Educational Psychology

Book · December 2018

CITATIONS
2

READS
32,216

1 author:

Dr .AR .Saravanakumar
Alagappa University
338 PUBLICATIONS **1,256** CITATIONS

SEE PROFILE

Educational Psychology

Dr.AR. Saravanakumar
Assistant Professor of Education, Directorate of Distance Education, Alagappa University, Karaikudi 630003.Tamil Nadu,India

Educational Psychology

Author : **Dr.AR. Saravanakumar**

ISBN : **978 - 1 -73033 - 043 - 8**

Publisher : **SARA BOOK PUBLICATION**
303, Maharana Pratap Complex
B/H.V. S. Hospital
Paldi, Ahmedabad - 380006. Gujarat. (INDIA).
Phone: +91 8866003636, 9904000288

First Edition : November 2016

Price : 300/-

About the book

This book 'Educational Psychology' aims at developing the understanding of basic concepts and principles of human development,motivation and learning,and their implication for the mentors. The theoretical aspects of psychology in this book has produced a strong focus on Educational Psychology. I hope this book will be very useful not only to the learners but also to the mentors as it plays a key role in the teaching-learning process

Content

UNIT I

INTRODUCTION TO PSYCHOLOGY

1.1 INTRODUCTION

In this unit, we are going to define Psychology, Educational Psychology. We are also going to discuss the nature, scope and importance of Educational Psychology, and its significance to classroom teacher. At the end of this unit we are going to discuss the schools and methods of Psychology.

1.2 PSYCHOLOGY

1.2.1 Definition of Psychology

Etymologically the word Psychology means the study of soul on account of its derivation from the two Greek words- Psyche (soul) and logos (science of study). What is soul? How can it be studied? The inability to answer such questions leads some ancient Greek philosophers to define Psychology as a 'study of mind'. Although the word mind was less mysterious and vague than soul, it also faced the same question such as: What is mind? How can it be studied? Etc. and consequently this definition was also rejected. Failure to define to search for some other suitable definitions, William James defined Psychology the term soul and mind persuaded the Philosophers and Psychologists as the description and explanation of state of consciousness as such. By consciousness, the Psychologist meant awareness of wakefulness. There were several interpretations of consciousness and this concept was rejected. The latest and modern concept of Psychology is in terms of behaviour. J.B. Watson defined Psychology as the 'Science of Behaviour.' McDougal defines Psychology is a science which aims to give us better understanding and control of the behaviour of the organism as a whole. The above account of the definitions regarding the subject Psychology clearly reveals that the meaning and concept of this subject has frequently changed its shape based on its dependence upon philosophical or scientific thinking. Commenting over this aspect Woodworth says, "First Psychology lost its soul, then its mind, then it lost its consciousness. It still has behaviour of sort." Although even at this final stage there seems to be no agreement over a universal definition of Psychology, yet the definitions may be generally viewed in the light of behaviour. It may then be concluded that Psychology is a science of behaviour or a scientific study of behavioural activities and experiences. Psychologists define Psychology in various ways. The nature of Psychology is understood from the following definitions

- **Crow and Crow-** 'Psychology is the study of human behaviour and human relationships.'
- **Dewey** – 'Psychology is the science of the facts or phenomena of self.'
- **Feldman** – 'Psychology is the scientific study of behaviour and mental process.'
- **Koffka-**Psychology is the scientific study of behaviour of living creatures in their contact with the outer world.
- **McDougal-**Psychology is the science which aims to give us better understanding and control of the behaviour and experience.'
- **Skinner-**'Psychology is the science of behaviour and experience.'
- **Woodworth-'**Psychology undertakes to make a scientific study of the individual considered as a unit as he really is in his dealings with other individuals and with the word.

1.2.2 Relationship between Psychology and Education

Education and Psychology are related intimately. Education deals with modification of behaviour and Psychology studies the behaviour as it grows and evolves. You cannot modify the behaviour without studying the behaviour and its peculiarities. As such both are inter-related and dependent. At many places Psychology leads the process of dependent. It tells:

- About needs and aspiration of child and hence which is the best curriculum for the child?
- What are the methods to be adopted to motivate and teach?
- How best is to carry on the process of Education?

Psychology thus is a great boon to education and it is because of the contribution of Psychology that education has leased to be a rigid process as it used to be in good old days. It is dynamic process and saying of Pestalozzi 'Psychologist education' tells us that both are intimately related.

1.2.3. Development of Psychology

Till 19th century, psychology was studied only as a branch of philosophy. When we look at the original meaning of the word psychology this will become clear. The word psychology comes from the two Greek words, 'psyche'(soul) and 'logus'(science).So the root meaning of the word Psychology is that it is a science of soul. This is the traditional approach to the study of psychology. Traditional psychologists attempted to study the location of the soul and its nature and its state after the death of the individual. When we are not sure about the location of the soul, attempting to investigate its nature is impossible. So the definition of psychology as the study of soul was given up. Then it was defined as a science of mind. Mind functions in three domains viz. Cognitive (thinking), Affective (feeling) and Conative (willing). A mental act is different from a physical act. If a piece of iron is placed near a magnet, the iron moves towards magnet. This is a physical and no thinking, feeling or willing is involved on the part of iron or magnet. But on the contrary, when we place a dish of milk before a cat, the cat moves towards the milk and drink it. This is a mental act because the cat driven by hunger motive, knowing (thinking) the white liquid is milk, which it likes (feeling part) to drink, it actually moves (willing part) towards the milk. Thus every human act or behaviour emanates from an internal motive, as the British psychologist McDougall puts it.

According to **William Mcdougall,** who propounded the **'Hormic School of psychology'** (Purposivism), every response of man is due to a purpose or inner motive called 'instinct'. McDougall criticized behaviourism. He stated that response occurs, not always due to the occurrence of a stimulus. It is not necessary that we feel the desire to eat when we look at sweets. Desire to eat depends upon the hunger motive. Different motives result in different responses. According to McDougall, it is the instinct that motivates human behaviour. He further believes that an emotion is present in any instinctive activity. Each instinct associated with some emotions otherwise known as **'sentiments'** become the centre of all activities. Without them no activity is possible. Though all of us have similar instincts, they get modified according to one's environment. Our behaviour depends upon the modification of the instincts or our sentiments. In other words, sentiments are the motives of our behaviour and these sentiments may be analyzed into instincts and emotions. The instincts and emotions are the bases of human behaviour according to Hormic Psychology.

Titchner, who developed, the theory of '**Structuralism'** believed that mind is the basis of all human actions. According to him there are three states of mind- Cognitive, Affective and Conative. The mind was regarded as consciousness and the ultimate elements of it are sensation, feelings and images. The nature and structure of consciousness can be studied through **introspection.** To introspect means to look within. **Psychology** thus came **to be defined as a science of consciousness.**

Behaviour psychologists like **J.B. Watson** of U.S.A and others questioned the validity of introspection and said that psychology should be an objective science. They bitterly criticized introspection as unreliable. They defined psychology as a science of behaviour. They tried to define behaviour in terms of stimulus and response, popularity known as S-R formula. For every stimulus, there is a response. The response to stimulus is behaviour. If you are pricked with a pin, there is a jerk of the body. 'Pricking' is the stimulus and the 'jerk' is the response or behaviour. A simple behaviour consists of the basic unit of behaviour i.e .S.R. Any complex behaviour can be analyzed in terms of S-R Units obtained sequentially. For behaviourists, **environment** is the determinant of one's response or behaviour and heredity has no influence what so ever. They also deny McDougall's Theory of instincts. **Bernard**, the behaviourist states that we do not allow our instincts like fear, sex, acquisition, affiliation etc, to operate as they are; but we modify them in the midst of our social environment. Behaviourists also deny any role for mind in determining our behaviour. They argue that we talk because of the movement of our tongue and not because of thinking of functioning of the mind.

As a revolt against behaviourism and structuralism, **Gestalt school of psychology** emerged in 1912. Gestalists advocated that everything should be viewed as a whole and studied in its totality. The researches of **Werthemer, kohler and Koffka** contributed a lot to the development of this school. The German word **'Gestalt'** refers to **'configuration', 'Whole', or 'totality'.** We generally perceive the whole and not its parts. The 'whole' is not the addition of the parts but something more than that. When we purchase a bicycle, we only perceive it as a whole cycle and not as spokes, wheel, saddle, chain, mudguard etc. Sometimes we fail to notice even some missing parts like bell or lock. So, according to Gestalists **perception is unified and learning is** nothing but **reorganization of the field of perception.** Their main areas of investigation are perception and learning. To perceive an object or event, apart from our sensation of the object or event, our previous experiences about them are also called into play. Things are perceived in the canvas of our background experience. Gestalists advocate that human behaviour is based on one's perception and perception is influenced by our past experiences stored in our mind. For them behaviour is physical as well as mental or cognitive. A particular stimulus does not elicit the same response from every one. People express different responses as per their previous experiences.

Then came the Viennese physician **Sigmund Freud** (1856-1939) on the scene with a bang proclaiming the school of psychology called **'Psycho-analysis'.** While structuralism gave emphasis for the conscious mind psycho-analysis emphasized the role of unconscious mind in the actions of individuals. Since psycho-analysis goes deep into the subterranean level of the mind, this is also known as **depth psychology.** The other schools of psychology deal only with surface activities. But psycho- analysis develops deep into the roots and springs of human behaviour. The unconscious mind is the seat of repressed tendencies and desires, not approved by the society. Sex plays an important role. According to Freud in the drama of human existence, sex is the villain of the peace. Freud holds that early childhood experiences determine the development of personality.

He speaks of human personality made up of three major systems- **Id** (operating at unconscious level), **Ego** (operating at conscious and sub-conscious levels) **Super Ego** (operating at conscious level).

Freud's disciples **Adler** and **Car Jung** broke away from him and founded their own schools of psychology viz., **'Individual Psychology' and 'Analytical Psychology'** respectively. Unlike Freud , Jung stresses past experiences of the individual. He thinks religion has a lot of therapeutic value. According to Adler, birth order of an individual in the family has much influence in determining one's way of life.

Plaget's Cognitive psychology, Humanistic psychology of **Carl Rogers, Maslow** and others have also significantly contributed to the growth of psychology and made it attain today the status of positive behavioural science. As a pure science, psychology is concerned with systematic study of behaviour and verification through experimentation. We can bring psychology under the category of 'Bio-Social science'.

The components of behaviour are:
i. The conscious experiences of which the organism is aware of, like that of being hungry or having pain when injured, etc. and

ii. The unconscious process: (e.g.) without any specific reason we get irritated with some people, become friendly with others etc.

To attain this significant status, many had contributed to the growth of psychology, of whom the following are notable.

1. E.H. Weber: Forerunner for conducting psychology experiments: examined the methods of measuring sensory experiences based on which formed the Weber's Law.

2. G.T. Fechner (1860): Published his book Elements of Psycho-physics which investigated problems in sensation and perception.

3. Wilhelm Wundt (1879). He is called as Father of Psychology. He established the first psychology laboratory at 'Leipzig' in Germany. He investigated on attention, reaction time, memory association, emotions etc. He established the method of introspection as a technique of data collection. He is the founder of structuralist school of psychology.

4. Sir Francis Galton (1822-1911): Studied individual differences using statistical techniques (use of correlation coefficients).

5. Ivan Pavlov (1849-1936): Studied conditioned reflexes.

6. E.L. Thorndike (1874-1947): Formed the Trial and Error theory of learning and laws of learning: advocated the Multifactor theory of intelligence.

7. J.M. Cattell (1860-1944): Developed quantitative methods in psychology: was a assistant to Wundt established his psychology laboratory at Columbia in America

8. E.B. Titchner (1867-1929): Represented structural school in America

9. G. Stanley Halt (1846-1924): Wundt's famous American student: began systematic study in child psychology in the U.S.

10. Mesmer: Clinical-psychological methods.

11. Jean Piaget: Theory of cognitive development in children.

12. Sigmund Freud (1856-1939): Founding father of psycho-analysis and known as **Father of Modern Psychology.**

13. Alfred Binet (1905): Developed the concept of mental age; constructed the first intelligence test.

14. B.F. Skinner: Operant conditioning in learning.

15. Weschler: Developed Adult Intelligence Scale.

1.3. SCHOOLS OF PSYCHOLOGY

Psychology has developed in the form of different schools. These different schools may study the mental life of man, by their techniques. Three of the important schools of Psychology are discussed in this section. They are:

- Behavioural School of Psychology
- Psycho Analytical School of Psychology.
- Cognitive School of Psychology.

These schools try to study the human mind on the basis of certain principles. These principles were based on the understanding of the protagonists' and advocates of the schools. Though no school can be called complete but it also cannot be denied that it made a very valuable contribution to the history and development of psychology.

1.3.1. Behavioural Psychology

Behavioural school of psychology originated with the psychologist John B. Watson. He concluded that the whole idea of consciousness is absurd. Consciousness cannot be proved by any scientific test, for consciousness cannot be seen, touched or exhibited in a test tube. Even if it exists it cannot be studied scientifically, because it is subjected only to private inspection. Therefore, if we intend to make psychology a science of behaviour we should concentrate only on the observable and measurable behaviour. The theory of behaviourism as propagated by Watson was in fact based on the findings of the Russian psychologist Ivan Pavlov. In his classical conditioning experiment, Pavlov conditioned a dog to salivate at the sound of a bell by substituting that sound for the sight and smell of meat. He concluded that all behaviour is a response to some stimulus in the environment. Watson tried to apply this approach in the field of human behaviour. Behaviourism, in this way, tries to project human beings as little more than a rather complex machine which response in a particular set function to a particular kind of stimulation. Behaviour of an individual may, thus be supposed to be controlled by environmental forces by the hereditary endowments or innate differences.

The strong conviction about the stimulus response, automatisation and environmental influences made Watson to assert as: "Give me a dozen healthy infants, we informed and my own specified word to bring them up in and I will guarantee to take any one at random and train him to become any type of specialist I might select-doctor, lawyer, artist, merchant chief and yes, even beggar man and thief, regardless of his talents, penchants, tendencies, abilities, vocations and race of his ancestors." Behaviourism of Watson and

his disciples, brought a new era in the field of psychology by making it somewhat materialistic, mechanistic, deterministic and objective like most of the physical and natural sciences. However, it suffered from a number of drawbacks, limitations and short-comings. For this reason it has been subjected to criticism and being modified and refined in a number of ways by the contemporary psychologists.

1.3.2. Cognitive Psychology

The main theme of this new school is cognitive revolution. This contrasts with behaviourism. By referring to it as it as the black box theory, it is implied that behaviourists are concerned with the output or response (R) of the organism in a certain situation and sometimes they are concerned with the input or stimulus (S) but do not consider what transpires between the stimulus and response. This unexplored element is represented by a 'black box' which intervenes between S and R. Cognitive school of Psychology deals with man's thinking, memory, language, development, perception, imagery and other mental processes. Also it deals with the higher human mental functions like insight, creativity and problem solving. Cognitive psychologists are totally opposed to the stimulus response approach of the behaviourists. They maintain that there is more to learning and behaving than just single responses to stimulus. The human mind does not accept information from its environment in exactly the form and style that it is conveyed to him. The conveyed information is compared with the information already stored in the mind. Then it is analyzed and often enlarged upon and given a quire new form. Finally, it is interpreted and then used or stored according to the need of the time.

Cognitive psychology thus presents the system's view point to explain the behavioural mechanism. In this system, whatever is conveyed through stimuli in the environment is the input. The cognitive functioning of the human mind is the 'process' and the result of the cognitive functioning is the 'output'. Tolman has made notable contributions in the field of learning, thinking and creative functioning. While explaining the problem solving behaviour of the higher organisms, he stated that the organism tries to set up mental hypotheses through purposeful behaviour. Piaget has shown keen interest on the study of development of cognitive abilities and operation of cognitive processes in children. He has outlined a definite pattern and stages of development of cognitive abilities depending upon the biological readiness of the children.

1.3.3. Psychoanalytic Psychology

Psychoanalytic psychology was the brain-child of Sigmund Freud. This movement put forward views quite contrary to structuralism, functionalism, behaviourism for explaining human behaviour. Freud presented a new dimension in the field of psychology. The influence of psychoanalysis in terms of the totality of human behaviour including the conscious, subconscious and unconscious behaviour, Structure of the psyche, the concept of repression, catharsis in the form of revealing the unconscious, the psychosexual development and giving sex it s rightful place in the realm of human behaviour, will always remain praise worthy and memorable.

Later, an association for the development of psychoanalysis was formed. The personalities associated with this school became famous either by virtue of their efforts in advocating. Freud's point of view or because of the establishment of their own psychoanalytic systems based upon their own views. Two systems, namely, individual's psychology established by Alfred Adler and analytical psychology, established by Carl Jung are note worthy. In these systems, an effort was made to provide some general urge

as a substitute for sex which was given excessive importance by Freud. Adler provided a substitute in the form of the self-assertion or the power-seeking motive and laid emphasis on the individuality of the subject by advocating the proposition of the life-style Jung replaced the sex urge with the more comprehensive term 'libido' or the 'life urge'.

1.4. METHODS OF PSYCHOLOGY

Educational Psychology employs various methods to improve teaching-learning process in the classroom. It uses methods to gather facts about the nature of children: and how they learn. It employs methods to know how they develop. It employs methods to know how child's personalities like learning, social adjustment, or skill grows from the elementary stage to a complex one. It studies how a group of children passes through the several stages of growth and development. As educational psychology is an applied branch of general psychology, it makes use of methods of general psychology. Some of the most commonly used methods of psychology or educational psychology are:

- Introspection methods
- Observation method
- Interview method
- Experimental method
- Case-study method
- Differential method

In this section we will try to discuss all these methods.

1.4.1. Introspection Method

Introspection is composed of two words 'intro' and 'aspection'. 'Intro' means 'within or' inward' and 'aspection' means 'looking'. Hence it implies self-observation or looking 'within' or looking 'inward' to experience one's own mental state. It is a process for examine one's own mental process of thought, feeling and motives. An individual looks within, observes, analyses and reports his own feelings. Let us explain this process with the help of an example. Suppose you are happy and in this state of happiness you look within yourself. It is said that you are introspecting your own mental feelings and examining what is going on in your mental process in the state of happiness. Similarly, you may introspect in state of anger or fear etc. Introspection is also defined as the notice which the mind takes of itself. Introspection is the oldest method which was formerly used by philosophers. This method was developed by structuralists in psychology who defined psychology as the study of conscious experience of the individual.

Merits of the Method of Introspection

- It is the most economical method and it does not involve any apparatus or laboratory for its use.
- This method can be used at anytime and everywhere.
- It is the only method that an individual knows his/her emotions and feelings

Demerits of the method of Introspection

- Data collected through this method is highly subjective.
- There is ample scope for the individual to hide facts
- Abnormal individuals cannot be introspected.

1.4.2. Observation Method

Observation is one of the oldest techniques that man has made use of. It is defined as seeing things as they are in their natural setting. It does not mean seeing things as they were or as they should be. Observation deals with the overt behaviour of persons in appropriate situations. Observation has been defined as 'measurement without instruments'. 'In education, observation is the most commonly employed all measurement techniques.

Types of observation

Observation is of following types:

- Participant observation
- Non-participant observation
- Structured observation
- Unstructured observation

Participant Observation: Here the observer plays a double role. He becomes by and large a member of the group under observation and shares the situation as a visiting stranger, an eager learner and an attentive listener.

Non-participant Observation: This is used with such groups as infants, children of abnormal persons. The observer takes such a position as he is able to observe in detail the behaviour of the individual under observation. The position of the observer is least disturbing to the subject under study.

Structured Observation: Structured observation starts with relatively specific formulations. The observer in advance setup categories in terms of which he wishes to analyze the problem. The observer always keeps in view;

- A frame of reference
- Time units
- Limits of an act

Unstructured Observation: It mainly takes the form of participant observation. The observer takes the role of a member of the group.

Merits of the method of Observation

- Observation can be used with children of all ages.
- It does not require any special tool or equipment.
- It is adaptable both to the individual and groups.

Demerits of the method of Observation

- There is a great scope for personal prejudices and bias of the observer.
- Records may not be written with cent percent accuracy as the observation is recorded after the actions of the observed.
- It reveals the overt behaviour only.

1.4.3. Interview Method

Interview method provides an opportunity for getting information directly from the subject about his behaviour in fact to-face contact or relationship. Here the subject and

the psychologist both engage themselves in the mutual exchange of idea as and information. For this purpose, the interviewer makes an attempt to fix a fact –to-face appointment with the person whose behaviour he wants to investigate. The major steps to be followed in this method can be listed as below:

- Preparation for the Interview
- Taking an Interview
- Closure of the interview.

Merits of the method of Interview

- Interview enables the teacher to tackle his /her everyday classroom problems.
- It is a superior data collecting device.
- It creates friendly atmosphere for proper response.
- It promotes exchange of ideas.
- Information received through interview is more reliable.

Demerits of the Method of Interview

- It is subjective
- Interviewer may try to tackle a minor problem.
- Interview is placed in an artificial situation
- Sometimes it becomes difficult to interpret the results of an interview
- Interviewee may not give details of himself/herself.

1.4.4. Experimental Method

It is the most objective and scientific method for studying behaviour. The investigator studies the cause and effect relationship regarding human behaviour by performing experiments. Experiment may be conducted in a laboratory or a classroom or other field situations.

Types of Experimental Method

Experimental Method is of following types:

- Control Test Method
- Control Group Method
- Rotation Method.

Control Test Method: In this method we try to differentiate by observing the performance under different conditions. First we observe under normal conditions and then again with one condition changed. There is no need of having two different groups of subjects for the experiment. Only the measures can be taken several times under different conditions.

Control group Method: Control test method possesses a serious drawback known ass; positive practice effect. In control group method we can minimize the practice effect. Here two separate groups, known as experimental group and control group are taken. They are equated or matched on various traits like age, sex, intelligence and other personality characteristics.

Rotation Method: This method consists of presenting two or more stimulating situations to the experimental subjects in as many sequences as necessary to control the serial effects of fatigue or practice.

Merits of the Experimental Method

- It is the most objectives and systematic method of getting reliable data.
- The findings of the experimental method are open to critical examination and verification.
- This method allows maximum control over the phenomena under investigation.

Demerits of the Experimental Method

- Since mental processes are constantly fluctuating in character, they cannot be detained for the purpose of experimental study.
- It is costly and time-consuming method
- It is extremely difficult to control all other causative factors except the one under study.

1.4.5. Case Study Method

A case study is the study of an individual case. Case study method is usually used for studying the behaviour problems of a maladjusted or deviant individual. Various steps involved in case study method are:

- Determination of the status of the phenomenon under investigation through direct observation or measurement
- Determination of the most probable antecedents of the case
- Formulation of a definite hypothesis or a set of hypotheses through knowledge of similar cases.
- Verification of the hypothesis
- Remedial steps
- Follow up of the case.

