum systematically. This scientific analysis if followed up logically leads to curriculum evaluation.

There could be quite some dead wood in terms of concepts and practices in a curriculum frame, which become outdated over time and are no longer in practice in the field. How do we remove such concepts and practices from the curriculum? This also requires a scientific basis and analysis. Curriculum evaluation helps one in taking such decisions objectively.

A particular curriculum may look good on paper but the actual output in terms of the quality of the product may not be judged very well by the consumers. For example, the post-secondary institutions (consumers or recipients of the secondary school products) may have several complaints about the way in which a particular content is taught at the secondary level. How do we improve the effectiveness of the curriculum implementation so as to reach the expected level of the post-secondary institutions? A curriculum evaluation exercise would help us modify curriculum and improve its effectiveness.

To improve the efficiency of a curriculum one has to analyse the outputs of and the inputs into the educational system and make the necessary modifications as revealed by the analysis. This can be accomplished by carrying out a curriculum evaluation.

There could be differences between the intended curriculum and the operational curriculum. Intended curriculum refers to the prescriptions in the curriculum document including the operational and evaluation procedures of a course. The operational curriculum refers to the actual processes in a classroom through which the intended curriculum is transacted.

There could be differences between what is intended and what is implemented. To reduce this gap and bring it to a reasonable level of acceptance, curriculum evaluation would again be helpful.

These examples show the need for curriculum evaluation during the development of a curriculum, as a review mechanism and also as an integral part of curriculum implementation.

10.6.3 Techniques of Curriculum Evaluation

Now the question arises "why do we need curriculum evaluation?" the professional response to this question stresses improvement of student learning, and hence improvement in the quality of education. The following are the main purposes of curriculum evaluation.

- To develop a new curriculum: if you wish to develop a new curriculum for a vocational course at the secondary stage, it would be worthwhile to evaluate a current curriculum from a different system before adopting it to our emerging requirements. The usual practice would be to prune an existing curriculum to suit our new requirements because at times the decisions in the planning process can be quite arbitrary. Such a process leads to the risk of overloading the curriculum. To make objective decisions on the development of the new curriculum, evaluation of the existing curriculum is necessary.
- To review a curriculum under implementation: it may be required by policy planners and decision makers to get an immediate feedback on the implementation of a curriculum in order to make amendments if required for effective realization of all the objectives related to it. A curriculum evaluation exercise would be necessary for this purpose.
- To remove 'dead wood' and update an existing curriculum: as discussed in sub-section 4.2.2, it is essential to remove obsolete ideas and practices from a curriculum and include current developments in the curriculum. In order to make objective decisions about inclusion or deletion of content or practices a curriculum evaluation exercise would again be necessary.

- To find out the effectiveness of a curriculum: To make an objective evaluation of the effectiveness of a curriculum in terms of the achievement of its immediate as well as long-term objectives, a curriculum evaluation exercise would be essential. This evaluation is different from the evaluation of the students of a course for the purpose of certification. The difference is that curriculum evaluation is more comprehensive and includes student evaluation plus the feelings generated among the students regarding appropriate-ness of the various components of the curriculum.

As shown by these examples, curriculum evaluation can help teachers and decision-makers take objective decisions on curriculum, and its development and implementation. This indeed is the major purpose of any curriculum evaluation exercise. The results of evaluation can be used to improve future educational effort; otherwise there is little sense in carrying out any curriculum evaluation activity.

The administrators, policy makers, teachers, parents and even students are concerned with the way(s) in which a particular school curriculum is being implemented_ They have reasons enough for making it accountable. It is the curriculum evaluation process alone that can provide immediate feedback on the status of implementation of a curriculum_ Thus, process of curriculum evaluation gains importance because of these reasons.

You have read about the various considerations for curriculum planning i.e., the demands of the discipline, needs of the students, institutional demands, social and environmental considerations. If one has to plan a curriculum according to these considerations, a through need analysis has to be carried out. This can be accomplished through the curriculum evaluation process. This would help the curriculum planners identify and list the desired output specifications of the curriculum being planned after a careful analysis of the job and the tasks to be carried out by the students after completion of the course. In this context also, the curriculum evaluation process gains importance.