There are three types of case studies:

- Case studies of individuals.
- Case studies of institutions.
- Case studies of communities.

Merits of the Case Study Method

- Case study considers all aspects of the child. Hence, it is highly reliable and can be used as a tool of evaluation.
- It helps to understand the causes of maladjustment.
- It helps in suggesting remedial measures for the rehabilitation of maladjusted cases.
- It helps the teacher to gain better concept of normal behaviour.

Demerits of the Case Study Method

- It is time consuming.
- It warrants a lot of efforts on the part of the researcher.
- It is meant only for individual case and ends with the diagnosis and treatment of the individual under study.
- It requires technical proficiency and some experience on the part of the teacher.

1.4.6. Differential Method

Differential method is the method of studying differences within the same individual or between individuals in different groups. In this method there are four types:
Types of differential methods are:

- Correlation Method
- Field Survey Method
- Longitudinal Method
- Cross-Sectional Method

- **In the correlation method,** the psychologist takes people as they are and studies what they usually do, without changing the conditions under which they respond to the tests or perform the desired tasks.
- **In the field survey method, t**he differences with regard to a particular trait pattern or characteristics among the individuals are discovered by conducting the field survey and taking adequate samples, from the studied population.
- **In the longitudinal method, t**he differences in an individual or group of some individuals are studied over a long span of time.
- **In cross sectional method, w**e take many individuals and study them simultaneously.

Merits of the Differential method

- It is useful in determining the present trends and solving current practical problems.
- It suggests the course of future developments for those who are interested in similar problems.

Demerits of the differential method

- It focuses on existing condition. It pays title attention to the past which might have caused the present problem.
- There is possibility of manipulation of data.

1.5. BRANCHES OF PSYCHOLOGY

There is hardly any sphere of human life where psychology is not being used in modern times to understand and improve the existing conditions. Important branches of psychology are mentioned below:

- General Psychology
- Child Psychology
- Clinical Psychology
- Development Psycholog
- Social psychology
- Industrial Psychology
- Educational psychology

1.5.1. General Psychology

This deals with the basic principles underlying in different branches of psychology. General behaviour of normal adults forms the subject matter of general psychology. General psychology deals with such concepts as perception, emotions, motivation, learning, thinking, sources of individual differences and their measurement etc.

1.5.2. Child Psychology

That branch of psychology which deals with growth and development of children, role of heredity and environment in child development, different potentials found in children and their measurement, different aspects of adjustment in behaviour with environment that children achieve etc. is known as child Psychology. Today, infant psychology and adolescent psychology have also emerged out of child psychology

1.5.3. Clinical Psychology

The branch of psychology is an applied one is popular among the professional psychologists. In society there are people whose behaviour is abnormal in the sense that they manifest significant behavioural deviations from the norms of the society or the groups in which they live. There are various forms of behavioural disorders like that of psychosis (which refer to serious forms of mental illness), the neurosis (mild forms of functional disorders which can be treated without the patient being hospitalized) and feeble mindedness (which points to persons who are poorly endowed with intellectual capacities making them incompetent to make efficient and effective adjustments to the demand of reality and to come up socially). Besides these, there are other forms of abnormal behaviour. Some people may be emotionally unstable, some may find it difficult to establish healthy interpersonal relations with people, adapt themselves vocationally to the work situations, etc. In all such cases it is the clinical psychologists provide service to those who have mental or emotional problems. Clinical psychologists work in psychiatric clinics, child guidance centers, and mental hospitals. They mostly work in collaboration with medical doctors trained in treating mental disorders who are known as psychiatrists.

1.5.4. Development Psychology

Development Psychology deals with all aspects of growth and development of the individual throughout his life span. Right from the time of fertilization in the Womb, up to the time of old age and death, all aspects of human development are studied in great depth and detail. Different stages of development, ranging from pre-natal period, through the stages of infancy and childhood to that of middle age and old age are studied. There is a concentration of studies in childhood and adolescence. Of late, there is a growing interest and hence a number of studies on old age and its problems **(Gerontology).** The findings of developmental psychologists are utilized extensively by educational, clinical and counseling psychologists, though many of them in their own right are not applied in nature.

1.5.5. Social Psychology

Social psychology has two aspects. The first one is a pure science which applies itself to problems such as the role of society and culture in influencing the development of personality of the individual, social motives, development of communication and language and problems of competitions, co-operation, imitation and role-playing. The second one, i.e. social psychology, as a applied science is concerned with attitudes and preferences as they exist and as to how they are modified or changed. In short, as an applied science, social psychology is interested in helping people to solve public problems of high importance.

Of late, social psychology has chosen to enter into community work by its adopting procedures for studying attitudes of groups and for modifying them. By this, it tries to reduce intergroup tensions. In this manner, the development of this kind of psychology may be called clinical social psychology because it does to the community, what clinical psychology does to the individual person. Besides the kinds of functions that are described above, social psychologists engage themselves in such kinds of activities like conducting market research, audience-response measurements, opinion surveys, etc.

1.5.6. Industrial Psychology

This is another applied branch of psychology which concerns itself with industrial and business situations. It deals with all kinds of problems in industry such as selection of right men for various jobs, promotions or supervision and interpersonal relationship among the employees. It also studies such aspects as fatigue, accidents and working conditions and their improvement in industry. Another division of industrial psychology which is known as **'consumer psychology'** deals with such problems as techniques of marketing, advertising and propaganda. Ultimately industrial psychology aims at increasing productivity, improving the performance of employees and finding good market for the products. This is essential for building greater productivity and industrial peace.

1.6. EDUCATIONAL PSYCHOLOGY

1.6.1. Definition of Educational Psychology

Educational psychology is defined as that branch of psychology which is concerned with psychological researches as applied to any or all aspects of educational processes and practices. It is in relation to problems like learning, teaching and training. Classroom is the laboratory for the educational psychologists. By applying the principles and laws of psychology in educational situations, educational psychology tries to solve the different problems faced in the educative process. So as to make to more effective and efficient (says Kolesnik, the Russian Psychologist).Psychology is the science of behaviour. Education is the deliberate process of modifying one's behaviour (knowledge, skills and attitude) through a sequence of systematically planned experiences to achieve the predetermined goals and objectives (Redden). Therefore educational psychology could be considered as the science of modifying the learner's behaviour so as to refine his/her personality and make him/her an efficient and responsible citizen.

1.6.2. Nature of Educational Psychology

Educational Psychology has made tremendous advancement and gradually established itself as an independent study. Most of the educational problems come under its purview. Child education, diagnostic and remedial education, education for the gifted and handicapped, factors affecting learning, principles of evaluation, etc. bear proof to the

claim that educational psychology is a special field of study. The study of classroom climate, techniques of behaviour modification, programmed learning, micro-teaching, software and hardware approaches computer assisted instruction are all the areas developed by the educational psychologists aimed at improving the interaction between the teacher and the taught. Advanced techniques of instruction are through and through psychological by nature.

1.6.3. Scope of Educational Psychology

As **Blair, Jones and Simpson** say, educational philosophy is primarily concerned with the question of what should be done and educational psychology attempts to answer the question of what should be done and educational psychology attempts to answer the question of how it can be done. Educational psychology for most part is interested in means rather than ends. As to the scope of educational psychology, **Kolesnik** mentions the following problems which are dealt by educational psychologists:

- Differences among student
- Motivation
- Methods of instruction
- Evaluation
- Classroom management
- Mental health
- Character formation

H.C. Lindgren suggests that the subjects-matter of educational psychology revolves around three areas:

a) The learner
b) The learning process
c) The learning situation

In the first area the learner, is included the study of abilities, needs, life-goals, self-concept, etc. of the individual learner as well as the differences that exist among different individuals. This area also includes the study of the development of the pupil, the environmental influences on his personality, the problems of his mental health, etc. In the second area, i.e. in the learning process, the nature, process and factors of learning are studied. In the third area, the learning situation, such factors as classroom management, discipline, techniques for teaching exceptional children, guidance and counseling, etc. are studied. The teacher himself is very important in the total learning situation. Therefore, the psychology of being a teacher (his motivations, conflicts, effectiveness, professional growth, his mental health etc.) is also included in the scope of educational psychology.

Garrison et.al recognizes the following as major divisions of educational psychology.

- The child and his development: The course of development, nature of intelligence, language and thinking, socialization and its role etc.

- Learning and educative process: Learning and motivation, the learning of skills, knowledge, understanding and problem solving, character development, etc.

- Evaluating Pupil-Growth: Methods of pupil-evaluation, studying the individual child, learning difficulties at school, evaluating the results of instruction, etc.

- Guiding the child: Personality integration, adjustment problems of the child, pupil-teacher relations, etc.

- In short, speaking with E.A. Peal, it might be said that educational psychology broadly deals with the nature of learning, the growth of human personality, the differences between individuals and the study of the person in relation to society.

1.7. IMPORTANCE OF EDUCATIONAL PSYCHOLOGY

1.7.1. Need for the Knowledge of Educational Psychology for Classroom Teachers Educational psychology helps the teacher in the following ways Contribution to theory of Education

- To understand the development characteristics of children: To be a successful doctor, one must have the required professional knowledge and skills as well as the knowledge about the nature of the patient whom he wants to treat. In the same way, if one wants to be a successful teacher, he must know about the science of behaviour of learners. Children pass through different stages of development as infancy, childhood and adolescence. These developmental stages have their own characteristics. If the prospective teacher knows these characteristics he can utilize them in imparting instruction and molding their behaviour according to the specified goal of education.

- To understand the nature of classroom learning: To instruct effectively in the class, the teacher must understand the principles of learning and various approaches to the learning process, problems of learning and their remedial measures. It also gives the knowledge of various approaches to understand the learning process, factors affecting, and guidance for effective learning.

- To understand individual differences and adjust his teaching to the needs and the requirements of the class which has a great range of individual differences.

- To understand effective teaching methods: Classroom teaching is not dependent on any one theory. It is related and uses several theories of teaching-learning. The teacher must be acquainted with knowledge of various theories in order to organize his class-room teaching. Educational psychology provides us with the knowledge of different approaches evolved to tackle the problems of teaching at different age levels.

- To understand the causes of the problems of children which occur at different age levels and successfully solve them.

Knowledge of mental health: Mental health of the teacher and the taught is very important for efficient learning. The teacher from the study of psychology can know the various factors which are responsible for the mental ill-health and maladjustment. He can prevent maladjustment in children provided he is equipped with the fundamental knowledge of mental hygiene.

Curriculum construction: Psychological principles are used in formulating curriculum for different stages. Needs of the pupils, their developmental characteristics, learning pattern and needs of the society, all these are to be incorporated in the curriculum.

Measurement of learning outcome: Psychological tools help the teacher to assess the learning outcome of the students. He can also evaluate his teaching methods and in the light of the performance of the students can modify his strategy of teaching.

- Guidance for the education of exceptional childre
- Helps to develop positive attitude.
- Understanding of group dynamics.

Contribution to Practice of Education:

- Problem of discipline: Traditional teachers believed in the dictum "spare the rod and spoil the child". But modern teachers who have the knowledge of educational psychology realize that the use of corporal punishment is inhumane. Teachers now tackle the problem of indiscipline by examining the causal factors leading to them in a more scientific way. The teacher has changed his attitude from an autocrat to democrat.

- Use of A.V. aids: Teaching with the use of aids that affect multiple senses of the learner is more effective and lasting. Thus the modern teachers resort to the use of hardware and software approaches in educational technology to make their teaching more concrete and stable.

- School and classroom administration has been psychologised and made participative rather than dictatorial in nature.

- Time table: Now subjects are incorporated in the time table taking into consideration their difficulty level and fatigue index. No two difficult subjects are taught in successive periods.

- Co-curricular activities: Teachers used to give undue importance to the theoretical subjects in schools. Activities like debate, drama, scouting and games were supposed to be wastage of time. Now we give these activities due importance for the harmonious development of the personality of children.

- Use of innovative methods: Several innovative ideas resulting from research studies in psychology have been introduced to improve the teaching-learning process. Activity centered teaching, discussion method, micro-teaching, programmed instruction, and non graded school classes at the primary stage are some of the important innovations.

- Production of text books: We now write textbooks taking into consideration the intellectual development of children, their needs and their interests at different age levels.

- Undoubtedly the study of educational psychology may be very helpful to equip our prospective teachers with necessary skills to deal with classroom teaching-learning problems.

1.8. SUMMARY

Psychology defined first as the study of soul in its history of evolution, it has been known progressively as the study of mind, study of consciousness and finally as the study of behaviour. Psychology and Education are related intimately. Psychology studies the behaviour as it grows and evolves; education deals with modification of behaviour.

Educational Psychology as one of the branches of Psychology tries to study the behaviour of the learner in relation to his educational environment. Most of the definitions centre on the fact that educational psychology as a specialized branch of psychology concerns itself with suggesting ways and means of improving the processes and products of education, enabling the teacher to teach effectively and the learners to learn effectively by putting in the minimum effort. Educational Psychology is scientific in nature. It has an extensive scope. It helps the teachers in accomplishing cultural and professional aims. Also it helps the teachers to understand the learner, learning process and learning situation. Psychology has developed in the form of different schools. They affect the products and processes of education. Behavioural school focuses its attention totally on the overt or observable behaviour for its objective observation and considers environmental forces to be the sole factor in shaping one's personality and influencing one's behaviour. Psychoanalytic school puts forward many new ideas like the unconscious and subconscious mind, psychosexual development, sex as an urge responsible for all types of behaviour, etc. Cognitive school highlights the role of man's higher cognitive abilities and capacities development and functioning of a man through his behaviour.

Study of behaviour in Psychology can be made with the help of a variety of methods. Introspection method is a sort of self-observation in which one perceives analyses and reports one's own feelings. Observation method provides a way of studying the behaviour of an individual in most natural conditions. Experimental method is considered as most scientific and objective method for studying behaviour. Differential method is a method based on individual differences. Case study is the study of an individual case. Interview method is a method for the investigation of behaviour by getting information directly from the subject about his behaviour in face-to-face contact or relationship. Psychoanalytic method is the method of analysis of mind.

1.9. PRACTICE EXERCISES

1. Differentiate General psychology from educational psychology.

2. Discuss the significance and importance of Educational Psychology to classroom teacher.

3. Discuss the scope of Educational Psychology.

4. Explain various methods of Psychology.

1.10. QUESTIONS AND ANSWERS

1. Define Psychology.

Psychology defined first as the study of soul in its history of evolution, it has been known progressively as the study of mind, study of consciousness and finally as the stud of behaviour.

2. What is the relationship between Psychology and Education?

Psychology and Education are related intimately. Psychology studies the behaviour as it grows and evolves education deals with modification of behaviour. We cannot modify the behaviour without studying the behaviour and its peculiarities. Hence, both are inter-related and dependent.

3. Describe Psychoanalytic Psychology.
Psychoanalytic school puts forward many new ideas like the unconscious and subconscious mind, psychosexual development, sex as an urge responsible for all types of behaviour etc. It has highlighted the role of earlier experiences and the need for better education to the child in the formative years.

4. List the methods of psychology.
Most commonly used methods of psychology are introspection method, observational method, experimental method, differential method, case-study method, interview method and psychoanalytic method.

5. Write a note on introspection method.
Introspection is a process of examining one's own mental process of thought feeling and motives. An individual looks within, observes, analyses and reports his own feelings. Introspection is also defined as the notice which the mind takes itself. It is the oldest method of Psychology.

1.11. REFERENCES

- Aggarwal, J.C.(2007), *Essentials of Educational Psychology*, Delhi: Vikas Publishing House Private limited.
- Chaube,S.P.(1997), *Educational Psychology*, Agra: Lskshmi Narain Agarwal.
- Crow and Crow (1993), *Educational Psychology*, Delhi: Eurasian Publishing House.
- Dutt N.K. (1974), *Psychological Foundation of Education*. Delhi: Doaba House.
- Mangal, S.K.(2004), *An Introduction to Psychology*. Delhi: Sterling Publishers Private Limited.
- Mangal,S.K.(2003), *Advanced educational psychology*. Delhi Prentice Hall of India.
- Nagarajan,K(2002) , *Educational Psychology*. Chennai: Ram Publishers.
- Podhu,K.S,K.S.Premila,T.Sampathkumar&D.Vinodhkumar(2009).*Educational Psychology,*B.Ed.,Course Material,TNOU,Chennai.
- Santhanam, S.(1993), *Educational Psychology*. Chennai: Santha Publishers
- Saravanakumar. AR (2010) *Essential of Educational Psychology*, M.A. Education Course Material , DDE, Alagappa University Karaikudi
- Sprinthall, C, Richard and Sprinthall, A Norman(1990). *Educational Psychology: A development approach.* Newyork: Mc Graw Hill.
- Tromburgy D.Hershel.(1984) *Introduction of Educational Psychology*. Newyork: West Publishing Company.

UNIT II HUMAN GROWTH AND DEVELOPMENT

2.1 Introduction
- 2.2 Concept of Growth and Development
- 2.2.1 Meaning of Growth
- 2.2.2 Meaning of Development
- 2.2.3. Three concepts of Development

2.3 Relationship Between growth and development

2.4 Maturation and Development
- 2.4.1 Meaning of Maturation
- 2.4.2 Relationship between maturation, learning and development

2.5 Nature versus Nurture
- 2.5.1 Meaning of Heredity (Nature)
- 2.5.2 Meaning of environment (Nurture)
- 2.5.3 Differences Between heredity and Environment
- 2.5.4 Studies on heredity and environment
- 2.5.4.1 Studies on heredity
- 2.5.4.2 Studies on environment

2.6 General principles of growth and development
- 2.6.1 Development is a product of interaction
- 2.6.2 Development follows an orderly sequence
- 2.6.3 Development is a continuous process
- 2.6.4 Development goes from bilateral to unilateral trend
- 2.6.5 Inter relationship of different aspects of development
- 2.6.6 Development is individualized process
- 2.6.7. Development is positive and negative both
- 2.6.8 Development is cumulative
- 2.6.9 Development proceed from general to specific
- 2.6.10 Rate of development differs with sex

2.7 Dimensions of development
- 2.7.1 Physical growth and development
- 2.7.2 Cognitive growth and development
- 2.7.3 Emotional growth and development
- 2.7.4 Social growth and development
- 2.7.5 Moral growth and development
- 2.7.6 Language growth and development

2.8 Stages of development
- 2.8.1 Physical Development
- 2.8.2 Cognitive Development
- 2.8.3 Emotional Development
- 2.8.4 Social Development
- 2.8.5 Moral Development

2.1 INTRODUCTION

Human beings keep changing. During their lives, they change in size, appearance and psychological makeup. The way they change differs from individual to individual. But the fundamental underlying patterns of growth and development remain more or less the same and take place in an orderly way. Each individual, with his unique heredity and the way he is nurtured, determines the way he traverses the broad highway of his life at his rate of progress. He will attain the size shape, capacities and developmental status in a way which is peculiar to him at each stage of life.

Growth is sometimes used to designate all the quantitative changes brought about in the structure and functions of the human anatomy and physiology. The term development means a progressive series of qualitative changes that occur as a result of maturity and experience. Thus at each stage certain developmental processes bring changes in the individual in different aspects of life: Physical, social, psychological and emotional. The speed of change various from one individual to another but it follows as definite and predictable pattern. Every individual has to go through the various stage of childhood, adolescence, adulthood and old age. Both growth and development, at every stage follow certain principles.

This is the first unit of this course. In this unit we shall discuss the concept and principles of human growth and development, why their systematic study is needed and how the teacher can facilitate growth and development during adolescence. We shall also discuss, in brief, various stages of development. You will also study the role of the teacher in facilitating the growth and development of school going children. You can observe the growth of your students over a period of a few years.

2.2 CONCEPT OF GROWTH AND DEVELOPMENT

The terms growth and development are often used interchangeably actually they are conceptually different. Neither growth nor development takes place all by itself. Growth refers to quantitative changes in size which include physical changes in height, weight, size, internal organs etc. As an individual develops old features like baby fat, hair and teeth etc disappear and new features like facial hair etc are acquired. When maturity come the second set of teeth, primary and secondary sex characteristics etc appear similar changes occur in all aspects of the personality.

During infancy and childhood the body steadily becomes larger taller and heavier. To designate this change the term growth is used. Growth involves changes in body proportions as well as in overall stature and weight. The term growth thus indicates an increase in bodily dimensions. But the rate of growth differs from one part of the body to the other.

Development, by contrast, refers to qualitative changes taking place simultaneously with quantitative changes of growth. It may be defined as a progressive series of orderly, coherent changes. The term progressive signifies that changes are directional, that they lead forward rather than backward. Orderly and coherent suggest that there is a definite relationship between the changes taking place and those that proceed or will follow them. Development represents change in an organism from its origin to its death but more particularly the progressive changes which take place from origin to maturity.

Thus, development may be explained as the series of overall changes in an individual due to the emergence of modified structure and functions that are outcome of the interactions and exchange between the organism and its environment.

2.2.1. Meaning of the term Growth

In the strict sense of terminology the two terms growth and development have different meanings. The term 'growth' is used purely in the physical sense. It generally refers to increase in size, length, height and weight. Changes in the quantitative aspects, which could be objectively observed and measured, come into the domain of growth. Growth is one of the components of the developmental process. In a sense, development in its quantitative aspect is termed as growth.

Characteristics of 'growth'

- Growth refers to increase caused by becoming larger and heavier.
- It is quantities, additive, and argument.
- It is objectively observable and measurable.
- Growth does not continue throughout life, it stops when maturity has been obtained.
- Growth may or may not bring development. For example, a child may grow (in terms of weight) by becoming fat, but this growth may not bring any functional improvement (qualitative change) or development.
- Rate of growth is not uniform. It proceeds more rapidly in the early years of life but slows down in the later years of infancy. Again, at puberty, there is sudden rise in the speed of growth.
- There exists wide range of individual differences among children with respect to growth.
- The rate of growth of different parts of the body is different.

2.2.2. Meaning of the 'Development'

'Development' implies overall changes in shape, form or structure resulting in improved working or functioning. It indicates the changes in the quality or character rather than in quantitative aspects. Development is the result of growth, maturation and learning.

Characteristics of Development

- Development is progressive series of changes that occur in an orderly, predictable pattern as a result of maturation and experience. Development is 'directional 'and 'sequential'.
- Development is continuous in all are of mental activity. It does not stop with puberty as in the case of growth.
- The goal of development is to enable the individual to adapt to the environment in which he lives, i.e. development results in improved functioning of the individual.
- Development is a complex process of integrating many structures and functions.
- Development is of many aspects (e.g physical, emotional, intellectual, social and moral) and individual differences are seen in the different aspects of development.

- Rate of development is not uniform throughout the life span of an individual. Actually the child makes advancement during a particular period of development and takes rest in the next following period, to consolidate his development. In advancing therefore, he turns back and then moves forward again like a spiral. Thus it could be said that development is spiral and not linear.

- Development is influenced by maturation and learning.

- Development is very much related to one's environment. Stimulating environment helps an individual to develop many skills.

- Development is based on, modeling the parents, teachers and other elder members.

- Since development is qualitative in nature, it cannot be measured directly. It could be accessed through keen observation in behavioral situations.

- Development is possible even without growth.eg. Even short stature people may exhibit strong physical functioning.

2.2.3. Three concepts of development

Development is maturation: According to Arnold Gessell, the role of physical changes is very important in development. The development from infancy to adolescence is governed by physical changes. When physical growth of the particular stage gets matured only, then development in that stage is possible. For example, a growing nervous system changes systematically and automatically and this results in predictable changes in bones and muscles. Thus major changes in the organism are based on maturation.

- According to Gessell, there is internal programming toward physical and cognitive growth and each year is characterized by certain behavioral changes. Development is always guided and controlled by these changes.

- Development is learning: According to Baer, "development is the behavioral changes which require programming and programming request time but not enough of it to call it age."

- Programming here means the sequence of learning which may happen naturally or it may be arranged in the life of an individual with the help of the environment. Thus, according to this definition, development is genetic and environmental both. Whatever we learn in the process of our life is related to development of us.

- Development is the synthesis of abilities: According to **Jean Piaget,** there are four basic elements that take part in the process of development is the result of synthesis of all these elements. They are given below;

- Maturation — An automatic and innate process
- Social transmission — learning through language, schooling or
- training given by patents.

- Experiences — obtained from the outer environment informally
- Equilibration — Whatever is learn or gained internally orexternally is equilibrated here.

2.3. RELATIONSHIP BETWEEN GROWTH AND DEVELOPMENT

Growth and development are closely related. Growth indicates increase, enlargement and augmentation. Development indicates progressive changes resulting in better quality, character and composition. Development is a wider and comprehensive term. It refers to overall changes in the individual. Growth is one of the components of development. Generally growth results in maturation (it is the biological ripening of the organism) at which training or learning if provided, brings forth optimum development in the individual's functioning. If the thigh muscles of an infant grow and become ripe (maturation) at the tenth month after birth. It starts walking which indicated development. Thus grow generally leads to development. Development leads to further growth and further development. As the child starts walking, changes (or growth) occur in the calf-muscles and in the palm of the foot. This growth leads to further development in the child viz. running at the eighteenth month. Thus growth and development are inter-related. However, in some cases, development is possible without growth as we see in the case of some children who do not gain in terms of weight, height or size, but they do experience functional improvement and development. Though growth and development are related, there are major differences between them which are listed below.

2.3.1. Differences between "Growth and Development"

Table 1: Difference between Growth and Development

Growth	Development
Growth is quantitative i.e. it indicates increase Enlargement and augmentation.	Development is both quantitative and qualitative and it results in improved functioning of the individual
Growth could be objectively observed and Measured	As development is mainly qualitative it cannot be measured: it could be; assessed through keen observation in behavioral situations.
Growth does not continue throughout the life -span. It stops after maturation is obtained.	Development is continuous in all areas of mental activity: it does not stop after puberty
Growth is one aspect of development	Development is complex and many-sided.
Growth occurs in different parts of the organism. Growth is not directional.	Development describes the changes in the organism as a whole and does not list the changes in parts.
Rate of growth is not uniform in all parts of the organism.	Developments progressive and sequential
Individual differences exist in growth among Children	Rate of development is also not uniform
Growth is not affected very much by learning.	Children differ in their level of development in different aspects- physical, social, emotional and intellectual.
Growth may or may not lead to development.	Learning and experience affect development to a very great extent.
	Development in one aspect promotes development in other aspects (among physical, mental, social, emotional and moral) i.e. development is integrative.

2.3.2. Principles of "Growth and Maturation"

The changes brought about in the individual by the process of growth and development tends to show some well defined principles. They are known as principles of growth and development. These principles are listed below:

- **Principle of continuity:** Development is continuous and never ceases. Any individual starting his life from a tiny cell develops his body, mind and other aspects of his personality through a continuous stream of development.
- **Rate of growth and development is not uniform;** Although development follows continuity, yet the rate of growth and development is not steady and inform at all times. It proceeds more rapidly in the early years of life, but slows down in the later years of infancy. Again, at puberty, there is a sudden rise in the speed of growth and development.
- **Uniformity of pattern:** Although development does not proceed in a uniform rate and shows marked individual differences, yet it follows a definite sequence or pattern. (eg. The child first learns to turn laterally then title so as to lie on its stomach and swim on the floor: then it sits stands and walks before it learns to run. Thus development is progressive and sequential and this pattern is found in every child)
- **Development proceeds from general to specific responses:** In all phases of a child's development, general activity precedes specific activity. His responses are of a general sort before they become specific. (eg. An infant learns **gross movement** of hands before it learns the fine motor movements of its fingers. The young infant first grasps any object with the whole hand and gradually begins to pick with thumb and finger)
- **Principle of integration:** Development involves movement from the whole to the parts and from the parts to the whole.
- **Principle of inter-relation:** The growth and development in various dimensions like physical, mental, social, etc. are interrelated and interdependent. Growth and development in any one dimension affects the growth and development of the child in other dimensions.
- **Development is predictable:** With the help of the rate of growth and development of a child, it is possible for us to predict the range within which his nature of development is going to fall (eg. From the trend of increase in height we can predict beforehand how much high the child will grow).
- Growth and development are a joint product of both heredity and environment
- Growth proceeds from head to trunk centre to extremities.

2.4. MATURATION AND DEVELOPMENT

2.4.1. Meaning of Maturation

Maturation is a natural process. It is the growth which takes place within the individual. The maturational changes are the result of unfolding and ripening of inherited traits and are relatively independent of activity, practice or experience. Maturation involves changes that are associated with normal growth.

2.4.2. Relationship between Maturation, Learning and Development

In the case of human activities, development occurs as a result of maturation and learning. No amount of teaching or exercise will enable a six month old baby to talk or walk. It is also equally true that the child does not learn the language just because he attains that

stage or age, unless the language is taught to him. The language which he learns is that which he hears.

A number of studies have been conducted to show the importance of maturation for learning and development, of which two have been described below: i) **W.N. Kellogg and L.A. Kellogg** reared an infant boy and an infant chimpanzee in the same human environment, treating them with the same affection and tenderness. The aim of the experiment was to see to what extent, the chimpanzee could be humanized by the human environment. The boy was two months older than the chimpanzee; still the chimpanzee was able to learn to skip, to open the door, to eat with a spoon, to drink from a glass, earlier than the boy. This was because the chimpanzee though two months younger was physically more mature. However, by 15 months of age the boy surpassed the chimpanzee in almost everything in physical strength. This experiment has led to the following inferences:

The chimpanzee, though of an inferior species, was superior to the human child in certain respects. This superiority was due to the earlier maturity (because of its heredity) of the chimpanzee. On the other hand, the boy even with his relative immaturity, was able to speak, to imitate and to solve a number of problems which the chimpanzee could not do, even though it was more mature as a chimpanzee could not do, even though the it was more the training given to the two was the same.

ii) G**esell and Thompson's co-twin study:** In this experiment it was tried to find out whether the training of one twin in stair climbing could give an advantage over the other untrained twin. At 46 Weeks of age, neither of the twins could climb stairs. It was found that after 4 weeks of training she was able to climb without assistance and by 52 weeks she claimed 5 steps in 6 secs. During all this period, twin C, the control twin, and no chance of climbing a stair. When she was 53 weeks old, she was placed on the staircase. She climbed the stairs unaided and took 45 seconds to climb five steps: but with a week of practice, she was able to climb five steps in 10 seconds. This experiment shows the strong influence of maturation. The two processes-maturation and learning-are closely related to each other.

Training given before 52 weeks, the period required for maturity proved to be ineffective in staircase climbing. But training given to the child when it attains the requisite physical maturation for climbing stairs, brings forth quick learning and faster development. Thus maturation could be considered as Physical readiness for learning.

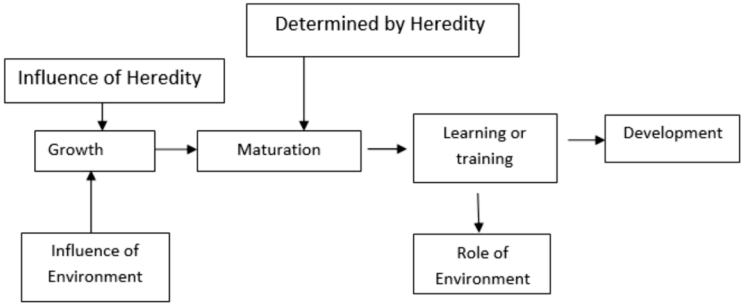


Fig. 2: Illustration on Gesell and Thompson's co-twin study

Maturation helps in the process of learning. Learning can take place it the stage for the type of learning has been achieved through the process of maturation. If the teacher understands the complexity of the changes that are going on, as a result of both process and the interaction between the two, he will not go straying his teaching. Forcing the child to attempt to learn some speech patterns, before certain maturation has occurred, can disrupt the normal development of speech in the child. On the other hand, failure at an appropriate time to provide specific training (deliberately planned and sequentially organized environmental influences) in speech may be cardinal educational error hampering the language development of the child. Similarly an infant attains the requisite physical maturation to hold a pencil and manipulate that the age of 5. But giving training to children at the age of 3, in the L.K.G. class is highly ineffective as could be seen in the slow progress and there is always a danger of the hand written of such children becoming illegible and bad.

2.5. NATURE VERSUS NURTURE

The Nature and nurture are termed as heredity and environment. Two views are prevailing among the psychologist with regard to the growth and development of an individual namely heredity and environment. Some people argue that a person's heredity decides his growth and development, and others argue that it is environment which decides the individual's pattern of growth and development.

2.5.1. Meaning of Heredity (Nature)

Heredity is the process by which characteristics of an individual are basically determined by genes received from the parents.

Dougal and Holland define, "One's heredity consists of all the structures, physical characteristics, functions or capacities derived from parents, other ancestry of species."

Woodworth defines, "Heredity covers all the factors that are present in the individual when he begins life not at birth, but at the time of conception about nine months before birth."

2.5.2. Meaning of environment (Nurture)

Environment is the process by which characteristics of an individual are determined by his/her surroundings and circumstances. The forces of environment begin to play their part and influence the growth and development of the individual, right from the time of fertilization of the ovum by sperm. Therefore, from the environmental point view, not only what happens after birth is important but also what goes on inside the womb of the mother after conception has equal significance. Boring, Langfield and Weld define," "the environment is everything that affects the individual except his genes."

Dougal and Holland define, "Environment as a word which describes, in the aggregate, all extrinsic forces of influences and conditions, which affect the life, nature, behavior and the growth, development and maturation of living organisms.'

Woodworth and Morquis define, "Environment covers all the outside factors that have acted on the individual since he began his life."

2.5.3 Differences between heredity and environment

The following table explains the difference between heredity and environment.

Table 3: Differences between Heredity and Environment

Heredity	Environment
Innate or inborn	Acquired
Genetic constitution	Environmental constitution
Body constitution	Mental constitution
Physical traits	Psychological traits
Biological in nature	Psychological in nature
Heredity fixes the traits during conception	Environment fixes the traits after birth
Only limited role	Wider role
Causing similarities or identifies between parents and children in their physical and mental make up	Causing differences between parents and children in their physical and mental make up
Heredity cannot be changes	Environment can be changed.

2.5.4. Studies on heredity and environment

Hereditariness conducted several researches to support that the heredity is the main cause for the formation of behaviour and character. Environmentarians, in their studies stressed that environment is the major cause for the formation of behavior and character. Some of the studies are presented below.

Studies on Heredity

The following are some of the studies which were conducted to support heredity as the main cause for formation of behavior and character.

Dugdatle did study on Juke's family. Juke was a fisherman and corrupt. About 1000 persons were born on five generations out of which 300 died during infancy 310 were orphans, 130 were criminals and rests 120 were normal. Thus, the family inherited certain physical and mental traits from generation to generation which were responsible for their antisocial activities Goddard studied Kallika's family, Kallika was a soldier who married two women-one was feeble minded and another was an intelligent girl. Of 480 individuals descended from the feeble minded women, 434 were mostly feeble minded, criminals, sexual perverts and drunkards. From the descendents of the intelligent girl, 486 out of 496 individuals were talented. Thus, this study supports the heredity.

Sir Francis Galton conducted a study on family histories of 977 persons. Of 977 eminent men, 536 were found to have closed blood relationship and were famous. On the other hand, studies on 977 common persons, only 4 near relative were famous.

Studies on Environment

The following studies support for environment as the main cause for formation of behavior and character.

Scottish Survey: Decuo's studies show that environmental changes brought about changes in the IQ of children. "The most celebrated of these studies are the Scottish surveys of 1932 and 1947, as reported by the Scottish Council for Research in Education. In 1932, intelligence tests were administer 87, 498 Scottish children of nearly eleven-year

old. In 1947, the tests were given to 70, 809 children of the same age. The average score showed a small but significant improvement over the fifteen year period."

Study of Fly Edith: These two identical female twins were separate childhood. One of them was married to a business man and the other to farmer. In the behavior, IQ and many other psychological areas, there were lots of differences between the two in the later part of their life.

Study of James and Reece: These two twins were reared in a hill and a village respectively. When their intelligence was marked the difference of 19 point was found. This indicates the influence of environment.

Study of Wolf children: In the early nineteen twenties some hunters found two children from a cave of wolves in a jungle. One of them was about eleven years and the other about seven years old. It seemed as if the children have been carried away one by one by the female wolf when they were young babies and instead of being eaten up, they were reared up in the cave. The social environment turned them into wild beasts. They howled and crawled like beasts. They could not stand erect. Their limbs were crooked. But they could crawl very swiftly just like wolves. Their limbs were crooked. But they could crawl very swiftly just like wolves. Their jaws had been deformed and disfigured. They ate raw meat and felt restless in the presence of men. They sipped water. They were taken to a hospital. After some days a priest took them home. He made great efforts to reclaim them. He taught them how to ear and drink. He trained them in wearing clothes. At first they resisted but after some months began to wear clothes. He trained them how to walk erect and he succeeded soon. Meanwhile the younger child died. But the behaviour of the elder one was modified and he looked like a human being. The environmentalists say that it was purely environment that turned the children into beasts and again it was environment which brought them back to human form and behavior.

2.6. GENERAL PRINCIPLES OF GROWTH AND DEVELOPMENT

2.6.1. Development is a product of interaction

Development is a process which is the result of constant interchange of energy within the organism and his environment. Thus hereditary forces interact with environmental forces and the process of development goes further. These two forces are so closely interacted that is is very difficult to isolate the contribution of either of them. The contribution of gene may be 10% as compared to 90% contribute of environment in the process of development.

2.6.2. Development follows an orderly sequence

The rate of growth and development is different in different individuals depending upon a number of factors but it does follow an orderly sequence in all the individuals. The psychologists have reported three important directional trends in the process of development.

- Cehaulo caudal: Development starts from head and proceed toward heel. We see that development of head of a child is well advanced as compared to other parts of the body.

- Proximo digital: Development starts from the central part of the body. Then it spread to other outer or more distant part of the body. We see that an infant uses his shoulders and an elbow first to reach an object and then be uses his fingers and wrists.

- Locomotion: Locomotion develops in a sequence in all the individuals belonging to different cultures of the world. The rate of development for different infants may be different but every infant will have to pass through these stages at all cost. For example, an infant first learns to crawl, then to sit, then to stand and finally to walk. No infant can walk directly in the first stage.

2.6.3. Development is a continuous process

Development is a continuous process which begins from the time of conception in the womb of the mother and continues till death. But this process is not always smooth or gradual. Ups and down are most of the times seen in every stage of development. There are spurts in physical growth and psychological functioning. Sharp growth rate is seen at the time of spurts. For example, a sharp increase in height and weight in the early adolescent period, a fast rise in vocabulary during pre-school period, sudden improvement in problem solving abilities during adolescence and so on.

2.6.4. Development goes from bilateral to unilateral trend

Infants up to the age of 2.5 years are both of their hands with equal ease. Then they learn to use any of their hands preferably. Similarly, in the beginning of cycle learning we use both the hands to control it but when we become fully experts in cycle learning we can control the cycle single handedly. Thus, development is a process of specialization also.

2.6.5. Inter – Relationship of different aspects of development

Different aspects of development are interdependent and inter related. For example child's social behavior is interrelated with the physical development. If child is physical handicapped, his emotional development may also be slow with aggressive development in some emotions. Similarly, if social development of an individual is poor, his mental or physics development will also be slows.

2.6.6. Development is individualized process

All individuals develop in their own way depending on their genetic characteristics and the training received from the environment. Thus each child has his own rate of physical, social, mental and emotional development. If we observe ten years old children in a society, we find that there are great differences in their height, weight sociability, emotional expressions and learning readiness. Similarly the rate of growth is very high during infancy or pre-adolescent period and compared to other periods of life. Thus, rate of growth also changes with the change in stages of life.

2.6.7. Development is positive and negative both

Up to a certain period of human's life all the faculties of the individual develop but after that retardation starts especially after the age of 70. Physical and emotional retardations are seen during this age with zero social development. Mental development still continues but it too ultimately starts diminishing with the increase in age. Death is nothing but the collapse of all these processes of development.

2.6.8. Development is cumulative

Development is a cumulative process. Certain changes impress the observer and it looks as these changes are sudden but actually they are not sudden. They are the cumulative effect of all the changes in the individual. The child climbs the steps of the development one by one and then he reaches the zenith. The child first of all learns the words, then he learns the phrases, then sentences and finally he comes to know how the stories or essays are written. Thus each change in the child is the combination of his prior growth and experiences.

2.6.9. Development proceeded from general to specific

In all types of development we find the principle of mass differentiation and integration. At the time of birth, the world is like big blooming confusion for the child. Then by and by his behaviors are refined and become goal directed responses.

2.6.10. Rate of development differs with sex

There is slight difference in the process of development between boys and girls. Girls mature earlier that boy at least emotionally. Girls mature earlier than boys at least emotionally. Girls are taller and behavior than boys in pre adolescence period but by the end of this period boys surpass them.

2.7. DIMENSIOINS OF GROWTH AND DEVELOPMENT

2.7.1. Physical Growth and Development

It refers to strengthening of body and muscles with better proficiency and coordination of motor organs, if a person is able to do heavy work with ease, if he is able to do the task in lesser time, if he is able to do the task with accuracy and if he is able to do the task with neatness and beauty, then it is said that physical growth and development of the person is satisfactory.

2.7.2. Intellectual Growth and Development (Cognitive)

It refers to the ability to draw out conclusion from jumbled information and to apply the inferences to real life situations in order to make the life happy and meaningful. If a person normally does what be is expected to do, if he is able to mould the situation in his own factor, if he is able to manipulate the situation against the other and if he is not backward in any way in mental operations, then it is said that his mental growth and development is satisfactory.

2.7.3. Emotional Growth and Development

It refers to the accuracy of responses that an individual will exhibit under the influence of his emotions. These exhibited responses will be real as well. For example, if anger is not exhibited at the abuse give by any other person, it means that emotional growth and development is not satisfactory. Expressing sorrow at losses but not to much sorrow as it is beyond control is emotional maturity. If a person gets angry at his results but he fully controls his anger according to the situation, then it is said that his emotional growth and development is satisfactory. Same is the cross with other emotions also.

2.7.4. Social Growth and Development

It refers to improvement and refinement of behavior of an individual in social situations. If a person is stable in his behavior even in adverse situations, if the behavior of the person is fully acceptable to the society and if he is able to influence the society by his behavior, then it is said that the social growth and development of the person is satisfactory.

2.7.5. Moral Growth and Development

You might be telling your children/students about socially desired behavior, such as: “Obey your orders “, “Be honest”, “Greet your visitors”, “Don't tell a lie”, “Speak politely”, “Don't hurt animals”, “Pray to God”, “You are a girl, don't do this” and similar preaching. By telling such things you recognize the importance/need of rules in a society. In other words, you want to make them aware of socially desired behavior.

Generally, students at the middle and secondary school stage get confused when they find that people sometimes break the rules and that the rules that apply to some are not always applied to others. For example, we tell children not to tear pages from their exercise books. But many a time we take out one or two blank pages from their exercise books. Similarly we teach them not to tell a lie. But at school and in the community as well, they observe many; people telling a lie for petty things. Such experiences probably change the children's concept of rules.

In this unit, considering the age-groups we are catching to Kohlberg's theory of moral development is worthy of mention. Kohlberg (1969, 1981 and 1984) refined, extended and revised as Piaget's basic theory of the development of moral values. Before talking about Kohlberg's theory of moral development, let us give an idea about Piaget's views of moral development.

2.7.6. Language Growth and Development

Language is means of expressing, thinking and action. Had we not been given this power, we would not have been able interact with others and our social existence was not possible. Language may be verbal and not verbal both. Human being uses both types of languages at a time to inform other about his thinking and behavior and to the informed about their thinking and behavior. Thus, language development refers to the ability of a person to convince the people what he thinks right.

2.8. STAGES OF DEVELOPMENT

Based on certain developmental characteristics psychologists have classified human life span into the following developmental stages:

Parental stage: Germinal period (first 2 weeks) Embryonic period (2to8 weeks)
(from conception to birth)

Fetal period (9 week to birth)
II postal stages

- Infancy — from birth to 2 years
- Childhood
  (i)Early childhood — from 3 to 6 years
  (ii)Later childhood — from 7 to 11 years

- Adolescence
- Adulthood
  (i)Early adulthood — from 20 to 29 years
  (ii)Later childhood — from 30to 50 years

- Senescence — from 50 to 60 years
- Old age — from 60 years onwards

2.8.1. Physical Development

Physical growth refers to a process which begins about bodily a physiological changes-internal as well as external in an organism from the conception till his death. General pattern of physical growth:

- Increase in height and weight.

- Changes in body proportions.

A new born by has as body length of 16 to 18inches and weight 6to 8 pounds. Boys weigh more than girls. Generally, growth is rapid and the head increases disproportionately in size. Weight increases by hundred percent in the first six months and up to five years an average of four pounds increase per year will be seen. Height also increases at the rate of four inches per year in the first 4 years. At the age of 5 a child will be about 35"to 40" tall and weight from 30 to 35 pounds. Of course girls will be shorter and lighter. At the age of 3, the lungs and heart grow in size. Bigger muscles develop faster and earlier than smaller muscles. It is because of manual dexterity cannot be found below 3 years of age.

Table 4: Illustration of Muscular Development.