You have studied the curriculum development process in which the developmental try-out of the curriculum was a necessary step. This try-out is made with the intention of collecting necessary feedback from the field, on the curriculum. A systematic collection of such information and its utilization is nothing but a curriculum evaluation exercise in a micro context. This exercise also is of importance in the total process of curriculum development.
In this way we can say that the curriculum evaluation exercise derives considerable importance in the total process of curriculum development and implementation.

10.6.4 Sources of Curriculum Evaluation

These are several sources from where meaningful information can be collected regarding a given school curriculum. Major sources are discussed below.

Students: the students of a particular course are the primary and most important source of information regarding how relevant the intended curriculum is and how well it is being implemented. The list of the output specifications can be given to the students who are undergoing a particular course and detailed information can be gathered in two ways:

- By finding out whether the students have really achieved the intended output specifications. They feel they have achieved the objectives of the course. Information is generally gathered through the evaluation system as prescribed in the curriculum for certification purposes and is mostly quantitative in nature.
- By finding out the perceptions of students regarding the extent to which they feel they have achieved the objectives of the course. This information is more qualitative in nature as these are the perceptions of students and they are of immense value from the point of view of revising the curriculum. Such valuable data can be collected even from students who have passed out and who have already learnt through the implementation of the curriculum.

Teachers: curriculum review/evaluation should be done by the teachers in the school. However the involvement of others cannot be denied. We, the teachers, are part of the curriculum in the sense that we transact the curriculum in the class. We can give valuable information regarding the implementation of the curriculum. The teachers are valuable agents of curriculum evaluation. Teachers who are not currently teaching the subject but have sufficient content knowledge and background information on a particular curriculum can also be helpful in curriculum evaluation in addition to those teachers who are currently implementing the curriculum. You, as teacher, should have requisite skills to review a curriculum. To help develop this competence in you is one of the objectives of this course.

Subject experts: To get balanced information on the implementation of a curriculum, especially from the discipline point of view, it would be worthwhile to consider the views of other subject experts in the field as relevant and reliable. The subject experts could be from other systems like a practitioner in the field or even a self-employed person. The experts will provide valuable information on the field conditions which would be of tremendous value for the purpose of curriculum evaluation.

Curriculum experts: curriculum experts can provide information on the modern techniques used for developing a curriculum so that it becomes more meaningful from the student's point

of view. The age old practice of assembling content points, in a telegraphic language into a syllabus, has become outdated. In the meaningful curriculum the output specifications, are made clear, i.e. the curriculum specifies as to what the students will be able to do at the end of the course, the conditions under which they will be observed and the level of acceptance of errors. Curriculum experts have come a long way since then and their assistance in curriculum evaluation is inevitable. Therefore, curriculum experts are a good source of information for curriculum evaluation.

Policy makers: Policy makers occupying responsible positions in apex bodies like Central Board of Secondary Education(CBSE), National Council Educational Research& Training(NCERT), National Open School(NOS) and State Boards of Secondary Education are also excellent sources of information for curriculum evaluation. By virtue of their position they are better informed about the current and the envisaged changes in government policies regarding economy, industry, agriculture and education. All these areas have direct or indirect implications for school curriculum. There have been quite a few instances in the recent past where even the change of governments in a state was responsible for making specific changes in textbooks of History Science. Therefore, policy makers can be an important source for the curriculum evaluation.

Community: the local community where the products (educated/trained persons) of a particular course are to be absorbed can be yet another important source of information for curriculum evaluation. The requirements of the local community can make the curriculum relevant and need-based or otherwise. A curriculum revised on the basis of needs and requirements of the community will be able to serve the cause of the community better in producing better socialized and more responsible citizens.

Dropouts sample: Those students who have dropped out of a particular course can be yet another valuable source of information for curriculum evaluation. These students can pin-point the curricular factors that might have been responsible for their withdrawal from the course. A diagnostic test administered on these dropouts can provide valuable information regarding the misconceptions generated by the present curriculum. This feedback will help in modifying or improving the curriculum.

Employers and entrepreneurs: The opinion of the employers who have to absorb the products needed by them, will reflect on the strengths and weaknesses of the curriculum. Those who are self-employed, even in the unorganized service sector can provide valuable information on the strengths and weaknesses of a particular curriculum. Such information can help in making the curriculum socially relevant and useful.