Behavior	Age in month	Behavior	Age In months
• Turn from side to back	0.4	• Creeps	10.0
• Sit with support	4.0	• Stands up	10.6
• Turns from back to side	5.0	• Walks with help	11.6
• Effort to sit	5.4	• Sits down	12.5
• Sits alone for thirty seconds or more	6.2	• Climbs as stair	13.0
• Rolls from back to stomach	7.3	• Jumps off floor, both feets	28.0
• Babbles	8.6	• Walks upstairs, alteration forward foot	35.5

But individual variations are not uncommon.
In later childhood, the rate of physical growth is slow and steady. Children between 6 and 12 years put on 3 to 4 pounds. The increase in height between 9 to 12 years is only one inch per year. The lengthening the limbs are the most significant physical change during this phase. The legs grow very fast. Postural defects are likely to appear at this stage. The heart and lungs reach almost growth. Muscular development and co-ordination improve and by the age of six a child has a considerable mastery over the basic skills. But the eye muscles reach full growth only by nine years. Therefore children should not be given long reading seasons up to this age. By twelve years of age the muscular coordinating on is almost perfect and the child may improve in handwriting, manipulator skills and soon.

In adolescence physical growth is remarkably rapid and bodily changes occur in a fantastic way. Children rapidly grow out of their clothes, a problem for parents. The endocrines glands become very active and secondary sexual characteristics become pronounced. Boys reach the masculine stature. The voice breaks and becomes hoarse. Between 12 and 14 girls may grow faster than boys. Boys grow faster from 14. Boys develop big muscles and need hard physical work; girls reach puberty and experience rounding of the figure unique to women. Because the rate of growth at this period is too much, muscular coordination is very poor. Adolescents, as a rule are clumsy and awkward in their words and deeds. Aene and pimples mar their countenance. In this world there is no worse nuisance than a boy at the age of 114. He is neither ornamental nor useful. Then he is at the unattractive growing age. He grows out of his clothes with indecent haste, his voice grows hoarse and breaks quavers, his face grows suddenly angular and unsightly.

Educational Implications

It has been observed by W.F. Dearborn, "There is organic need for strenuous, physical activity. Skeletal muscles are developing and require exercise. 9 to 11 years old dash breathe Leslies from place to place, never walk when they can run, never run when they can jump or do something more strenuous." Some of the important activities which facilitate physical development are:

- Provision of nutritious diet
- Regular medical check-up and follow-up
- Provision of healthful environment
- Free and guided play activities
- Activities involving handling of tools and materials
- Exercise and morning walk
- Yogic exercises
- Preparing charts and models
- Proper postures
- Games and sports
- Opportunities for skipping, hoping, jumping, throwing, grasping etc.
- Excursions
- Community cleanliness programmes.

2.8.2. Cognitive Development

Trying to teach a child that which is actual, too advanced or too difficult for him does not result in a better educated child. In fact it is likely to harm him emotionally. One of the indexes to growth of intelligence is to the point of in vocabulary, which has two phases, words used and words correctly recognized. Increase in vocabulary in general is characteristic of mental growth and reaches its high points in the twenties, although it is possible that vocabulary ability increases slightly throughout most of adult life. Another index to the development of intelligence is the development of thinking through the stages of enumeration, description and interpretation. The teacher should be conscious of these stages and in teaching should try to stimulate the higher orders of thinking. The above indices evidence mental growth because they indicate increasing powers of perception, memory, imagination, and reasoning or problem solving. A person has mental or learning readiness for tasks when he has grown and developed to a level where he has the potentiality and capacity to learn these tasks readily. Generally mental growth is most rapid in the first 5 years of life, nearly as rapid from ages 5 to 10, less so from 10 to 15 and much less so from 15 to 20. Natural mental growth probably stops at about the age of twenty. Bright children develop much faster than dull children and reach a much higher level at maturity. The bright probably develop over a little longer period that do than dull.

Table 5: A Chart on Growth of Vocabulary

Age in years and months		Average number of words
Years	Months	
0	8	0
0	10	1
1	0	8
1	3	19
1	6	22
1	9	118

2	0	272
2	6	446
3	0	899
3	6	1222
4	0	1540
4	6	1870
5	0	2072

Vocabulary development depends on environment. A happy home and nursery school condition may be helpful in the proper mental development during this period. In later childhood, mentally a child at six years of age is ready to go to school. Its brain has reached eighty percent of its total development. A child at six can from simple concepts and the child evinces a keen interest in reading and writing. But it cannot attend to any one thing for a considerable time. Therefore long reading and writing sessions have to be avoided. But the ability to read and write improves by 9 to 12 years. It is the period when children are eager to learn and consequently pleasurable learning experiences have to be provided to sustain the motivation. It is the period when the children's horizon of interests widens and their curiosity reaches maximum development. They like to explore and find out for themselves the nature of things. Children between 6 and 7 years of age indulge in make-believe. They become realistic between 9 to 12 years of age. Between 6 and 7 years of age children are incapable of forming abstract concepts. Up to 12 years of age, a child's self-concept does not appear and it identifies itself with its superiors. By 12 years a child is able to express clearly its feeling and experiences.

Adolescence is a period of rapid mental development. Ability to form concepts matures. He is able to generalize his experiences. Abstract concepts are formed and understood. Numerical ability reaches significant growth. The adolescent is capable of doing abstract reasoning. Consequently he likes debates and discussions and cannot take anything for granted. Therefore he is seen to argue with elders, a tendency that may be labeled "impertinence and impudence."The vague and diffused interests of childhood get distilled into concentrated and specific interests during adolescence. Boys like to read stories of privation and adventures and girls read stories of home life, love and beauty. An interest in fine-arts is common in many adolescents and so also in sports and games. Many adolescents are day-dreamers. Normal and occasional day dreaming is essential to let out pent up emotions. But if it amounts to "withdrawal" it becomes dangerous.

Educational Implications

Without education, proper mental development cannot take place. In order to bring about this development teacher should take the following activities.

- Since physical and mental development is correlated, the teacher should keep an eye on the physical health of the children
- The child should be provided various opportunities for learning. In nursery schools such opportunities are various and varied.
- While organizing education due attention should be paid to the individual differences of the children.
- For higher mental developmental development, it is necessary that voluntary knowledge or perceptual knowledge should be developed to the maximum.

- For the mental development and education, language is necessary. Therefore, from the very beginning due attention should be paid to the development of the language.

- Learning by doing and experimental education should have proper place in the educational setup. With this process a child can learn many things

- Due attention should be paid to the fatigue, whether it is physical or mental

- The curriculum should be prepared while keeping these stages of the mental development in view.

2.8.3. Emotional Development

Emotion is a complex and diffuses mental experience involving body and mind. To become emotional means to get excited, activated and stirred up. According to J.B. Watson, the only emotional reaction of neonates is generalized excitement. By 3 months the excitement gets differentiated into Distress and Delight. By 6 months "distresses partly splits into specific emotions fear, disguised and anger. By 13 months 'delight' partly gives rise to elation and affection. By 18 months 'distress' further gives rise to jealousy and affection becomes specific as affection for adults and affection for children. By 24 months, in addition to the above fear, disgust, anger, jealousy, distress, excitement, delight, relation, affection for adults, affection for children, joy emerges out of 'delight'. Up to the age of one year, all emotions are connected with the infant's basic biological needs. When the infant's movements are restricted it becomes angry. Love is happiness for the infant. It likes to be fondled. By 4 or 5 years, the child acquires many emotions as a result for its interaction with men and matter.

A liking for group life appears at 6. It is the gregarious instinct that paves way for the socialization for the child. The child learns to control its primal emotions. As the instincts of curiosity, construction and acquisition development during 6-12 years of age the accompanying emotions are also seen. The instinct of self-abasement may lead to an unconditional surrender to parents and teachers, made possible by the mechanism of identification. In general this period is one of consolidation and children do not experience any emotional calamity that would be l experienced during adolescence.

Adolescence marks a period of emotional instability and in balance. A sudden change from great elation to total dejection may be seen in adolescent behaviour. The self assertive instinct and sex instinct reach maximum development. Adolescents crave for recognition and love. They want to be consulted and feel insulted if their options are not taken into account in deciding policies either at home or at school. The gregarious instinct becomes dominant. The period of early adolescence (13-15) is more troublesome than late adolescence (16-19).

"In the world there is no worse nuisance than a boy at the age of fourteen… If he talks with childish lips he is called a baby and if in a growth-up way he is called impertinent. In fact, talk at any kind from him is resented… He becomes painfully self-conscious, and when he talks with elderly people he is either unduly forward or else so unduly shy that he appears ashamed of his existence. He becomes the devoted slave of anyone who shows him consideration. While it is the height of bliss to receive the kind looks of women and never to suffer their slight" (Tagore).

Educational Implications

There are several situations and things in the home and the school which make a child unhappy rather than happy. It is common to note that children experience too many unpleasant emotions like anger, fear and jealously than positive emotions of affection, joy and pleasure. Here it may be stressed that it is the experience of positive emotions that helps the child to develop a positive outlook on life. Following suggestions are offered to help children's emotional balance.

Hurloks states five causes which disturb emotional stability:

- Fatigue
- Poor Health
- Association with emotional people
- Thwarted desires
- Unpreparedness
- Children should be helped to express their emotions in a natural way.
- Children should be helped to develop a realistic understanding about the situations that arouse pleasant situations
- Children should be helped to learn how to control their feelings which may offend others.
- Children should be gradually directed to exercise more of internal self-control.
- Counseling may be useful in case of highly disturbed emotional state of mind.

2.8.4 Social Development

Social growth helps in improving one's personal relationship in learning ant how one gets along with people successfully. Physical and mental growth contributes social development which is giving a person more capacity for dealing effectively with social situations. Physical and mental weakness and defects tend to maladjusted person. A child is very individualistic in early childhood, but living with people socializes him so that he evolves from extreme individualism to being a socialized person. Leadership is an evidence of social maturity. Students who are school leaders tend to be characterized by better scholarship, higher socio-economic status. Home and school environments can make a child feel frustrated, resentful, over dependent, inferior and insecure in many ways or the opposite. In school, children are accepted or rejected by others. Socio-metric methods may be used to determine the social acceptance and rejection of children within a group or class.

Persons are socially mature who can make friends, who are leaders, who have good emotional control, who cooperate with others, who become economically and socially independent, who have wholesome recreational interests, who maintain high moral standards, who have good manners and who get alone with members of the opposite sex.

A neonate is no better than an animal in being totally self-centered. It wants its biological needs to be satisfied. Its mother is the first human being who moves closely with it and by

3 months the baby beings to have a linking for its mother. Then as it grows, it learns to smile at familiar persons and cry at the sight of strangers. By 3 years of age the child is selfish to the extent that it wants to play alone and never gives anything to others. By the age of 3 or 5, children may play with other children, but they may quarrel suddenly and part. Home environment at this period decides socialization. The treatment given to them by the members of the family decided their social nature. Only child in a family is likely to become ego-centric.

Later childhood is the period when children become less self-centered. School life usually commences at 6 and school is a potent socializing agency. The child gets injured to the unavoidable rubs and uncertain receptions it may get in latter life. In a classroom it cannot have its own way. There are other children and teachers too. It learns to adjust grand spirit of blossoms at 6 years of age. The child learns to obey the command. It is a time when friendships are made. Group affinity increases by 9 or 12 years. Small excessive peer-groups are formed. They depend on their parents, but they value the group more than they value the affection of the parents. A child craves for peer approval.

The tendency to be in a peer group, which originated during later childhood, becomes pronounced during adolescence. Though boys and girls continue to be in the same group, interest in the opposite sex grows steadily. Some adolescents show withdrawal mechanism, is a definite symptom of maladjustment and abnormality. Adolescents between 13 and 16 need a model to follow. It is a period of 'hero worship'. An adolescent identifies himself with his idol. Between the ages of 16 and 19 adolescents want to be recognized as an adult. The adolescents' craving for recognition and independence are very great. They like to be economically independent. Conflicts with adults, especially parents and teachers are quite common. This is a period when enduring friendships are formed.

Educational Implications

A teacher can play a vital role in the social development of the child under his charge. He exerts a great influence upon the development of the personality of the child. Following are the important suggestions for the social development of the child:

- Teachers and parents may encourage the children to mix in inter-caste rather than inter caste and inter-regional rather inter-regional groups.
- The teachers and parents should respect the personality of children.
- Teachers should demonstrate democratic outlook and refrain from projecting their class images on students. They should not show any discrimination.
- Common activities like camps, common needs, social service etc, should be frequently organized. Adequate stress may be laid on group activities.
- Exhibitions may be organized from time to time. Children may be taken from time to time to public places like museums, courts, places of historical importance etc.
- Work experience should be introduced in schools. This will enable the children to have first hand experiences of the activities pursued in farms and factories.

- Children should be acquainted with the social events like the celebration of the birthdays of leaders.

- The introduction of common school dress, common lunch etc, in the schools and colleges will prevent children of poor and lower middle classes from suffering due to the inflated ego of the children of the well-to-do families.

2.8.5 Moral Development

The term moral is derived from the Latin word 'mores' meaning manners, customs and folk ways. Morality is indissolubly linked with the social system. The children have to learn what is good and what is bad, what is right and what is wrong. He has also to learn his duty. All these terms imply clearly that morality has reference to social relationship and social process.

Piaget's Views on Moral Development

According to Piaget, there are four stages:

- Anomy (the first five years)

- Heteronomy-Authority (5-8 years)

- Heteronomy-Reciprocity (9-13 years)

- Autonomy-Adolescence (13-18 years)

- Anomy-Piaget called the first stage 'Anomy', the stage without the law. At this stage the behaviour of the child is neither moral nor immoral but non moral or a moral. His behaviour is not guided by moral standards. The regulators of behaviour are pain and pleasure. This is the "discipline of natural consequences" as a advocated by Rousseau.

- Heteronomy-Discipline of Authority- The second stage of moral development may be called the discipline of artificial consequences imposed by adults. Moral development at this stage is controlled by external authority. Rewards and punishment regulate moral development.

- Heteronomy-Discipline of Reciprocity-At the third stage, there is the morality of cooperation with peers of equals. This stage is regulated by reciprocity which implies, "we should not do to others what will be offensive to us". Conformity with the group becomes imperative.

- Autonomy-Adolescence-Piaget calls this stage equity stage also. The individual at this stage is fully responsible for his behaviour. The rules governing moral behaviour come from within the individual. Such autonomy is the ideal of moral development.

Kohlberg's Views on Moral Development

Kohlberg distinguished three levels of moral development pre conventional, conventional and post conventional, each divided into two stages.

- Pre conventional Level

Stage 1: Punishment and Obedience Orientation. The moral development determined by the physical consequences of an action whether it is good or bad, avoiding punishment and bowing to superior authority are valued positively.

Stage 2: Instrumental Relativist Orientation. Right action consists of behaviour that satisfied child's own needs. Human relations are considered in reciprocity. It may be seen in a pragmatic way.

- Conventional level

Stage 3: Interpersonal Concordance. At this stage, the child begins to like the good will of others and tries to please others to obtain their approval- good boy-nice girl. Good moral behaviours are those please others.

Stage 4: Orientation towards Authority. Focus is on authority or rules and one shows respect for authority.

- Post Conventional Level

Stage 5: Social Contract Orientation. Right behaviours are defined according to standards agreed upon by the group or society. Through a proper procedure, these standards can be changed.

Stage 6: Universal Ethical Principle Orientation. At this stage, the individual keeps not only the norms of society in mind but also the universal moral principles. An individual may be prepared to sacrifice his all, including life for the upholding of thee principles.

Educational Implications

The school plays a very important role in the moral development of the child. Through the organization of various curricular and co-curricular activities, teachers can foster among children various moral qualities. In the teaching of different subjects like languages and social studies etc. teacher may stress moral qualities like love, sacrifice, self-control, truthfulness and uprightness, etc. a suggestive list of some activities for the moral development of children is given below:

- Organizing group projects and games, school panchayat.
- Conducting daily morning school assembly.
- Celebrating National days and festival.
- Organizing Campus
- Screening appropriate films
- Staging dramas and plays
- Stressing the main teachings of saints and seers
- Looking after the cleanliness of school campus, classroom and playgrounds etc
- Looking after the school garden
- Organizing social service programmes
- Organizing girl guiding and scouting
- Celebrating festivals of different communities
- Organizing educational excursion and trips
- Arranging community and school get-together
- Organizing a comprehensive programme of guidance and counseling for bringing about moral changes.

2.9 DEVELOPMENTAL PROBLEMS OF ADOLESCENCE

The following are some of the notable problems of adolescents:

Problems related to somatic variation: Adolescents get bodily changes they attain property during this period. The flow of blood during menstruation in girls and nocturnal emission in boys create worries which lead to fears and anxieties. Since ours is a conservative society youngest are less to fears and anxieties. Since ours is a conservative society youngsters are less oriented about the sudden physical change during puberty, lack of scientific knowledge about sex hygiene and physiology leads to guilty feeling and many other complexities among teenagers.

Inquisitive on sex: Adolescents are curious to know about related topics and are seeking answer to their innumerable doubts. In our society parents are mostly unaware of explaining the sex related matters or shy about revealing them. Thus some adolescents resort to socially unacceptable ways to satisfy their curiosity.

Transitional conflict: An adolescent is considered neither a child not an adult. He has to depend on his parents for his needs but at the same time he wants to hold independent views and opinion like adult Sometimes parents expect to behave as an adult and at other times they treat his as child. This attitude makes him to have a conflict in mind about his status.

Adjustment problems with parents: Adolescents want to be independent but often parents interfere in their choices and selections for example selection of friends dress materials recreational interest study etc. So the adolescent finds difficulty in adjusting to the needs and demands of the parents.

Adjustment difficulties with the community: In the growing society everyone is running fast to stabiles his position in job and livelihood. Adolescents want to enjoy with their peers. But they are expected to set the goal in life. So they are not able to fix their mind whether to go with the goal enjoy in a non committed way.

Adjustment difficulties with school discipline: School imposes some restriction on the part of adolescents. But they expect freedom. This makes them to have adjustment problems with the school.

Financial problem: Adolescents are not financially independent. They are not able to fulfill their requirements of their pocket money. Excess demand or parents denial of to give money make them have problems. In this circumstance they sometimes go for stealing of parents' money.

Conflicts between parental aspiration and aspiration of the children: Without understanding the interest and abilities of children, parents place high aspiration regarding the achievement of their children. When they do not come up to their expectations there is constant quarrelling among parents and adolescents. As a result some adolescents go away from homes and commit suicide.

Problems related to physical appearance: Physical appearance and health are given more importance by the adolescents. Adolescents with the under developed or over developed physique handicaps, disease etc develop various complexes and they feel isolated from the group.

Heterosexual adjustment problem: Adolescents want to mingle with their opposite sex. The parents and teachers put restrictions on the part of youngest to have even friendship with opposite sex. These unsolved motivates aggravate and as a result they indulge in unwanted activities.

2.9.1 Overcoming the problems of adolescence

The following are some of the suggestions to overcome the problems of adolescents

- Parents and teachers should explain to the children about the various aspects of growth and development related to specific periods. This would make them understand the changes occurring during adolescent period somatic change social change, sexual change, emotional change etc
- Sex related doubts should be clarified to them.
- Adolescents gain the development of secondary sexual characters. This development does not make them feel discomfort and guilty if they are property oriented.
- They need to be oriented about the menstruation cycle and hygiene
- Adolescents should be respected and be given freedom to share their feelings and problems
- Views of the adolescents are also to be taken for decision making. This will encourage them to have cordial relationship with the parents and teachers
- Based on the individual needs the curricular and co-curricular activities are to be planned so that they will all participate fully
- Idle mind is the devil's workshop". A constructive work has to be given for streaming his energy
- Religious and moral education helps to reduce the restlessness indiscipline dishonesty and aimlessness among the youth
- The vocational training has to be planned to make themselves sufficient in financial aspects.

2.9.2 Educational Planning for adolescence

- Educational programmes are to be planned in such a way to accommodate the adolescents in property way. The following are some of the strategies for providing appropriate education to adolescents
- Sex education should be imparted to the individuals for understanding of their own physique and development sex related queries etc
- Adolescents' needs and interests are different. The school should have proper library playground, art and craft rooms etc to cater to their needs.
- Adolescence is a period demand respect and recognition. They should get involved in setting garden creating department library, social activities recreational activities etc through which they develop a sense of recognition and responsibility

- Adolescents want independence in every action Hence the school curriculum must provide ample opportunities of self study and freedom to select learning subjects and materials.

- Guidance and counseling should be set at school to provide service to the needs and aspirations of individuals.

- Schools have to differentiate between discipline and freedom. They should not bring discipline in terms of all restrictions in their freedom.

- Creative abilities are to be strengthened by rewards and awards

- Adolescents imitate their role models. The great personalities of the world are focused to them for selecting as role models, through which they develop the qualities to bring out productivity to the society.

- A regular parent teacher meet brings down majority of problems of an individual. They discuss the personal, educational, health and emotional adjustments of the individual.

2.10. DEVELOPMENTAL TASKS AND ITS EDUCATIONAL IMPLICATIONS

2.10.1 Concept of development tasks and special needs of adolescents

When a child reaches the age of adolescence he developed some special ends and objectives related to the need of that particular age. These ends are called development tasks. They are inescapable requirement imposed by the person himself or by the society. An adolescent must be competent to achieve these ends. Failure to achieve competency has a crippling effect on the personality development of the adolescent.

Havighurst proposed a system of development tasks for American adolescents. He described in detail the developmental process and its relation to educational objectives. Development task has been defined by Havighurst as a task which arises at or about a certain period in the life of the individual, successful achievement of which leads to his happiness and success with later tasks while failure leads to unhappiness in the individual disapproval by the society and difficulty with later tasks".

From the above discussions we see that development tasks of adolescents are especially related to the needs very specific to that particular age. Such important needs are given below:

Achieving matured social relations: It is a must for the adolescents to achieve a well matured relationship with both the sexes. A masculine or feminine role that a child has to play is decided at this age. For this purpose he/she harnessed only when the relationship of the adolescents with different types of people are matured and stable.

Need for affection social and security: A desire for social approval and social acceptability is universal in all adolescents. If a person is accepted his friends peers teachers relatives etc at home in the neighborhood and in the school he experiences a great sense of self confidence and security. In order to fulfill this very type of need they take part in elections or in sports and become captains' members' president secretary monitor in charge of co curricular activities etc.

Desire for affection and love from parents' teachers and other responsible positioners of the society is found intense during this period. If such needs are not fulfilled they get frustrated and sense of insecurity develops in them. There are many situations which tell us that they struggle for their social status and security and avoid being rejected by the people such as fear of failure in the examination fear of losing the sympathy of teachers and parents fear of being rejected in the society and at home etc.

Desire for affection and love from parents' teachers and other responsible positions of the society is found intense during this period. If such needs are not fulfilled they get frustrated and sense of insecurity develops in them. There are many situations which tell us that they struggle for their social status and security and avoid being rejected by the people such as fear of failure in the examination fear of losing the sympathy of teachers and parents fear of being rejected in the society and at home etc. These fears may cause hostility aggression anxiety anger isolation frustration and so on.

Thus love affection and social approved are necessary for the emotional security of the adolescents. If they are deprived of these human rights they may face emotional problem which may further lead them to anti social and delinquent behavior.

Need for independence: You know that in the early years of life the child is entirely dependent upon the parents and elders. When he reaches adolescence stage he is physically, mentally and emotionally well developed and has gathered experience of the world. Therefore he thinks of getting freedom from the parents and other members of the society and develops a desire to lead the life in his own way. Some psychologists call this tendency psychological weaning of the adolescents whereas others describe this as process of destlization. But both mean that at this stage of development the adolescent students try to stand on their own feet try to take their own decision try to plan their future life independently and try to lead their life themselves. However for emotional satisfaction of their need for love affection and sympathy they still need the support of parents and their elders surely.

The adolescents feel themselves capable of shouldering responsibility of the world. This is why they glamour for adults status to be granted to them by their society. But the society including teachers considers that still they are immature and need protection directions and control. This state of affairs puts the adolescents in No Man's land where they feel that neither they belong to childhood nor to adulthood. This why at this stage their development has been characterized by indecisions confusion insecurity uncertainty of status fear of coming into class with their parents and elders, feeling of anxiety caused by many restrictions put on them and so on. If the situation is handled properly this state may develop into various emotional problems.

Participating in adventurous and risky tasks: The desire for adventure is dominant among the adolescents. Even cowardice people want at least to see such tasks or to read such stories Adolescents like thrilling and risky activities like climbing a tree beating someone on the way to school playing more risky shots in the play ground or visiting lonely and haunted places of the locality. These adolescents get satisfaction from such experiences. They accumulate such experiences for further narration and recall. Due to this reason all adolescents have been found reading detective or romantic stories through excess involvement of adolescents in such activities is very harmful as far as other roles of life is concerned.

Need for maintaining health and body building: Al most all adolescents want to build their muscles and body. For this purpose they do various types of exercises and consume highly nutritious food. They join various types of clubs for this purpose also. They also do some exercise for increasing their sexual power.

Need for friendship with opposite sex: Such type of needs are every strong in this age. Every boy wants the company of a girl and vice versa. If society is orthodox and it is not permissible to have such relations in the society then homosexuality is adopted by adolescents who are safer for them.

Such needs are aroused due to basic changing taking place in the sex glands. This sex urge may find expression in many ways. They may sex related stories they may see necked films they may go through the habit of masturbation If such sex urge is completely suppressed it may cause serious emotional problems. Mental conflicts guilty feeling phobia anxiety etc may grow out of this stress. If we call all such urges and impulses as sinful and dirty and suppress them to the maximum it will retard the growth of the adolescents.

Drug addiction: This need is not universal nature and it depends on the environmental which the child is reared. If there is a fashion drugs wine or any other types of alcoholic drinks in the society the adolescents will adopt it. These drugs are also used to escape the real pains of life for the time being but consumption of all such items will lead to depression and paranoid symptoms.

Adjustments of personal appearance: Personal appearance is an important part of the adolescents' personality. They are concerned about their personal appearance. It influences their personal and social development and very often there social status in the group is determined by their personal appearance. A beautiful and charming face is the centre of affection of the whole group and this makes the adolescents more confident and more secure. Pleasing faces get more affection from their parents' teachers and other members of the society. Besides, persons of good appearance get more approval of the opposite sex whereas an unimpressive personal appearance or poor complexion causes a fear of being rejected by the group. No adolescents can tolerate such a situation. That is why they may resort to excessive attention to make up and clothes.

Requirement due to physiological changes: when a child become an adult may physiological changes especially in the internal organs of the body and sexual organs take place and many of them can cause emotional problems too if not tackled properly. Similarly if the growth of the adolescents abnormal in any way it may also cause emotional stress and strain. The problems become more serious if the adolescent hides his defect. Thus proper adjustment to these physiological changes is a must.

Need for utilization excess energy: Adolescence is a period full of energy and activism. If this energy is not utilized in constructive works he may take part in Dhama strike or other forms of violent activities in the college campus. Most of the adolescents feel that they are living in a vacuum or helplessness. This kind of feeling give rise to apathy or aggression towards the old people of the society. Indifferent attitude towards adolescents may also create sense of being oppressed and exploited. Since adolescents are more idealistic the older people so they cannot tolerate injustice of any type. They can use demonstration and destruction both against the prejudices prevailing in the society.

Need from a set of values: Adolescents need to form a set of values to establish good relations with parents, relatives, teachers and friends. They have to be sympathetic and helpful to their friends. They have to be obedient and respectful with their teachers. Dealing with different people in different capacities differently is thought task which adolescents need to perform. Their behavior should be so decent that everybody in the society is pleased with them. Failure to learn codes of life observance of law and her social political and aesthetic norms etc may pose serious problems of adjustment for these adolescents. If they are not properly adjusted in the society they would not let the others sit peacefully either.

Need for self support: Adolescents happen to develop a desire to become independence of their parents. Now they want to be economically self supporting. Therefore vocational planning comes to the fore front in their minds. In some adolescents vocational aims dominate almost their every thought and action. Uncertainty about getting jobs worries them. In some cases it develops a persistent emotional tension. Some of their emotional problems grow out of their inability to clearly see their vocational goals. In big cities adolescents constantly see growing competitions in the field employment. They feel frustrated and react to this situation emotionally. Some adolescents develop worries anxieties and other emotional problems which may affect their academic programmes and social adjustment.

2.10.2 Educational implication of the period of adolescence

Keeping in a view the peculiar needs of adolescents their education will have to be molded and modified in the following way

Education for proper physical and motor development: Physical and motor development especially building of the body and formation of muscles is most needed during adolescence. So, proper exercise and suitable games and sports along with proper diet are recommended for them. But their particular interest must be taken into account while framing physical education curriculum for them.

According to medical science if this stage is left unexercised flabby constitution of the body for the rest of life is the result

Arrangement of Picnics and excursions: School should arrange tours and excursions for them to visits historical, geographical and research places and educational institutions. This will give them knowledge increase their cultural horizon. Release their pant up feeling and stresses and channelize their energy.

Training of emotions: Many negative emotions are injurious for them throughout their life. Even positive emotions are harmful if they are expressed in an uncontrolled manner so sublimation or training of these emotions is necessary through literature art, music and dance. Discussion, debates essay writing or speech competition, participation in play or drama or seminars can also help them a lot so they should also be organized now and then by the schools and the society.

Sex education: Sex urge is found strong and uncontrolled during the period of adolescence. If proper sex education is not given to them they may adopt many sex practices which are harmful for their life and morals i.e. masturbation homosexual relations unsafe practice of intercourse with girls etc. So such an education is must for adolescents.

Educational Guidance: All adolescents differ in their ability and interest. They are helped by the school to select subjects according to their mental level and interest. Vocational guidance is also given to them according to their paying capacity and need.

Freedom with vigilance: Adolescents are given freedom by parents and teachers to the maximum level possible but proper vigil is also made to see what they are doing. If their job is constructive they are not interfered by the society.

Organization of co curricular activities: In order to develop the adolescents physically mentally socially and emotionally in a proper manner various types of co-curricular activities are also organized in the school. These activities will engage them most and they will not have time to destruct the society any way.

Library attachment: Adolescents should also be brought to the library to study books on various topics. Public libraries should also be established at various places for this purpose. These books will give them knowledge and entertainment.

Democratic atmosphere: school should maintain democratic environment. Due respect to the students should be given. Such type of co curricular activities be planned and executed which encourage cooperation and brotherhood among adolescents. They should be given opportunities to participate in such activities so that they may exhibit their talent and develop democratic qualities. By organizing various games and other activities adolescents can be kept away from anger and jealously.

Religion and moral education: Adolescents do not get right direction in such matters and they suffer from wrong ideas. As a result of this they lack decision making behavior. As such moral religious and liberal education is imparted so that they may be able to distinguish between right and wrong.

Use of proper teaching method: subjects should be taught with proper methods of teaching which are according to their needs and stage development so that they can develop the thinking and reasoning powers and can use them in their daily life.

Mature behavior with the adolescents should not be under estimated as child. They should treat as adults so that their thinking becomes mature. They should also be given full respect by elders.

Organization of parent teacher association: parent teacher association should be establishment in every school so that the teacher and parents can solve the problems of adolescents.

Facilities for vocational subjects: Education and training for various vocations can be arranged so that adolescents may adopt some useful vocations in their future life.

Medical care: Adolescents are very much anxious of their health and physical development. School should arrange medical checkup camps in the schools for these students where they should also be given proper health advices by expert doctors.

Physical and health education: Keeping in view the special physical and physiological needs of these students physical and health education as a subject should be compulsory taught in the school in theory and practice both.

Nursing of creativity: Adolescents is a period in which creative potential is especially seen. For this purpose they should be provided opportunities to participate in music dance arts etc and an assignment of preparing science model should be given to them by the teach.

Community service: For proper development of adolescents a close relationship should be established between the community and the school. Schools should treat them as treasures of the community and the later should feed the school to the maximum level possible. Many athletes and players are identified at this stage. Community should help the school to identify such adolescents to that they can be referred to proper sports cults for their better training and rehabilitation.

2.11 SUMMARY

In this unit, we have studied the concept of human growth and development. The stages of development and the characteristics of each stage have also been discussed. The principles of development, their importance and need to study them scientifically have been discussed. As you have seen adolescence is a period of transition between childhood and adulthood. Accompanying it are a number of problems. During this period adolescents are considered neither as children nor as adults. Their status remains ambiguous. They are prone to rebel against authority. What baring these characteristics adolescents have upon the instructional; process and for dealing with their particular problems have also been discussed. What you as a teacher can do to attend to these problems and how you help the development of a balanced personality of your students have also been dealt with in order to create a better understanding of students needs and problems.

2.12 PRACTICE EXERCISES

- Trace those events from your own childhood and adolescence stages that reflect the characteristics of these periods.

- "Adolescence is a period of storm and stress". Discuss with convincing arguments

- Teachers can do a lot to help adolescents develops a balanced personality. How? Discuss your experiences in this regard.

2.13. QUESTIONS AND ANSWERS

1. Differentiate heredity and environment.

- Innate or inborn
- Genetic constitution
- Body constitution

2. Differentiate between development and growth.

Growth means quantitative changes in size which includes physical changes. Development means a qualitative change at physical as well as mental levels.

3. What are the dimension of growth and development?

- Physical
- Mental.
- Emotional
- Social

4. Short note on Kohlberg's Moral Development.
Kohlberg distinguished three levels of moral development such as pre conventional, conventional and post conventional, each divided into two stages

5. Write notes on adolescence.
The characteristics of an adolescent are as follows:

- Growth spurt: A rapid increase in height and weight
- Puberty: Rapid development of the reproductive organs that signals sexual maturity
- Body images and adjustment critically apprising their body and self image
- Extremely sensitive and perceptive about their own physical appearance

6. Write note on Concept of development tasks.
When a child reaches the age of adolescence he developed some special ends and objectives related to the need of that particular age. These ends are called development tasks. They are inescapable requirement imposed by the person himself or by the society. An adolescent must be competent to achieve these ends. Failure to achieve competency has a crippling effect on the personality development of the adolescent.

2.14 REFERENCES

- Podhu,K.S,K.S.Premila,T.Sampathkumar&D.Vinodhkumar(2009). *Educational Psychology,*B.Ed.,Course Material,TNOU,Chennai.

- Sanden Vander W.James (1989) *Human Development* Refred A.Knopg INC New York

- Saravanakumar. AR (2010) *Essential of Educational Psychology*, M.A. Education Course Material , DDE, Alagappa University, Karaikudi.

- Saravanakumar. AR (2016) *Metacognition and Attention Activation,* Lambert Academic Publishing, Germany. ISBN: 978 – 3 – 659 – 94421 – 5.

- Sprinthall C.Richardand Sprinthall A Norman (1990) *Educational Psychology A development approach* McGraw Hill Publishing Company New York.

- Saravanakumar. AR (2016) *Metacognition and Attention Activation,* Lambert Academic Publishing, Germany. ISBN: 978 – 3 – 659 – 94421 – 5.

- Saravanakumar. AR (2008) *Attention An Overview,* Arivu Pathippagam, Chennai – 14. ISBN: 81 – 88048 – 65 – 6.

- Saravanakumar. AR (2008) *Metacognitive Perspectives,* New Century Book House (P) Ltd, Chennai – 98. ISBN: 81 – 234 – 1508 – 7.

UNIT III

INDIVIDUAL DIFFERENCES

3.1 INTRODUCTION

In this unit, we are going to study the Psychology of individual differences, heritability of intelligence, cognitive domain and Piaget's approach to cognitive development. We are also going to define intelligence and discuss different theories of intelligence and assessment of intelligence using intelligence test. At the end of this unit we are going to discuss about creativity.

3.2 INDIVIDUAL DIFFERENCES

No two learners are alike. Individual differ in their physical characteristics, emotional characteristics, personality traits, interests' achievement etc. Mass procedures fail to accomplish the objective of education unless they are supplemented by adequate attention to the individual. This makes increasingly necessary to have a definite provision of certain form of guidance which must treat the individuals as an individual

3.2.1 Definition of Individual Differences

Every individual is a typical human being in himself. Being alike in some respects we are definitely different in so many other respects. These differences that distinguish one from another and also make one as a unique individual are named as 'individual differences' in the terminology of psychology. Two different explanations given for the term individual differences in the "Dictionary of Education" by Carter B Good are:

- Individual differences stand for Variations or deviations among individuals with regard to single characteristics or a number of characteristics
- Individual difference stands for those differences which in their totality distinguish one individual from another

The above two dictionary meanings of the term individual differences now can help us in building a workable definition the following words.

3.2.2 Meaning of individual differences

It is a familiar fact that members of the same species resemble each other in so many aspects. That is why when observed causally or superficially all ants, or rats hens or cows look alike to us. We also as human beings have so many common characteristics and are alsike in so many respects. The common prosperities and characteristics distinguish and separate living species from one another.

But by careful examination one can understand that no two members of the same species are exactly alike in all aspects. All living organisms whether human beings or others differ in size shape appearance speed of reaction and in numerable other aspects of behavior. We can see that some individuals are healthy and joy our while some other are ill and irritable. Some learn everything very quickly and others slowly. In this way there exist differences in individuals. Everybody is not just like everybody else. Every individual is a typical human being in himself. Being alike in some respects we are definitely different in so many other respects. These differences that distinguish one from another and also make one as a unique individual are named as **"individual differences"** in the terminology of psychology.

3.2.3 Different types of individual differences

Human being are found to differ from each other and among themselves in varieties of ways and dimensions some of the important varieties of these individual differences are

1. Physical differences: Individual different in height weight, colour of skin and eyes, colour and texture of hair size of hands, arms and head, structure and functioning of internal organs, facial expressions, mannerisms of speech, walk, hair styles and other such native or acquired physical characteristics.

2. Mental differences: People differ in their intellectual abilities and capacities like thinking and reasoning power of imagination creative expression, concentration etc. In the field of general intelligence also we find tremendous differences between individuals. On the basis of intelligence people are classified as idiot, imbecile, Moran, borderline, normal, bright, very superior and genius.

3. Differences in motor ability: such as reaction time speed of action, steadiness manual and finger dexterity, resistance to fatigue etc.

4. Differences in achievement: Differences exist in achievement and in knowledge and in knowledge even among individuals who had almost the same amount of intelligence and had been subjected to equal around of schooling and experiences.

5. Emotional differences: In some individuals positive emotions like love affection etc are more prevalent whereas in others negative emotions like anger Disgust etc are more powerful. Individuals also differ in the manner they express their emotions. Some are emotionally stable and nature while others are emotionally unstable and immature.

6. Differences in interest and aptitude: There exists great variations among the individuals in relation to the specific tastes and interest Some take interest in the meeting people attending social functions and are very fond picnics and group excursions Others feel happy in solitude avoid social gatherings and are interested in mediation or enjoy the company of books. In a similar way people are found to have different aptitudes Some have mechanical aptitude while others have scholastic musical or artistic aptitudes.

7. Differences in attitudes belief and opinions: Individuals are found to posses varying attitudes towards different people groups objects and ideas Their attitude may be positive negative or neutral in nature

8. Learning differences: individual differences are found in the field of learning also. Pupils differ in their rate of learning styles of learning motivation and persistence in learning

9. Differences in social and moral development: Some are found to be adjusted properly in the social situations and lead a happy social life while others are socially handicapped unsocial or anti social. Similarly people are found to differ in respect of ethical or moral sense.

Thus we can conclude that as a whole the personality of an individual is unique in itself. In all the dimension and aspects of behaviour and personality traits individuals differ from each other.

3.2.4 Stages of cognitive Development

Piaget (1970) suggested that children throughout the world proceed through a series of four stages in a fixed order. Piaget four distinct cognitive development stages are:

- Sensori motor stage (Birth to 2 eyras)
- Pre operational stage (2 to 7 years)
- Concrete operational stage (7 to 12 years)
- Formal Operational stage (12 years to adulthood)

Sensori motor stage (Birth to 2 years)
According to Piaget the sensorimotor stages is from birth to two years during which a child has little competence in representing the environment using images, language or other symbols. In the first two years infants learn about their world primarily through their senses and actions. Instead of thinking about what is going on around them infants discover by sensing (sensory) and doing (motor). The major accomplishments of the period are the following

a. Coordination of reflexes: During the first 4 months the uncoordinated reflexes which are present at birth are coordinated into simple schemes

b. Object causality: Infants gradually learn that there is a relationship between their actions and the external world (Objected causality). They discover that they can manipulate objects and produce effects.

Object permanence: A newborn baby does not realise that objects are permanent. For infants below eight month old what is out of sight is purely out of mind. Gradually by the age of 8 moths the infant develops the concept of object permanence an understanding that objects continue to exist even when they are not immediately in view.

Imitation: Infants may try to imitate the actions or facial expression of an older person.

Pre operational stage (2 to 7 years)
According to Piaget's the pre operational stage is a period from 2 to 7 years of age which is characterised by language development. During this stage the child acquires the ability to form mental images of objects and events and thus begins to think symbolically. This stage is further subdivided into two:

a. The pre conceptual phase (2 to 4 years)
b. The intuitive phase (4 to 7 years)

The pre conceptual phase (2 to 4 years): This is the period of rudimentary concept formation. During this period the child develops the ability to identify and classify objects. The other features are as follows:

Representational thought: The child develops the ability to form mental symbols to represent objects or events are not present. The symbolic function of cognitive development can be seen in differed imitation and symbolic play.

(i) Differed imitation: The child shows the ability to imitate action performed earlier by adults

(ii) Symbolic play: The child demonstrates make believe play in which he uses signs and symbols in place of real objects.

(iii) Transductive reasoning: The mode of reasoning of the child at this stage is transductive in nature that is he reasons from the particular to the particular.

(iv)Ego centrism: the child at pre conceptual phase cannot think beyond his own view. He tends to assume that others see the world just as he himself sees it.

(v) Animistic Thinking Pre operational children display animistic thinking children attribute human feelings and motives to non living objects. Thus a three year old might state that thunder occurs because the clouds are angry and Mother Nature brings rain.

B. The intuitive phase (4 to 7 years) During this period the cognitive behaviour of the child is still controlled by perception. His reasoning is based on intuitive rather than on systematic logic. But he is able to use concepts as stable generalization of his past and present experiences. The child in the intuitive sub stage lacks understanding of relational terms and ability to serials objects. His logic is limited with irreversibility and his thinking is marked by an in ability to conserve in terms of quantity as well as number.

Concrete operational stage (7 to 12 years)
According to Piaget the concrete operational period is from age 7 to 12 years which is characterized by logical thinking loss of egocentrism. The child's thought process is limited to real events observed or the actual objects operated by him. The important features of this stage are

a. Inductive deductive reasoning: The child begins to think in terms of a set of interrelated principles rather than single bits of knowledge. He can now make use of inductive and deductive approaches in terms in terms of reasoning and arriving at conclusion

b. Flexibility in thinking: The child sheds his egocentrism and he is able to take view points of others.

c. Understanding the principle of conservation: The child develops the ability to conserve both in terms of quantity and number of objects. He can now very well think that the change is appearance of an object does not alter either its quality or its number.

d. Classification and serialisation: the child develops the ability to classify objects. He develops the understanding of rational terms and also the ability of serialization.

e. Reversibility of thought: At this stage the child learns to carry a thought backward and forward in time.

Formal Operational stage (12 years to adulthood)
According to Piaget the formal operational period is from age 12 to adulthood which is characterized by abstract thinking. At this stage the child thought process becomes quite systematic and reasonably well integrated. The following are the important features of this period.

a. Abstract thinking; The child develops abstract thinking He uses symbolism in the process of thought and learns to deal with abstraction by logical thinking.

b. Hypothetical reasoning: systematic assumption of possible solutions (hypothesis) is derived by the child for the problem. Then the child tests these hypotheses to see which one is the correct solution for the problem.

c. Problems solving: The individual follows the systematic approach in solving the problems. He formulates multiple hypotheses and a number of alternative solutions

d. Transfer of knowledge: The individual is able to transfer his learnt knowledge from one situation to another.

Table 6: Stages of Cognitive Development and its Characteristics

Stage	Age	Major Characteristics
Sensorimotor	Birth-2 years	Development of object permanence development of motor skills little or no capacity for symbolic representation
Pre operational	2-7 years	Development of language and symbolic thinking egocentric thinking
Concrete operational	7-12 years	Development of conservation, mastery of concept reversibility
Formal operational	12 - Adulthood	Development of logical and abstract thinking

3.3 NATURE OF INDIVIDUAL DIFFERENCES

Human traits or qualities are not found in the dichotomous state of "present" or "absent". All persons do have common traits. But the amount and proportion of such traits differ from person to person leading to uniqueness of personality and behaviour. So individual differences are of quantity and proportion and not of quality they are one of degree not one of kind. Human attributes are present in the form of "Normal distribution" with majority exhibiting 'average degree'. Individual differences lend variety and colour to life.

3.4 FACTORS CAUSING INDIVIDUAL DIFFERENCES

1. Differences among individuals can be attributed to variations in hereditary endowment or environmental stimulation or both It can be observed that people belong to different hereditary stock and hence differ in their native endowments and characteristics.

2. Similarly environment influences and simulations experienced by the individuals' right from their conceptions in the womb of their mothers cause differences among individuals.

3. Maturation learning and training are also responsible for the occurrence of individual differences among human beings

4. Differential amount of secretion of hormones by ductless glands in different individuals result in the differences in individuals functioning.