10.6.5 Methods of Curriculum Evaluation

There are several aspects of curriculum evaluation which makes the evaluation process a comprehensive activity. Some of these activities are as follows: Pre-testing/Post-testing This is one of the most commonly used aspects of evaluation of a curriculum. The procedure adopted is similar to that of a before-use and after-use strategy.

A test is devised to measure the terminal behaviour of students after have covered a curriculum. Sometimes two parallel forms of the test are developed as Ti and T2. One of these tests is administered on the students before they start on a particular course in order to assess the level of their knowledge or competence. Learner score's on pre-tests reveal the status of the student against the set criteria or the expected terminal behavior. The students are then exposed to the curricular experiences as planned and at the end they are given the second test. The difference between the test scores of pre-test and post-test is attributed to the effectiveness of the curriculum and thus is one way of evaluating the curriculum. If the improvements are substantial as expected by the curriculum framers, it established the strength of the curriculum. If there are some terminal behaviours that have not been achieved by many or even by one group of the students, it indicates that the curriculum has to be modified. This pre-and post-test can be diagrammatically represented as follows:

Pre and Post Testing of Curriculum

In many standardized curriculum materials you will find such provisions whereby you can assess the student's current knowledge and skills in a particular area and then take up the course concentrating on those aspects in which the student is weak and skipping certain portions where he/she is strong as revealed through the pre-test. Such structured curriculum is easy to adapt to a specific environment or situation; it can be modified according to the required specifications. Most of the Indian school curricula are not so highly structured. Individualized learning kits for different school grades are also available; kits have the inbuilt pre-and post-tests. That can be used by the teachers.

You, as a school teacher, can attempt to develop such curriculum material especially in those areas where a large number of students show common difficulties in learning. Such activities will help you serve the student community better.

Norm-Referenced Testing and Criterion-Referenced Testing

Testing a curriculum can be done with reference to a set of criteria called criterion-referenced testing(CRT) or in relation to a norm like a normal distribution called norms-referenced testing(NRT). Generally, in the Indian school system, we use norm-referenced testing where the results of a test are used to compare two sets of curriculum. On the basis of

this type of testing, the curriculum can be ranked as high or low. In criterion-referenced testing, all the objectives of a course are listed in behavioural terms specifying the conditions under which the criteria are to be observed and the level of acceptance with tolerance limits. On implementation of the curriculum if the objectives are attained to the specified level, it indicates the extent to which the curriculum has served its purpose. Comparing with a norm or standard, one can evaluate a curriculum for its attainment of objectives.

Formative Evaluation

We have tried to minimize the use of jargon so that evaluation can be seen as a straight forward, easily attainable process. Even then there are some terms that can be used to provide a deeper understanding of some of the issues involved in curriculum development, formative evaluation in one such phrase. It is conducted during the planning and development phases of curriculum. Formative evaluation is carried out during the process of curriculum development. The result of formative evaluation provides feedback to curriculum developers and enables them to correct flaws detected in the curriculum. Formative evaluation thus contributes and hence the formative evaluation. The results of formative evaluation may help in the following two activities: selection of course components, and modification of course elements.

Formative evaluation is carried out at two levels-curriculum development process level (process evaluation) and curriculum implementation level (product evaluation). Let us elaborate these two levels of formative evaluation of curriculum.

Process Evaluation:

Process evaluation refers to evaluating the curriculum implementation processes, like the variety of methods and media used and their appropriateness. Similarly, the attainment of long term objectives which cannot be measured in tangible forms can only be inferred through a particular way of curriculum implementation. This is done through the process evaluation. For example, developing a scientific attitude is a long term objective of science subjects. This cannot be achieved through specific activity but the way the curriculum is implemented or transacted over a long period. Such objectives can be evaluated only through a continuous evaluation of the processes.

Product Evaluation: The product of a curriculum is the student with his learning outputs in terms of knowledge, skills or attitudes. Evaluating him or her continuously during the implementation of the curriculum will be formative evaluation of the product. The data obtained from this evaluation can be continuously used to modify the learning experiences so that all the objectives of the course are attained by all students. This level of attainment of

objectives is called 'mastery level'. Therefore, formative evaluation of the product helps in achieving mastery learning by all the students. Since the evaluation is formative there is a scope for improvements and modifications at every stage of development.