Differences in Physical stature and intelligence of individuals are largely determined by heredity while variations in interests' morality discipline, attitude etc are due to environmental influences.

3.5 SIGNIFICANCE OF INDIVIDUAL DIFFERENCES TO A CLASSROOM TEACHER

The notion that individuals differ in their various abilities capacities and other personality characteristics should help the practicing teachers realize the following:

1. In any group there are individuals who deviate from the norms of the groups,

2. Every teacher should know the abilities potentials, interests, attitudes and other personality characteristics of each student and try to render individual guidance to children for the maximum development of their potentialities

3.5.1 Tackling the problem of individual differences in the classroom

Crow and Crow write since we supposedly are teaching individuals not group of individuals it is the function of the school within its budgetary personal and curriculum limitations to provide adequate schooling for every learner no matter how much he differs from every other learner. The following suggestions can prove helpful for the teacher in this direction.

1. Proper knowledge of the individuals' potentialities: The first in catering to individual difference is to know the potential of each individuals child through intelligence tests cumulative records interests inventories, attitude tests and tests of personality traits.

2. Ability Grouping: In the light of the results derived from the various tests students of a class can be divided into homogeneous groups according to their abilities. Such division can prove beneficial in adjusting instruction to vary individual differences.

3. Adjusting the curriculum: To meet the requirement of varying individual differences among the pupils the curriculum should be as flexible and differentiated as possible. It should have the provision for a number of diversified courses and curricular experiences so that pupils may get opportunity to study and work in the areas of their own interests and abilities.

4. Adjusting the methods of teaching: The teacher should try to follow a different procedure or method of instruction suiting the requirements of varying ability groups of his pupils.

5. Adopting special programmes or methods for individualizing instruction: Special programmes like Dalton plan, the Winnetha plan the project method or use of programmed learning material could be made to enable students to learn at their own individual rate.

6. Other measures of individualising instruction:

i. The size of the class should be as small as possible

ii. The teacher should pay individual attention to the group under instruction

iii. Teacher should keep in mind the individual differences of his students while engaging them in drill or assigning homework

iv. In case where ability grouping is not possible special coaching and guidance programme for the dull and gifted is most helpful.

In this way the problem of individual differences needs a multi dimensional attack for its proper solution

3.6 OBJECTION TO ABILITY GROUPING IN EDUCATION

1. It emphasizes intellectual at the expense of other aspects of pupils personality

2. It fosters feelings of superiority and inferiority among children

3. It is undemocratic and works against the principle of 'equality'

4. Teachers because of their low expectation of pupils in the slow learning steam may even teach them less

5. Ability grouping is uneconomical and pose administrative problems.

6. Teachers assigned to normal or below average streams may themselves feel inferior

7. It eliminates the stimulation of the gifted on other pupils

8. Non availability of appropriate tests to assess pupils abilities parents opposition for bringing segregation among students etc pose practical difficulties to implement the system of ability grouping in education.

3.7 CARE OF EXCEPTIONAL CHILDREN

The fact of individual differences implies that teachers have to cater to a wide variety of pupils during the course of their professional work. Hence it is essential to know about the nature and needs of such exceptional children who in some dimension or other deviate significantly from normal and average pupils. According to Samuel A. Kirk an exceptional child is one who deviates from the average or normal child in mental physical or social characteristics to such an extent that he requires a modification of school practices or special education services in order to develop to his maximum capacity.
Exceptional children are classified as under:

Intellectually exceptional:
a. The gifted and creative
b. the slow learner and
c. the mentally retarded.

Physically Exceptional:
a. Impaired vision
b. Impaired hearing
c. Impaired speech,
d. Crippled and
e. Brain injured.

Emotionally and socially exceptional: Delinquents
Multiple handicaps: The children who have more than one defect given above.

3.8 GIFTED CHILDREN

It is said 3 to 5% of children have their I.Q 130 and above and such children are labeled as "gifted children". There are two types among the gifted i) intellectually gifted and ii) specially talented in certain fields like music, drawing and painting etc.

Intellectually gifted children have a greater proportion of the general factor 'G' in their intelligence. According to Terman, they surpass the average children in (a) desire to know (b) originality c. determination d. perseverance e. common sense f. achievement motive g. logical thinking h. analytical ability and i. sense of humor.

Children with special talents like gifted in music, drawing etc. may have dominant S factor in their intelligence but their I.Q may not be that much as that of the intellectually gifted children.

3.8.1 Identification of the Gifted

1. Individual tests of intelligence could be administered and identify those as the gifted whose I.Q is above 130.

2. In school examinations and achievement tests gifted children occupy the top 5% of ranks.

3. Appraisal of social and emotional maturity and adjustment (gifted children will be far superior to others)

4. **Use of interest inventories**: interest of the gifted children will be superior and multiple in comparison with children of equal age.

5. Teachers' judgment based on his observation of the child both inside and outside the class.

Paul Witty has suggested the following for observing the children for their giftedness.
a. Good Vocabulary
b. Language proficiency
c. Interest and linking for books
d. ability to concentrate for a longer period than is usual for children
e. interest in exploration and discovering relationship
f. Early development of ability to read
g. Early interest in calendars and telling terms.

3.8.2 Education of the Gifted children

Grade Acceleration Method: It involves advancing the gifted child rapidly from grade to grade in school so that he enters college earlier than others i.e. achievement and not time spent should be the criterion of promotion. But acceleration of many years might put a gifted child in a group of students who are older and physically socially and emotionally more nature than him. This exposes him to the danger of maladjustment. Further grade acceleration method is possible only if a concentric curriculum design for different grades is followed.

Ability Grouping: Pupils are classified into 3 streams - gifted average and slow learners –fro teaching. Each stream will have learning materials instructional methods and assignments suited to the nature of pupils. Each stream can progress as its own rate

without being pushed or pulled beyond its ability. However this kind of segration develops superiority and inferiority complexes among the pupils of different streams for physical education and co-curricular activities.

Cross sectional grouping: Here a pupil takes one subject with a particular class group and another subject in which he shows superior proficiency with pupils of a higher class. Individual differences in physique have to be taken into consideration in seating craft work and physical education activities.

Enrichment method: Here the gifted are kept along with others in the same class but given advanced assignments special projects etc. Similarly those gifted with extraordinary talent in specific fields could be provided with enriched programmes for the full flowering of their talents.

Special schools for the talented: Gifted children could be identified through "Talent search Examination" and they could be educated in special schools with enriched curriculum better infra-structural facilities and facilities for interaction with experts in the respective fields. "Navodaya school" have been started with this aim, in mind viz. scheme for grooming the talented out socially deprived children.

3.9 SLOW LEARNERS

Slow learning children were formerly spoken of as **educationally backward pupils**. According to **Cryil Burt,** any pupil who shows an educational retardation of 2 years and more of his age can be classified as backward. The I.Q of such backward children will be generally between 70 and 80. It is said that about 8 to 10% of school pupils may come under this category. Backwardness may be general affecting achievement in all school subjects or specific relating to one or two aspects of school work only like reading writing or arithmetic.

3.9.1 Causes of backwardness

Academic backwardness may be natural due to heredity factors or conditioned due to environmental causes. The former is often severe and in many cases not completely remediable but the latter may be of different degrees depending upon the nature of the outside influence.

Certain pupils known as disadvantaged pupil often tend to remain at a disadvantage when compared to other pupils of equal intellectual ability in academic achievement and may become backward. The culturally deprived child the child from the economically lower social class the child from minority homes the culturally different child e.g. Indian children studying in the U.S or U.K are all such disadvantage pupils whose talents may not flower academically unless special care is taken of their needs. Particularly cultural and intellectual deprivation in early years affects ones academic performance severely and its effect is often cumulative.

3.9.2 Identification of the slow learners

Use of standardized individual intelligence tests:

1. Children with I.Q in the range 70 to 80 are identified as slow learners

2. Tests for sensory acuity memory, emotional and temperamental characteristics standardised achievement tests in school subjects' recreational activities, medical examination reports developmental history family and environmental back ground

should all be used to collect comprehensive data, suing which the case history of the child should be prepared. Analysis of such complete case histories will reveal whether the child is really backward the nature of its backwardness possible causes and point the way for remedial education. The help of guidance clinics are the great value to teachers in such measure. A child guidance clinic usually is staffed by a doctor psychologist psychiatrist and a social worker who gathers the data for any pupil referred to the clinic.

3.9.3 Education of the Slow Learners

1. For children with conditioned backwardness of a remedial nature special classes in normal schools are needed

2. Individualizing instruction and individual attention are needed for these children.

3. Ensuring adequate drill and practice every day after teaching a concept.

4. Use of A.V. aids model and charts are to be excessively used to concretise instruction for the slow learners.

5. Teachers should be sympathetic and provide for activities that build self confidence through success

6. Physical defects if any found in slow learners are to be removed with medical assistance. If there is any sensory defects it should be minimized through appropriate training arranged for with the help of medical and paramedical personnel.

7. Teacher should have the knowledge of social cultural background of the slow learners as they greatly influence ones interest attitudes, habits, ambitions adjustment etc. This knowledge will help the teachers to advise for parental education and procure parental cooperation

An enriched environment through proper preschool education will help to reduce incidence of conditioned backwardness in schools

3.10. MENTALLY RETARDED

The American association of Mental Deficiency in its manual on terminology defines mental retardations as **"sub average general intellectual functioning which originated during the development period and is associated with impairment in adoptive behaviour"**. This sub average intellectual functioning group includes all individual whose performance on suitable objective tests of general intellectual ability is more than one standard deviation below the population mean. This definition gives emphasis on:

a. Symptoms and not the etiology
b. coexistence of deficit in both adoptive behaviour and general intellectual functioning

Doli gave an inclusive definition of mental retardation based on six criteria

i. Social incompetence (inherent inability for managing themselves)
ii. Mental sub normality
iii. Developmental arrested sub normality
iv. Constitutional origin
v. Obtains at maturity (i.e. take place during development period)
vi. Essentially incurable

Thus mental retardation is a multifactor phenomenon and as such they are to be educated in special schools with special care and methods. The main aim of epical schools is to give such pupils suitable training so that they would have acquired sufficient knowledge and skills to be independent and self supporting citizens in society.

3.10.1 Mental Retardedness

Rosen Fox and Gregory define Mental retardation refers to a chronic condition present from birth or early childhood which is characterized by both impaired intellectual functioning as measured by standardized tests and impaired adaptation to the daily demands of the individuals social environment.

If some children with no apparent physical disabilities do not make satisfactory progress in the school it is just possible that they are mentally retarded. Such children should be carefully examined and their I.Q should be ascertained through psychological tests. After it is ascertained that they are mentally retarded we may proceed towards making necessary adjustment for them in education. It is not difficult to provide for such children in a class of normal children. It is generally seen that a dull child is not only quite good but even better than other normal children in activities that involve some physical extension and practical affairs. Therefore for such children we need not emphasize learning of difficult portions of the prescribed courses. Such children may be encouraged to think of some practical things in relation to the same. For example in geography history and economics lessons they may be advised to prepare certain charts and pictures. Some special forum may be organized for them in such subjects. In mathematics and science lessons their attention may be drawn to their practical applications in day to day work. In some other subjects they may be encouraged to acquire some appropriate skills relevantly. In language lessons the power of expression on their part may be encouraged.

It will not be psychological proper to run separate school or class for mentally retarded children. A separate school may not be feasible also and a separate class is likely to make them more spectacular in the eyes of other children so it will be better if they are kept in a common class, where normal children are also taught. But in a common class the teacher will have to pay some special attention to them. The teachers should assign some separate scholastic work to them according to their individual progress. This he should in addition to the general teaching. The teacher should give special home to children in view of their particular mental growth. Thus if the mentally retarded children are taught with other common children with special attention given to them at times, their adjustments in education may be satisfactory.

3.10.2. Factors of Mental Retardation

Mainly two factors are responsible for mental retardation. These are categorized under two headings i) organics and ii) Environmental. These factors are otherwise known as cultural and familial. Organic factors include genetic factors and the factors caused by various infection and trauma. Again social and psychological factors come under the environmental causes organic factors account solely for moderate and serve retardation cases while the environmental factors account for mild and moderate retardation. Different studies and research works reveal how genetic physical social and psychological factors are associated with mental retardation studies of Linford Rees (1970) and David Stafford Clark (1964) reported that at least 5% of the babies born turn out to be retarded at the time of birth. Again Gibson (1963) reported that about 3% of the children aged between 6 and 16 years mentally retarded.

a. Genetic factors: Retardation in determined at the moment of conception in genetic conditions. In this there are two types namely those caused by pairing of two defective recessive genes and those caused by chromosomal aberrations

b. Metabolic Disorder: Statistics of mental retarded reveal that about 1 in 20,000 births suffer from PKU (Phenylketonuria) Phenylkotonuric is a rara metabolic disorder. Here the enzyme responsible for the metabolism of the biochemical phenylalanine is not present at birth.

c. Mental infection: Reports revealed that about 5% of pregnant women have some vital infections which invite dangerous effects during the first three months (Hellaman and Pritchard 1971) mothers who contact rebella or German Measles during the first three months of pregnancy may produce children who show symptoms of disorders and retardation.

d. Mental Retardation associated with intoxications: the cause of mental retardation can be associated with intoxications due to carbon monoxide lead, arsenic landmine and other substances. Permanent brain damage and mental retardation are found due to postnatal accidental poisoning of infants and children.

e. Mental Retardation Associated with Trauma: Psychical damage due to parental injuries or during birth may cause mental retardation. Exposition to large amounts of irradiation of pregnant women causes retardation also. Here the fetus may be adversely affected. The type of advantage depends upon the developmental stage of the foctus. Reports of medical examination reveal that when the uterus is irradiated during the first three examinations reveal that when the uterus is irradiated during the first three months of pregnancy the incidence of mental retardation is reported to be significantly high. Besides the above factors respiratory difficulties after birth conclusions and inability to make normal sucking movements are some of the causes of mental retardations.

f. Retardation Associated with environmental and psychological causes: A combination of genetic and environmental factors is responsible for familial type of mental retardation. Early emotional deprivation and disturbed parent child relationship are some of the potent factors associated with mental retardations of this type. Emotionally disturbed children are considered to be oversensitive to psychological stress and vitamin deficiency is likely to cause over susceptibility to infection. Several small scale surveys report that they familiar type of retarded children is found are low socio economic families. In all these cases the parent's intellectual and emotional levels are low.

3.10.3 Practices in a special school

The following are some of the practices in a special school

a. Compensatory Education

Generally compensatory education aims at preventing development defects that interfere with educational progress in the disadvantaged preschool child. In western countries like USA many institution of this type are found Project head start is this type of institution which started in Milwaukee, USA. This project was proved successful in USA.

Special Education: We know that a retardate learns at a slow pace. So, structured curriculum materials and techniques are necessary for educating retarded children. Recently individual centered programmers have been tried out at the institute of dialectology in Moscow USSR

Day care centre: when the children are of too young or too retarded to be included in other community programme their needs can be met by Day care centre.

Sheltered Workshop: As its name indicates a sheltered workshop provided an opportunity for mentally retarded persons to develop their work skills to a point where they can get a job. In our country, the Department of social welfare provides grants to the states to improve services for vocational rehabilitation of the mentally retarded.

Parental counseling: In our society the parents of mentally retarded children face special problems. They bother about their children's physical and educational problems. Home training services with community sponsored educational training programmes must be provide to the mentally retarded children who live at home.

Education of the mentally retarded: it is true that the mentally retarded child fails to make progress at school. But it is difficult to know who fail to do so. Researchers put all mentally retarded children in four groups

i. the slow learner
ii. the educable mentally retarded
iii. the trainable mentally retarded and
iv. totally depended mentally retarded.

Provision for Educable mentally retarded: We have evidential proof that educable mentally retarded children tend to fail in an ordinary school. The teacher must give priority in helping the mentally retarded child to become self –sufficient and an accepted adult member of the community in which he lives. The special methods which are generally adopted in teaching the educable mentally retarded are as follows:

Individualization: This term does not mean that the children receive individual instructions with small classes, but it implies that each child is allowed to proceed at his own pace of learning according to his own unique growth pattern.

Learning by Doing: Here the basic principle of special education is that the children should learn by doing. Top priority is given to activity methods which lay emphasis on learning through experience.

Need for Learning Readiness: The concept of maturation and willingness to learn should be given die to importance while introducing academic work to the mentally disabled.

Graded curriculum: It is true that these children learn more slowly than average children. Here the teachers face difficulties for gradation of students and for preparing the study materials for slow learners

Repetition: Mentally disabled children have a poor memory. For them teaching method must provide for a considerable amount of Repetition if learned material is to be retained. Research has shown that the memory span of these children increases if the learning materials have meaningful association.

3.10.4 Trainable Mentally Retarded Children and their Education

They trainable mentally retarded children have I.Q in the range 25-55 These children are

mainly taught to take care of themselves and to do simple occupational children are mainly taught to take care of themselves and to do simple occupational job. The primary objects of TMR education are to teach these much more retarded children how to do their daily work without the help of anybody. As these children learn very quickly a more definite timetable is necessary with short periods of activity.

a. Self Care: The curriculum should include a programme at simple habit training. This enables the children to develop skills of self-help in respect of their daily practical needs.

b. Social Training: Priority should be given to group activities such as games, simple dramatic work and storytelling etc.

c. Sensory Training: Special emphasis must be laid on instructions by which the children will be able to make the fullest use to their senses.

d. Language development: They must be provided with some aids through which they can have better speech development and proper understanding of verbal concepts.

e. Craft Work and Music: For developing the feeling self confidence in TMR children. Research reports say that music is sometimes found as a means of releasing energy and provides a form of expression which the mentally retarded children enjoy. Some psychologists have opined recently for normalization of education for retarded children. They argue that mentally retarded children should be taught in regular. Some suggestions for parents of the mentally retarded very often parents fail to understand their children and prefer suspect that particular child is mentally retarded checked up first. If possible they should take the child to the guidance or psychological center to ascertain the degree of mental retardation. In some developed countries baby sitters are prepared to deal with all possible dispositions of the mentally retarded children and they relieve the parents to go out together occasionally.

3.11 THE PHYSICALLY HANDICAPPED

The physically handicapped persons (like crippled) are just normal except their particular physical defect. Hence such individuals should be provided with all those educational activities which are meant for normal children keeping in mind, their physical disabilities.

They should be provided proper vocational training. The vocational adjustment will develop in them self respect and they will be able to carry on their own life.
Education should also look to social adjustment of the physically handicapped. They should be helped to develop desirable attitudes towards own infirmity and towards his relations with other people.

The Blind and Near Blind: If the child is totally blind he should be sent to the special school for the blind where he would learn through the Braille system. Those who are partially sighted should be secreted to sight conservation classes where large print text books and similar other devices are used to teach them. In the schools adequate facility for light and boldly printed books should be provided.

The Deaf and Hard of hearing: One who loses his hearing after he has acquired speech is known as hard of hearing. They can be helped with hearing devices. However deaf and

dumb should be sent to special schools meant for them where they will be taught by sign language and lip reading.

Children with severe sensory and motor defects like cerebral palsy epilepsy rheumatic heart diseases severe sensory handicaps require the services of special personal aided by sophisticated equipment in special setting.

Educating the problem children and juvenile delinquent is discusses in lesson 21.

3.11.1 Need for the Education of the physically disabled children

The education of disabled children has to be organized not merely on humanitarian grounds but also on grounds of utility. Proper education generally enables a disabled child to overcome largely his handicap and makes him a useful citizen. Social justice also demands. It has to be remembered that the constitutional directive on compulsory education includes disabled children as well. Very little has been done in this field so far on account of several difficulties. There is much in the field that we could learn from the educationally and techniques based on advances in science and medicine.

The primary task of education for a disabled child is to prepare him for adjustment to socio-culture environment designed to meet the needs of the normal. It is essential therefore that the education of disabled children should be an inseparable part of the general educational systems. The differences lie in the methods employed to teach the child and the means the child uses to acquire information. These differences in methodology do not influence the goals of education. This form of education is therefore referred to as Special. The following are the special needs education of the disabled.

1. Academic Performance: i) Physically disabled children generally work below their capacity in several areas. ii) Some of the physically disabled children find it difficult to deal with abstract concepts.

2. Emotional Reactions or Social Relationship: i) Quite a large number of physically disabled children suffer from feeling of inferiority ii) They also suffer from feelings of failures. Iii) Normal children are at times not only indifferent to the disabled but also make fun of them. Thus the disabled children are withdrawn (iv) Aggressive feelings and tension get accumulated in the disabled as they have fewer opportunities for expressing their feelings. (v) Sometimes attitude of parents, teachers and students attitude may make a physically disabled child feel unwanted or rejected (vi) Disabled children are more prone to accident and injury. Thus they are not in a position to participate in several co curricular activities. This also creates feelings of disgust in them.

Problems of the physically disabled:

This disabled child is unable to participate in desirable normal activities of the daily life. He therefore needs satisfying substitute interests. The physically disabled child also faces emotional problems as he feels that others have a low opinion about him and develops feelings of hatred self pity.

The physically disabled child is not necessarily mentally deficient. It is therefore very necessary that the mental powers of the disabled are exploited fully and suitable opportunities be provided to generate hope in life and compensate for his physical disability. The major problem of the physically disabled is to identify at the earliest the impairments and make arrangement for adequate adjustment. The handicap that is obvious at birth is easily identified. Other impairments take time to be identified.

3.11.2 Curriculum provision methods of teaching and assessment

The following points may be considered while providing educational facilities for the disables children

1. Normal Curriculum: The majority of the physically disabled children are just normal except for their physical disabled. Such children should be provided all those educational activities which are meant for the normal children keeping in mind of course, their physical disability.

2. Special classes: If necessary special classes may be organized for severely disabled children.

3. Special Equipment and Methods of Teaching: Special children need special equipment and medium for their education. Children with visual impairment also need special teaching methods like the following

a. For the teaching of mathematics stress laid on mental work
b. Embossed diagrams are used in geometry
c. Relief maps and globes may be used for the study of geography.

4. Special subjects

a. Modeling may be substituted for drawing and painting Blind children derive pleasure from with clay and plasticine.

b. Dramatic art may be cultivated

c. Music may be given adequate encouragement

5. Physical Education: Corrective posture work Gymnastic running, wrestling and sports etc should form part of the physical education programme.

6. Vocational education and Handicrafts: A variety of handicrafts may be taught to the physically disabled.

7. Therapeutic Assistance: Special programmes in the form of speech therapy physiotherapy and play therapy should be undertaken to help physically disabled children make the correct and maximum use of whatever abilities and capacities they posses.

8. Education for Living in Society with Disabled: Disabled children have to live in a word of normal people. They therefore should be provided all types of education training and guidance which enables them to face their disability realistically and make suitable adjustments accordingly and live without bitterness and meet unpleasant situations boldly.

Education Services for the Exceptional Children

Panda (2000) mentions the following types of education services to be provided to the exceptional children depending upon the nature and intensity of the handicap.

- Regular classroom with weekly "Itinerant teacher"
- Regular classroom with daily resources room supplemental programming

- Resource room with several hours of daily regular classroom instruction and non instructional activities.
- Regular room with limited hours of weekly non instructional activities with regular classmates.
- Self - contained special classroom
- Special day school
- Homebound or hospitalization
- Residential

3.12 EDUCATION OF CHILDREN WITH ORTHOPEDIC AND LOCOMOTOR IMPAIRMENT/DISABILITY

3.12.1 Identification

Such children can be easily identified as their impairment is usually observable

1. Deformity may be observable in fingers hands, legs neck or waist etc

2. Showing difficulty in sitting standing and walking

3. Showing difficulty in picking up and holding objects and putting them on the ground

4. Frequently complaining of pain in the joints

5. Experiencing difficulty in holding the pen to write

6. Walking with Jerks

7. Experiencing difficulty in the movement of limbs

8. Amputated limbs

3.12.2 Role of Teachers

1. The Teachers should accept such children as he accepts the normal children

2. The teacher should avoid sarcasm for the disability of the children

3. Other children should be advised to appreciate the disability and show due regard to such children. They should be made to understand the disability

4. Seating arrangement in the class may be adjusted to the specific needs of such children

5. Reasonable opportunities for participation in recreational activities sports and games should be provided to these children

6. Remedial teaching may also be arranged for them

3.12.3 Educational Provision

Remarkable progress has been made during recent years for the education of the orthopedic disabled children. In the metropolitan cities of India many schools have incorporated many unusual features including medical and therapeutic equipments to meet with the educational and physical needs of these children. However the school may take the following steps to provide better facilities to these children

a. Vocational training should be given to these children as far as possible school equipments must be adjusted to his /her deformity e.g. table chair etc may be specially designed. The classrooms must be larger than those for regular pupils. The auditorium dinner room etc. Must be within the reach of the orthopedically disabled children. The schools must have health and physiotherapy programmes regularly

b. The role of parents and teachers is very important also. A teacher must help the child to accept his handicap to prevent the psychological crippling. Genuine efforts must be made to assist the children to the maximum extent possible to accept their handicap be self reliant and adjust to their limitations. Again family backgrounds of every crippled child must be collected by the teacher. Teachers should see that these children are provided with recreation facilities. Very often the recreational needs of these children are ignored in the school because of their disability. For grading the children the disability of children must be taken into account Oral test must be introduced for the children who face difficulties in writing the answer if possible they may be given extra time for this purpose. The teachers and experts along with their parents may take action to provide relevant aid for mobility of the limbs and functioning of the extremities District Rehabilitation Centers provide such facilities. Hospitals and primary health centers may be contacted for this purpose.

3.13 SUMMARY

A physically disabled child is one who is affected with a physical impairment that in any way limits or inhibit his participation in normal activities. Physically disabled children generally work their capacity in several areas. Some of the physically disabled children find it difficult to deal with abstract concepts. Blind children need special equipment and medium for their education. They also need special teaching methods as follows integration having the existence of following elements. Sharing the same classroom resources and opportunities by the disabled as well as the regular students integration approach is a particular orientation towards providing education to the majority of the disabled children. Several children do not have sufficient vision. They find it difficult to read the writing on the blackboard clearly. Hearing problems interfere with the achievement of the students. Children with orthopedic and loco motor impairment disability can be easily identified as their impairment is usually observable. Mental retardation refers to a chronic conditions present from birth or early childhood which is characterized by both impaired intellectual functioning as measured by standardized tests and impaired adaptation to the daily demands of the individuals social environment.

3.14 PRACTICE EXERCISES

1. Select handicap students of 12 to 16 years of age observe his/her activities and behaviours for a week. Discuss with them on various issues in order to collect his/her attitude towards the inadequacy she/he faces and how she /he is coping with that. Write a report in about 1000 words.

2. Interview parents and teachers of disabled students of a secondary school and write report in about 100 words. Report can describe the various problems faced by them in helping the student in his/her proper development

3.15 QUESTIONS AND ANSWERS

1. Match the following

	Stage	Age
i.	Sensorimotor	2-7years
ii.	Pre operational	7-12 years
iii.	Concrete Operation	12 to adulthood
iv.	Formal operational	Birth to 2 years

Answer

	Stage	Age
i.	Sensorimotor	Birth-2years
ii.	Pre operational	2-7 years
iii.	Concrete Operation	7-12 years
iv.	Formal operational	12 to adulthood

2. What does the mental retarded refer to?
Sub average general intellectual functioning which originated during the development period and is associated with impairment in adoptive behavior.

3. What are the various practices conducted in Special Schools?
Special Education Day Care Centre, Parental Counselling

4. Who is called a physically disabled child?
A physically disabled child is one who is affected with a physical impairment that in any way limits or inhibits his participation in normal activities.

5. What is the primary task of education for a disabled child?
The primary task of education for a disabled child is to prepare him for adjustment to a socio cultural environment designed to meet the needs of the normal.

6. Complete the following:
The problem of the physically disabled child is Unable to participate in desirable normal activities of the daily life.

7. Mention the role of teachers towards the locomotors Disabilities.
Accept the children; understand the disabilities, arranging provision, providing opportunities and remedial theory.

3.16. REFERENCES

- Aggarwal J.C. (2003) *Basic Ideas in Educational psychology* Second Revised edition New Delhi:Shipra Publications
- Sharma P (1988) *A Teacher's Handbook on IED Helping children with special needs* New Delhi NCERT
- Pollway E.A.et al (1985) *Strategies for Teaching Retarded and special Needs learner* Toronto Charles E Mervil Publishing Company House Pvt.Ltd
- Manivannan .M (2007) *Understanding Educational Psychology* Erode Vellar Colelge of Education for Women

- Saravanakumar AR.(2010). *Essential of Educational Psychology* Alagappa University M.A. Education Study material.

- Saravanakumar. AR (2016) *Metacognition and Attention Activation,* Lambert Academic Publishing, Germany. ISBN: 978 – 3 – 659 – 94421 – 5.

- Saravanakumar. AR (2008) *Attention An Overview,* Arivu Pathippagam, Chennai – 14. ISBN: 81 – 88048 – 65 – 6.

- Saravanakumar. AR (2008) *Metacognitive Perspectives,* New Century Book House (P) Ltd, Chennai – 98. ISBN: 81 – 234 – 1508 – 7.

UNIT IV

MOTIVATION

4.1 INTRODUCTION

In this unit we are going know the various kinds of motives and the function of motives, We are going to discuss the various theories of motivation. This unit also gives us information about the role failure and success, Praise and blame and rewards and punishments in the classroom context.

4.2 MOTIVATION AND LEARNING

Motivation is the process of arousing, maintaining and controlling interest in a goal directed pattern of behavior. Motivation is basic to all behavior including learning. It is concerned with the 'why' of behaviour. The success in life and learning depends on our motivation. It stimulates us and directs our behavior.

Good motivation in any activity ensures that we develop an interest in the activity. Feel an urge to do it. Pay attention to it and the resulting performance is quick and efficient. On the other hand, if there is poor motivation. We feel the activity is forced on us against our desire. We may somehow do it or learn it in a Haphazard way but our attention to the task will be minimum. Mistakes will occur in plenty and performance will also be poor. The most important reason for the gap between pupil's potential and the current level of achievement lies in the area of motivation. According to Crow and crow **'Motivation is considered with the arousal of the interest in learning and to the extent is basic to learning'.** An understanding of the nature of motivation, types of motivation and the innovative ability can make the best use of motivating influences to foster pupil to make maximum use of his or her talents. Further it helps the teacher to know pupils, appetites and desires i.e. to become sensitive to pupils needs. Motivation is basic to all behavior including learning. It is concerned with the 'why' of behaviour. The success in life and learning depends on our motivation. It stimulates us and directs our behavior.

4.3. DEFINITION OF MOTIVATION

Motives generally refer to biological, social and learned factors that initiate, sustain and stop goal directed behavior of organisms, Motives be physiological or psychological and act from within the organism. The term **'Motive'** in its root Latin means 'to move' or 'to impel'. Thus organism acting with a motive exhibits a specific behaviour and strives to reach the goal, appropriate to the motive.

Tolman speaks of motives as tendencies to strive for goals. **Herb** defines motives as events which arouse an organism to action. A motive creates a state of **disequilibrium or tension** within the organism and thus initiates and sustains a particular type of activity which would lead to **restoration of equilibrium** by the attainment of the goal central to the motive So 'disequilibrium' and 'tension appear to be basic to motivation.

Motives do not themselves lend to direct observation. They are inferred from the manifest behaviour or from the verbal reports. For example a student's plunging into intensive study will reveal his motive for achievement. Motives also enable us to predict behaviour.

4.4 CHARACTERISTICS OF MOTIVATION

By analyzing the definitions of motivation given by different psychologists, we can inter the following characteristics;

i) Motivation is a psychological process (internal)

ii) This internal process is initiated by some need or want

iii) It directs our efforts towards the goal that satisfies the need; i.e. it helps as to select the appropriate behavior so as to reach the goal.

iv) It brings energy mobilisation in us

v) It helps to sustain the attention in ones efforts or task

vi) Restless to achieve the goal stops after the goal is reached.
It creates interest in learners as a farmer in his farming. It energises man to act and to make constant efforts in order to satisfy his basic motive.

4.5 KINDS OF MOTIVATION

4.5.1 Primary and Secondary Motives

Motives are generally classified as "Primary" and "Secondary" motives. Primary motives are **unlearned** and they essentially a function of maturation. Primary motives, also referred as **"Biogenic Motives"** (or Physiological motives) are active almost throughout the life, though the methods of satisfying them are modified with age and experience. These motives are **universal and internal**. Primary motives consists of (i) the physiological motives which stem from some internal need or a physiological state within the body and (ii) The general motives I.e. those that are not based on any specific physiological need but are also unlearned.

On the other hand secondary motives also referred as **"Sociogenic Motives"** are acquired by the process of learning and they are essentially social in character (e.g. Gregariousness, acquisition, imitation, aggression adventure etc.). Primary motives {e.g. Hunger, sex, escape from pain etc.} are intense and powerful as compared to secondary motives. Usually physiological motives are not directly related to classroom learning.

4.5.2. Intrinsic and Extrinsic Motives

In another classification of motives, they are divided into **"Intrinsic and "Extrinsic"** motives psychologically all motivation is intrinsic. By extrinsic motivation we refer to certain incentives or reinforcements that are external. The extrinsic incentives may consist of money or a toy or sweet. When a child is assigned a task and told that he would get Rs.10/- on completing it within a specified time, the child puts forth his best efforts to finish the task in time. This is a case of extrinsic motivation.

On the other hand intrinsic motivation is inherent in the activity itself. In extrinsic motivation the task is undertaken because it is rewarding. The task leads to goal. But in intrinsic motivation, it is not a means to an end. It is an end in itself. The task is not undertaken for something else but performing itself is satisfying. Children find intrinsic motivation in play. Adults are intrinsically motivated to hear music, go to temples and offer prayer etc. If we play for a trophy or prize money, then it is external motivation. But if we play for the sake of the satisfaction we derive from it. Then it is a case of intrinsic motivation.

Relative Efficiency of Extrinsic and Intrinsic Motivation in Education

Reward and punishment, success or failure, use of audio-visual aids, cooperation and competition are all cases of extrinsic motivation. But when we emphasize rewards and punishment (or success and failure) too much it may lead to a negative attitude towards

the school by the student. This is the limitation of extrinsic motivation. But when students develop a positive attitude, then it develops an involvement of ego towards the task. They become intrinsically attached to the task. This is permanent and this is a case of intrinsic motivation.

4.6. THEORIES OF MOTIVATION

The process of motivation (how motives arise and control the behaviour) has been explained by different psychologists. While behaviorists emphasize extrinsic motivation, cognitive theorists advocate intrinsic motivation. The following are the important theories of motivation.

4.6.1. Instinct Theory of McDougall

Charles Darwin, in his **"Theory of Evolution"** advocated that no fundamental difference exists between man and higher animals in terms of their mental faculties; only refinements have taken place. Following this **McDougall** proposed his doctrine of instincts. He held that instincts are inborn and they are the spring of human behavior. He developed a list of 14 original instructs such as parental, gregariousness, mating, self-assertion, submission, acquisition, anger etc, He defined instinct as complex inherited tendencies common to all members of a species compelling each individual (i) to perceive and pay attention to certain objects and situations (ii) to experience positive or negative emotional excitement on perceiving them and (iii) there upon to act in a way which is in the long run likely to preserve the individual.

McDougall proposed that each instinct is accompanied by specific emotional disposition as fear with escape, anger with pugnacity etc. These emotional dispositions get organized by experiences in the environment to from sentiments. Most of human behavior is determined by sentiments. According to him, all behavior is purposive.

Today very few people only accept this theory as it has the following major limitations:
1. Instead of explaining why a particular behavior tasks place, it simply describes behavior by attributing it with some labels (names of instincts).

2. Experimental evidences (obtained by KUO, **Dunlop** and Social Anthropologists) point out instincts is modifiable through learning and adult behavior is largely influenced by learning and experiences. {(e.g.) KUO'S experiment showed that a kitten and rat brought up together fondled each other, which is against the instinct theory}

4.6.2. Morgan's Physiological Theory (Hypodermic Model)

According to **Morgan** there is a central Motive State (C.M.S.) in the brain which is based for all activities and behavior. An organism can be stimulated externally either through chemical or physical agents which is transmitted to the C.M.S. through nerves as electrical impulses. For example, if a horse is whipped or when a cart man uses the nail edged stick on the bullocks, the animals get stimulated and start running fast. Morgan thought of C.M.S. in terms of certain experimental evidences he has gatherer. He ascribed 4 basic characteristic features for C.M.S. They are;

1. Persistent: That once aroused, the C.M.S. does not require support from stimuli outside the organism or within.

2. General Activity: A motivated organism has a heightened bodily activity.

3. Selectivity: A C.M.S. results in selectivity of reaction to stimuli. The reaction does not depend on any external environment stimuli.

4. Emission of certain Behavior Pattern: The C.M.S. primes or prompts or the organism for appropriate consummator behavior. In order to substantiate his theory of C.M.S. he conducted a number of experiments which could be grouped under three types.

Neuron- Physiological studies: He found that adrenal ecomised atomized rats took more salt because the taste buds on the tongue have been sensitized to salt as a result of sodium insufficiency. The negative evidence gathered in his experiment was interpreted as due to C.M.S. responsible for the alteration in feeding behavior.

a) Studies on humeral factors (blood Factors): Found that change in blood factors may arouse motive state.

b) Studies on Direct- Electrode Stimulation of Brain Centre: Olds and Miller implanted fine electrodes directly into the brains of rats. The exposed terminals outside the rat's skull can be connected to a source of low voltage which is actuated when the animal presses a bar. Rats will press such bars thousands of times per hour to receive shocks to their "pleasure centers" Experiments on rats have proved that animals can be made to eat, drink or even run mazes as a results of stimulation of appropriate brain centers.

This physiological theory of motivation is not much of use for classroom motivation.

4.6.3 Hull's Drive-reduction Theory

When an organism is deprived of something, it finds itself in a state of disequilibrium and a condition of tension is created. This makes the organism energized and it becomes active, trying efforts to reduce or eliminate the tension. The emerging state that is produced by tension is called "Drive '. The emerging state of behavior is the drive and learning occurs only when behavior is reinforced by the reduction of some drive. Behavior according to Hull, becomes goal oriented by virtue of the selective reinforcement of certain responses, resulting from the attainment of the goal Behavior that does not lead to the goal on the contrary, does not remove tension and is therefore avoided.

For example when the glucose level in blood goes below a particular level, we are in need of it, i.e. food. This need for food sets the 'hunger motive' in us, due to which stomach muscles start contracting and expending and consequently, we feel a kind of pinching in the stomach. This tension generates 'drive in individuals to make efforts in getting food. After getting food, need vanishes, drive gets reduced and the motive disappears. Our food-seeking efforts come to an end. When the operation of a motive ceases, another motive may appear and guide the behavior of the organism viz. When hunger is satisfied, "thirst 'may motivate the behavior; then 'sleep' may follow and so on.

Hull used the following two mathematical equations to explain his elegant theory.

$SE_R = SH_R \times D \times V \times K - l_R - SO_R$

$SH_R = 1 - 10^{-an}$

Where SE_R is Reaction potential for a particular response
SH_R is the habit strength (strength of S-R bond)
D is the level of 'Drive'
K is the magnitude of reward
V is the stimulus intensity

SH_R is the inhibition (resistance) developed to a response due to repetition of the same, a number of times.

SO_R is the Oscillatory reaction strength 'a' is an empirical constant which is .03 for human beings; this value is greater for animals.

'n' is the number of reinforced trials required to from a habit. Only when the value of SE_R crosses a particular minimum value (called Threshold potential) response will occur. Among the values of SH_RD, K, V if anyone is zero, SE_R will become zero and no response is possible. Hence we cannot firmly say that a response will appear if a stimulus is presented. Response will emerge only when SE_R crosses the threshold.

Before Hull propounded his theory it was believe that reward and praise alone can reinforce behavior. But Hull argued that 'escape from pain' 'need reduction' etc. also serves as reinforces.

4.6.4. Murray's Need Theory

Closely related to the concept of drive is the concept of need. Henry Murray developed a need theory. His theory has been influenced by dynamic approach of psycho-analysts and field theories. 'Need' according to Murray is "a hypothetical construct which stands for a force (the physic-chemical nature of which is unknown) in the brain, which organizes perception, apperception, intelligence and action of the individual in such a way as to transform in a certain direction, from the existing unsatisfying situation". Unsatisfied needs would arouse the person to work, that would be sustained has been attained. Each need is accompanied by a particular feeling or emotion and tends to use certain modes of behavior, which brings an end situation that satisfies the organism.

Murray does not speak of reduction of tension by the organism in order to engage in activities. He proposed that organism not only behave to reduce tension but also to develop tensions so that they can be later reduced. He asserts that it is not a tensionless state which is satisfying but the process of reducing tension.

He classified all needs into two broad categories:
i) Videogenic Needs: These are called primary needs which are essential for survival. They include water, food, oxygen, sex, secretion, defecation, urination, warmth etc.

ii) Psychogenic Needs: These needs are secondary which emerge out from primary needs. Murray has given a long list of psychogenic needs. Achievement abasement, affiliation, aggression, autonomy, construction, superiority retention, order dominance rejection, exposition, play, nurturance, blame-avoidance etc.

4.6.5. Maslow's Theory of Hierarchical Needs

Abraham Maslow proposed a comprehensive theory of need gratification and growth motivation, including fundamental physiological needs, intermediate needs and what are

called meta needs which a person is able to attend to only when his lower order needs are satisfied. Such Meta needs are of creativity and self-actualization According to Maslow:

i) Human needs are many and multiple; all are not of equal importance, i.e. needs can be arranged hierarchically.

ii) The organism will aspire for a higher order needs only when the lower order needs get fulfilled.

Thus his hierarchy of human needs can be represented pyramidically as follows:

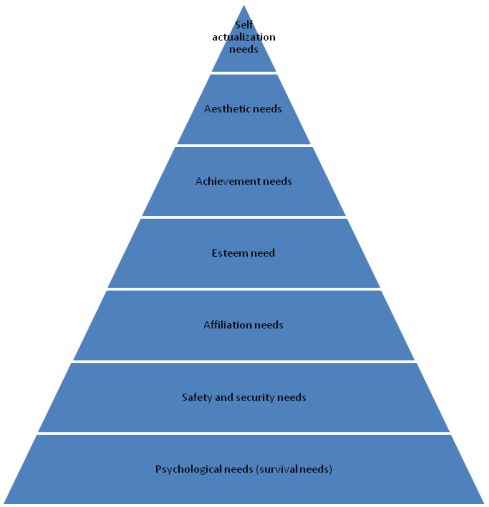


Fig 7: Maslow's Theory of Hierarchical Needs – Structure of Pyramid

Physiological needs:
These are the lower in the motivational hierarchy which includes need for food, water, oxygen, sleep, sex, sensory satisfaction and the like. These are vital for survival and hence should be fulfilled before the next higher order motives become prominent Perhaps the main reason why disadvantage and poor children refuse to be motivated in the classroom to learn is that basic bodily needs remain unsatisfied.

Safety and Security needs:
They include shelter, clothing and personal safety, security of the future, routine, regularity etc; Children do need discipline within their levels of understanding in order to perceive an orderly and organized world.

Affiliation needs:
It refers to the individuals hunger for affection "A pupil who is not loveable because of his behavior, needs to be loved most" Identify implies belongingness and often underachievement of certain pupils results from lack of love and belonging.

Esteem needs:
In all of us there is a desire for strength, mastery, competency etc. leading to a feeling of independence and freedom. We want to be high in the eyes of others. According to Maslow, satisfaction of this self-esteem need generates feeling of worth, confidence and

adequacy. Lack of satisfaction of this need can results in discouragement, feelings of inferiority and inadequacy.

Achievement needs:
They may be classified as need for knowledge and the need for understanding. Need for knowledge is satisfied when there is access to information, knowing how to do things, meaning of things events, symbols etc. Needs for understanding implies knowledge of relationships, process the integration of knowledge into broad structure etc. Thus achievement needs are related to intellectual domination and cognitive competencies.

Aesthetic needs:
This is concerned with appreciation of order and beauty. One whose lower order needs are fully satisfied or known that he need not bother about them, derives pleasure in beauty, nature etc, Tagore, Wordsworth etc. are the best examples for this.

Self-Actualization needs:
Self actualization means to fulfill one's individual nature in all its aspects. One who is talented in one specific area feels uneasy, if that talent is is not nurtured and utilized. He wants to attain perfection in that area. The highest level of functioning occurs when a person is self-actualized. People can be motivated towards self-actualization only when the lower order needs are satisfied.

Educational Implications of Maslow's Theory
1. The idea that D needs of pupils are to be satisfied to enable them to function at a higher level of motivation has to be borne in mind when dealing with economically and culturally disadvantage children.

2. Looking after ventilation, lighting , furniture, blackboard, provision, of midday meals for the needy, classroom arrangement for physical and psychological safety and showing interest in every pupil so that he feels that he belongs to the class are vital.

3. An individual tends to raise his goals after success and lower them after failure; so teachers should maintain realistic level of aspiration by providing graded assignments ensuring to include certain amount of success for every pupil.

4. The teacher should enhance the attraction and minimize the dangers of growth needs.

5. Indiscipline in classrooms and campus unrest could be traced to the fact that our curriculum is by and large not related to the demands of the society and aspirations of the people. The uncertain future makes the students behave hysterically at times. Therefore the curriculum should be drastically changed and periodically revised so that it serves the vocational needs of pupils.