10.7 Methods of Curriculum Evaluation

Curriculum evaluation can be done by external agency or by insiders (those who are involved in the planning and development of the curriculum) or by a combination of both the groups. A combination of outsiders and insiders would be preferable to get a comprehensive and objective evaluation. The methods of evaluation vary from a questionnaire based evaluation to evaluation based on unstructured interview. The method of collecting information would depend on the objective evaluation. When we require more qualitative descriptions of the implementation of the curriculum, unstructured or structured observations can be used. When we require quantitative data regarding various aspects of a curriculum being designed, a check-list can also be used. Similarly many other techniques can be used depending on the purpose of evaluation and the stage of evaluation i.e., whether evaluation is being done at the development stage or at the implementation stage. Curriculum evaluation at the planning stage is mostly confined to job analysis or task analysis. Similarly the content analysis that follows also requires the support of formative evaluation. These exercises are usually not practiced in schools and so the curriculum suffers from several drawbacks. A well prepared school curriculum should accommodate an evaluation cycle at the planning stage also.

10.7.1 Focus of curricular evaluation

One of the major tasks during the development of a curriculum is to prepare an exhaustive list of specific objectives to be achieved through the curriculum. Once the list is prepared, it has to undergo an evaluation cycle. The list may be supplied to a set of practicing teachers for their specific comments, additions and deletions, if any. In addition to working teachers, information from other individuals like prospective employers of the products, the next higher grade teachers, a group of prospective students, planners and administrators, etc., can be sought to check whether the entry behavior of their grade suits the output specifications. Based on the feedback collected from the evaluators the objectives can be modified.

A second major task which requires the support of an evaluation exercise during the development of a curriculum is the instructional materials that have been prepared to achieve the objectives. These materials have to be tried out on a sample of students for their feedback

on their learning routes and difficulties. A field tryout with a small sample is ideal in getting adequate evaluation information from a sample. This can be used for further improvement of the material. Data collected from the inbuilt evaluation exercises of the learning material can also be used in modifying the learning material. Curriculum material here refers to all learning materials which includes textbooks, self-learning text, audio and video programmes, teacher's manual, assignment questions, project work, etc. similarly, the evaluation procedures to be adopted during curriculum development also need a tryout and possibly further modification based on data collected through the tryout.

Evaluation during Curriculum Implementation

After the curriculum has been tested and the curriculum materials are duly modified, it is important that the teachers and administrators are oriented and trained for proper implementation of curriculum. To implement curriculum without introductory or supporting courses would be quite a severe risk; it may lead to the use of new materials in unsatisfactory ways. Training of the personnel involved and the provisions of necessary facilities and resources are essential for successful implantation of any curriculum.

References

1. Allan C. Ornstein, Francis P. Hunkins (1983), Curriculum Foundations, Principles and Issues, Allyn and Bacon, London.
2. B.D Bhatt (1996), Curriculum Reform Change and Continuity, Kanishka Publishers, Distributors, New Delhi.
3. E.C Cuff and G.C.F. Payne (1985), Crisis in the Curriculum, Croom Helm, London.
4. Hilda Taba (1962), Curriculum Development Theory and Practice, Harcourt Brace Jovanovich, New York.
5. Maurice Holt (1978), The Common Curriculum its Structure and Style in the Comprehensive School, Routledge and Kegan Paul, Boston.
6. William H. Schubert (1986), Curriculum Perspective, Paradigm and Possibility, MacMillan Publishing Company, New York, London.
7. Orenstein A.C and Hunkins F.P (1988). Curriculum: Foundations, Principles and Issues. New Jersey; Prentice Hall. 10.
8. Dewey, John (1996). The child and the Curriculum, Chicago: The University of Chicago Press.
9. Diamond Robert, M. Designing and Improving Course in Higher Education: A Systematic Approach, California: Jossey.
10. Doll Ronal. C. Curriculum Improvement: Decision Making Process London: Allyon and Bacon.
11. Saylor, G.J and Alexander, W. (1985) Planning Curriculum of School. New York: Holt Richard and Winston.
12. Tanner, D and Tanner, L.N (1975) Curriculum Development: Theory and Practice New York : MacMillan.
13. www.ncde.go.ug
14. www.wcedcurriculum.westerncap.gov.
15. www.ccsdli.org