Characteristics of Self-actualisers
Maslow in his book 'Towards a psychology of being' has listed the characteristics of a consistently self-actualized person

i. He has a sense of detachment
ii. He accepts himself and others
iii. He is demonization in outlook
iv. His behavior is problem –centered

v. He shows a high degree of spontaneity
vi. At times he shows mysticism
vii. He identifies with mankind
viii. He develops a deep inter personal relationship with others
ix. He discriminates between ends and means
x. He appreciates 'basic goods of life' with continued freshness and pleasure
xi. He is creative
xii. He has a sense of humor
xiii. He is a non-conformist
xiv. He shows sufficient perception of reality and acceptance of it.

4.6.6. McClelland's Theory of Achievement Motivation

The theory of achievement motivation was developed by McClelland and his associates in 1951 at the University of Harvard. The crucial problem of economic disparity among the nations of the world and psychological causes underlying this problem were attacked by McClelland. He rejects the conventional explanation that economic growth can be explained in terms economic variables. According to his view psychological and sociological factors are major variables affecting economic growth. In his book "The Achieving Society" he advanced his new concept of economic growth of the nation. He argued in his book that the rise of capitalism cannot be explained and understood on the basis of economic factors alone. He believes that changes in the fundamental beliefs and attitudes of men gave impetus to economic growth in certain countries.

According to him, human beings differ from one another in the strength of achievement motive. It is this difference in strength of motivation to achieve that is important in understanding the difference in the economic growth of nations. **Achievement motive is a type of social** motivation and appears to be a widely generalized level of aspiration, aiming at excellence in all undertaken activity. It involves an exalted self-esteem and self-concept **McClelland** denoted achievement motivation by the symbolic expression N- Ach (need for achievement). **Atkison** has also made a significant contribution to the development of the concept of achievement motivation.

Concept of Achievement Motivation and its Characteristics

The essence of achievement motivation is that it is not just a desire to achieve only but implies a striving to achieve a standard of excellence in actions. It is an intense desire to perform with excellence for its own sake. High achievement motive should be coupled with a success oriented mentality, if accomplishments are to be real. People with high N. Ach exhibit the following characteristics

i. do well in competitive tasks

II. generally prefer "**Skill exercise" to "game of chance"**

III. they are fast and hard learners

IV. they want to live up to a high self imposed standard of performance

V. they show preference for tasks of middle level probability of success (i.e. moderate risk- taking)

VI. they see problems and obstacles as challenges to be met and are determined to tackle them

VII. show persistence in work at an achievement related task

VIII. derive more pleasure from success than those who are weak in achievement motive (or who are dominated by the fear of failure)

IX. There is strong desire to excel and beat other or to perform the best (in the absence of competition from others, they compete with their own past best performance and try to beat it)

X. They are relatively resistant to outside social pressures

XI. They are energetic and generally exhibit a high profile of performance

XII. Sometimes appear to the tense and are likely to suffer from psychosomatic illness

Atkinson's Model

Atkinson's has developed a mathematical model for N. Ach, that relates a person's expected value of succeeding or failing at a task to the person's level of achievement motivation, in terms of its two components- (i) T_s(Tendency of an individual to act with a hope for success (ii) T_{AF} (Tendency of the individual, acting only to avoid failures). The formula suggested for the level of resultant motivational force is

N-Ach= T_s-T_{AF}

T_s and T_{AF} are calculated with reference to approach to success or failure, subjects probability of success (P_s) or failure for the given task and the incentive value (I_s) of the task for the subject. i.e. the tendency to approach success T_s is computed from the equation $T_s = M_s \times P_s \times I_s$ and further $I_s = 1 - P_s$. M_s is relatively general and stable characteristic (the motive to achieve) of a person which is present in any behavior situation. But the value of the variables P_s and is depend upon the individual's past experiences in specific situation that are similar to the one he how confronts.

Measuring Achievement Motive

McClelland used pictures of the TA.T (Thematic Apperception Test) for measuring achievement motivation. High pictures (i.e. pictures depicting someone putting forth a lot of effort) are not used to measure N-Ach. Only medium pictures in which there are just slight suggestions that the individual in the pictures is aiming at some excellence in activity, are used. Given a T.A.T, picture (let us say, a boy sitting at a desk), the subject is given 4 minutes for writing a brief story answering the following question: What is happening? Who is or are the; person or persons? What event that has happened in the past has led up to the situation depicted in the picture? What is being through? What is wanted? By Whom? What you think will happen or what will be done? etc. Each subject is shown 4 or 5 pictures and their stories analyzed and weighted for achievement related content and words. Instead of T.A.T. pictures, multiple choice questions are also used for this purpose with good results.

Inducing Achievement Motivation

Number of factor like home, school and culture of the society; affect the development of achievement motivation.

1. Home plays an important role in the early life of children in the development of attitudes and motives. When parents are educated and ambitious, children also imitate and possess a high degree of achievement motivation. Strong and supportive parents contribute to the growth of strong success oriented achievement motive in their children.

2. Mother's encouragement of independent activity at an adequate age is the most potent source of the development of N-Ach, according to **Weinner Botom.**

3. Deprivation of child-parent relationship affects emotional development and leads to cognitive deficiencies.

4. The social philosophy and culture of society will have a distinct influence on achievement motive. A society with a greater social mobility and migration, promotes achievement motive. In an orthodox society where everything is left to fate, the achievement motive will be low.

5. The school, its climate and teachers influence the development of achievement motive among the students. The motto of the school, the reputation it has made in the local community, the distinction it has obtained in public examinations, the values and ideals the school cherishes, all these will have considerable influence on the achievement motivation of students.

6. Providing feedback at regular intervals also will promote achievement motivation, because feedback will provide a clear insight into the meaning of goals.

7. A person's self –concept is also an important condition in learning and achievement level. The school should provide ample scope for the pupils to develop their self-concept and through that achievement motivation, by providing a variety of co-curricular activities in which pupils and teachers participate with real involvement.

8. Significance of self-study: The setting should dramatize the significance of self-study and lift it out of the routine of everyday life. This will increase the probability of more changes in motives.

9. Achievement as a sign of membership in a new reference group: There is likelihood of occurrence of changes in motive if the achievement is a sign of membership in a new reference group.

Anxiety and its influence on performance

Anxiety is the state of being anxious, uneasy with fear and desire regarding something doubtful. The anxiety is experienced in many areas and Individuals differ in their level of anxiety (level of general anxiety itself is considered as an aspect of personality). Low level of anxiety is considered to be a correlate of high achievement. Low level of anxiety produces a slight tension in the individual when he is about to undertake any task, and make him serious about the task and ceases after a satisfactory level of performance is achieved. Thus achievement-oriented people exhibit low level of anxiety. But high anxiety level has a debilitating effect on one' performance. High anxiety triggers high level of tension under which even the best player fumbles. He becomes to much emotional and his cognitive faculty starts working at the low level. On the contrary people with own achievement motivation do not show any anxiety at all when they are about to set out on a task: they are highly indifferent. Thus anxiety is to be there but it should operate at the lowest level so as to maximize one's performance.

4.7. ROLE OF REWARDS AND PUNISHMENT IN MOTIVATION

Rewards and punishment are the two potent and powerful incentives which influence the future conduct or learning of an organism. Roll of honor, prizes, badges and the like are various forms of rewards. Rewards help to **'stamp in'** the desired responses. Punishment is supposed to **'Stamp out'** the S.R connection as suggested by **Thorndike** (Law of effect). However punishment which is based on fear (fear of pain and fear of disgrace) will not only on such of those students who consider that getting reprimanded is shameful. Punishment will be of no consequence on those who consider that to withstand the punishment is heroic. Progressive educational opinion is generally against punishments particularly corporal punishments which degrade the pupil. But simpler types of punishment like reproof appear to have some value. Such punishments act as deterrents and serve as a form of discipline. But correction and restitution should be first tried before punishment is resorted to. Among these two viz. Reward and punishment which one will prove more effective, mainly depends upon the personality of the receiver as well as that of the giver.

4.7.1. Advantages of Rewards

i. Rewards serve as positive reinforces. As they are associated with success, they generate joy and satisfaction in the minds of the learners.

ii. Rewards lead to social recognition, which in turn promotes opportunities to express the initiative, creativity etc. of pupils.

iii. Rewards appeal to ego maximization and develop high morale

iv. Rewards enhance the efficiency of the talented.

4.7.2. Limitations of Rewards

i. Rewards will not motivate all but some who are almost equal in their efficiency.
ii. As rewards are extrinsic, they may not promote intrinsic interest in learning.
iii. Rewards tempt the learner to get them by any means including cheating.
iv. Rewards create unhealthy competition among the students.

4.7.3. Advantages of Punishments:

i. Punishment act as deterrent of wrong behavior.

ii. Simple punishment serves as a form of discipline in the class.

iii. Punishment immediately corrects the wrong doer and warms others not to repeat the same mistake (**Ripple effect** of punishment)

iv. If punishment is proportionate to the mistake, and also accompanies with proper explanation as why it is given, then it will have the value of reforming the wrong doer.

v. Punishments will be effective only when they are administered impartially: then only they will appear to the students as natural consequences of undesirable behavior.

4.7.4. Disadvantages of Punishment:

i. Punishments are based on fear and therefore they are less effective

ii. They create unpleasant feelings and associated with failures.

iii. The results of punishment are not always permanent
iv. Punishment that appears severe to one may not appear that much severe to another, there are no reliable measures of punishment.

v. They lose their effectiveness, if the pupil is either not afraid of or willing to accept them.

vi. They create ill feelings among the teachers and students.

vii. Sometimes those who are punished may appear to be heroes to others (e.g.). Those who were jailed under the **MISA** during the period of emergency (i.e. in 1976) started putting **MISA** as a prefix to their name as a mark of their valour).

viii. Some punishments shatter the self-confidence of emotional persons.

4.8. ROLE OF SUCCESS AND FAILURE IN MOTIVATION

Success is an important positive factor in the motivation of students. Success leads to the development of positive self-concept in the pupils and hence to further success and further increased motivation. So teachers should give graded assignments such that everyone will have some success initially and continue their efforts. In classroom teachers can set the stage for success through provision of readiness training for the learning activity, sating clear cut short term goals which every pupil can achieve pointing to evidences of progress through immediate feedback helping each pupil to develop a realistic level of aspiration and not expecting all pupils to progress at the same rate. Teachers should not misguide pupils by stating that failure is the stepping stone for success.

4.9. ROLE OF PRAISE AND BLAME

When a child is praised at his successes, he is overjoyed. As a result he works biter than before following prints must be kept in view while using praise as techniques of motivation.

a) If an organism is praised at every big or small success randomly, he will be addicted to listening the lords of praise. As on result, no new behavior is created due to praise.

b) Weaker children should be praised even at their small bits of success while talented children should be praised only when they have really done something very unique.

c) Praise technique should be applied according to changing ratio schedule, i.e., sometimes, it should be used and sometimes not and the subject must not know at what time this is to be given.

As far as Blame is concerned, students are directly blamed for their failures and they are made ashamed. But excess use of blame as a technique of motivation, may frustrate the child. Following points must be kept in mind before blaming the students on their failures.

a) Positive efforts of on child must be praised first before blaming him on his failure.

b) Students should not be solely made responsible for their failure. Other related factors and conditions must also be included in the list of factors causing failures in life.

c) The language of the blame should not be in setting for students. The self respect of every individual must be recognized.

4.10. ROLE OF CO-OPERATION AND COMPETITION

Both co-operation and competition are present in group learning situations as in the classroom. Neither of them is innate. They are both re results of social influences and pressures from the social environment. Competition promotes greater individual achievement. (e.g.) 100 meters race, Tennis-Singles etc. motive the efficient competitors to put in their best). However competition seems to generate a number of harmful effects.

They are:
i. In any competition there are few winners and more loses and hence most participants may just withdraw in self-defense.

ii. Fierce competition leads to strains in which none can give one's best.

iii. Intense competition breads to such anti-social attitudes like winning at any cost, obsession with surpassing other pupils, goading over other failure etc.

On the other hand, competitions do provide opportunities for:
i. Evaluating one's abilities on a realistic basis and sups him to overcome personal limitations.

ii. Establishing social contacts leading to friendships and affiliations.

iii. Increasing one's productivity.

But the harmful affects out weight the benefits of competitions.
Cooperation is the basis of democracy. It promotes mental peace and high social adjustment football, cricket, tennis doubles etc. are team games which demand cooperation from every team member, here group performance is more important than individual brilliance. (In spite of good performance by **Sachin Tendulkar,** due to lack of cooperation from other team members. Indian cricket team has lost many matches by its lack luster performance).

The best thing is we should arrange more of activities in which both competition and cooperation are involved. For example in a 4X100 meters relay, each member of team is motivated to put in his best and at the same time unless the 4 members of the team cooperate with each other, their team cannot win in the race. Similarly conducting Quiz programmer among the teams team-teaching, etc. could also be attempted. When competitions are used, group competitions with frequent changing of group members, as well as self-competitions are good.

4.11. LEVEL OF ASPIRATION

Frank defines level of aspiration as **"the level of future performance in a familiar task which an individual, knowing his level of past performance in the task, explicitly undertakes to reach". F. Hoppe** defines it as "**the degree of accomplishment consciously striven after by an individual".** Generally normal people set their level of aspiration little above their present level of performance, raise it after success and lower a little after experiencing failure. Abnormal people and people dominated with excessive fear of failure set their future goals either unrealistically too high or low.

Personality factors such as N. Ach; self confidence, maturity, self-esteem etc. seem to influence the choice of an individual's aspired goal. Generally the two popular measures used in aspiration studies are:

a) Goal Discrepancy (G.D) = Present Aspiration - Previous Attainment
b) Attainment Discrepancy (AD) = Present Attainment – previous Aspiration
For normal persons G.D. will be slightly positive and A.D. will be slightly negative.

4.12. MOTIVATIONAL STRATEGIES IN THE CLASSROOM

How to motivate children in the classroom for learning is a crucial problem which concerns all teachers at all stages of teaching. Following are certain common techniques used by teachers to motivate the students:

Rewards in the form of prizes, distinctions, grades, decorations etc., generate interest and enthusiasms in pupils and appeal to Ego involvement and Ego-maximization.

a) Use of proper incentives as motivating agents, appropriate to the age group of students. (E.g.). In primary classes, rewards and prizes may operate effectively; in high school classes praise and blames will be more suitable than rewards.

b) Students should be helped to feel the utility of what they learn by relating them to practical life situations.

c) Provide feedback to students about their performance, then and there: announce test results in the class possibly the next day itself. This makes the learner motivated to learn and face the next test eagerly. Similarly teachers not of head, smile, verbal appreciation etc. will serve as feedback in the actual classroom teaching-learning situation, when students present their responses.

d) Goal setting: Motivational behavior is always goal-oriented. When the goal is clear and attainable, the students strive hard to reach the goal.

e) Ensuring success to all, at least to some extent: Graded assignments should be given such that everyone will have some success initially and continue their efforts but the talented may claim more success or full success.

f) Competition and co-operation: Teachers should stress cooperation as a motive in study and sports. Where competitions are used, it should be set among the groups with frequent changing of group members. Within each group, individual members should be goaded for self-competition.

g) Professional competency and sensitivity to the needs of pupils help the teacher in his tasks and kindle student's interest in their learning. The imaginative use of **audio-visual instructional aids** is of great value in making the classroom teaching interesting.

h) Avoid excessive motivation as it is self-delegating.

i) Develop positive attitude in pupils towards the school situation and towards learning itself and proper teacher pupil relationship is basic to such an attitude.

Besides the strategies discussed above some modern dynamic methods of instruction like team teaching, group discussion, brain storming, quiz programmes etc., will keep the tempo of the class. Any teacher can become a motivating teacher if he adheres to the following

a) Well structured teaching.

b) Increased participation of the learners.

c) Warmth and enthusiasm of the teacher in appreciation of students efforts.

d) Setting clear cut goals, within the reach of the pupils.

e) Good rapport with the students inside and outside the class.

f) Like stage actor, the teacher should keep the tempo in the class by resorting to proper modulation of voice, gestures, etc, using varied techniques like demonstration, illustration (visual and verbal), etc.

g) Continuous internal assessment provides for continued motivation, eliminating needless tension in the last minute.

4.13. SUMMARY

Motivation is basic to all behavior including learning. It is concerned with the 'why' of behaviour. The success in life and learning depends on our motivation. It stimulates us and directs our behaviour. Good motivation in any activity ensures that we develop an interest in the activity. Feel an urge to do it. Pay attention to it and the resulting performance is quick and efficient. On the other hand, if there is poor motivation. We feel the activity is forced on us against our desire. We may somehow do it or learn it in a Haphazard way but our attention to the task will be minimum. Mistakes will occur in plenty and performance will also be poor. The most important reason for the gap between pupil's potential and the current level of achievement lies in the area of motivation.

4.14. PRACTICE EXERCISES

1. Define the terms 'motives' and 'motivations'

2. Distinguish between 'motives and 'incentives'

3. How does human motivation differ from motives in animal?

4. Write short notes on:
i. Motivation cycle
ii. Characteristics of motives
iii. Motivation and learning
iv. Classification of motives

5. Briefly explain Hulls Drive Reduction theory, bringing out its educational implications

6. Describe Maslow's theory of Hieracial of needs, bringing out its educational implications

7. Distinguish deficiency and growth needs

8. List the important characteristics of a self actualized person

9. What is achievement motivation? How is it measure? How may teachers help to elevate this motive in pupils?

10. State the characteristics of a person with high achievement motive

11. How the home and the school may and in the fulfillment of the needs of security and love and affection.

12. Distinguish between intrinsic and extrinsic motivation and point out the merits and limitations of each type

13. Write short notes on:
In learning situation the role of
i. Rewards and punishment
ii. Success and failure
iii. Competition and cooperation

14. Outline a practical program me of motivational strategies which can be adopted by the teacher to maximize learning among his adolescent pupils

15. Define the concept of 'Level of Aspiration'

16. Explain **Mc Dougall's** Instinct Theory of motivation

17. Explain **Murray's** Theory of needs

18. Explain **Atkinson's** theory of achievement motivation

19. What is anxiety? How does it affect one' performance?

20. Explain **Morgan's** physiological theory of motivation

21. Write a brief not of **McClelland's** theory of motivation

4.15. QUESTIONS AND ANSWERS

1. Define Motivation.

Motives generally refer to biological, social and learned factors that initiate, sustain and stop goal directed behavior of organisms.

2. What are the theories of Motivation?

McDougall's instinct theory
a. Morgan's physiological theory
b. Hull's drive reduction theory
c. Murrays needs theory
d. Maslow's theory of hierarchical needs

3. List out the needs in Maslow's theory of Hierarchical Needs.
Physiological needs, safety and security needs , affiliation needs, esteem needs, achievement needs, Aesthetic needs, self actualization needs

4. What are the advantages of giving rewards in the class?
Advantages
(i) Positive reinforces
(ii) Generate joy and satisfaction
(iii) Enhances efficiency
(iv) Develop high morale
(v) Promote opportunities.

4.16. REFERENCES

- Aggarwal, J.C.(2007), *Essentials of Educational Psychology*, Delhi: Vikas Publishing House Private limited.
- Crow and Crow (1993), *Educational Psychology*, Delhi: Eurasian Publishing House.
- Dutt N.K. (1974), *Psychological Foundation of Education*. Delhi: Doaba House.
- Mangal, S.K.(2004), *An Introduction to Psychology*. Delhi: Sterling Publishers Private Limited.
- Nagarajan,K(2002) , *Educational Psychology*. Chennai: Ram Publishers.
- Podhu,K.S,K.S.Premila,T.Sampathkumar&D.vinodhkumar(2009).*Educational Psychology,*B.Ed.,Course Material,TNOU,Chennai.
- Santhanam, S.(1993), *Educational Psychology*. Chennai: Santha Publishers
- Saravanakumar. AR (2016) *Metacognition and Attention Activation,* Lambert Academic Publishing, Germany. ISBN: 978 – 3 – 659 – 94421 – 5.
- Saravanakumar. AR (2008) *Attention An Overview,* Arivu Pathippagam, Chennai – 14. ISBN: 81 – 88048 – 65 – 6.
- Saravanakumar. AR (2008) *Metacognitive Perspectives,* New Century Book House (P) Ltd, Chennai – 98. ISBN: 81 – 234 – 1508 – 7.

UNIT V

LEARNING

5.1 INTRODUCTION

Learners are unique in themselves. They may differ in their mental capacities, interests, attitudes and values. They may also differ by virtue of their being male or female, rich or poor, of one caste or the other. You have also studied how individual differences can be explained on the basis of environmental and hereditary factors.

In this unit, we shall discuss how learning takes place in an individual and what the different types of learning are. You will learn conditions of learning, maturation and the process of learning. You will also learn factors relating to Thinking and Reasoning. You will learn the fundamental learning theories of Thorndike, Pavlov, Skinner, Kohler, Lewin and Modern Learning Theories of Piaget, Burner, Gagne and Ausubel.

5.2 NATURE AND IMPORTANCE OF LEARNING

5.2.1 Meaning of 'learning'

The knowledge we acquire, the language we speak, the habits, attitudes and skills developed in us are all due to learning Psychologists define learning as "a relatively permanent change in behavior, which occurs as a result of activity, training, practice or experience" This definition of learning has three important elements:

1) Learning results in change in behavior.

2) It is a change that takes place through practice or experience. (Changes due to growth and maturation are relatively independent of activity, practice or experience and hence they are not learning).

3) Before it can be called learning, the change must be relatively permanent. It must last a fairly long time. But behaviour changes brought about by fatigue, drugs, illness, warm up, etc. are transitory in nature and hence they are not include under learning.
Thus learning could be defined more simply as "profiting from experience".

5.2.2 Importance of learning in human life

Learning is basic to human behavior. Learning plays a central role in the language we speak our customs, attitudes and beliefs, our goals, our personality traits (both adaptive and maladaptive) and even in our perceptions. As a consequence of learning, the human child which starts with a few inborn patterns of behavior called instincts (like breathing, blinking, sucking the nipple of the mother, kicking the limbs, cooing and crying) for its adjustment to its environment, could constantly refine its modes of dealing with its environment and become more independent, effective and self-reliant in its functioning. Human infancy is the longest as compared to other organisms. This turns out to be a blessing in disguise as it becomes the period of learning. Because of their superior learning behavior, human beings emerge as par excellence among all living organisms. Speaking, laughing, restoring to finer and gentle recreations, acquiring fine motor abilities, owing culture and practicing different five arts are all unique to human beings only. As a result of learning, the child tries to inherit social heritage and refine it further.

5.2.3 Characteristics of learning

The following are the important characteristics of learning:

1. Learning is universal. All living beings learn.

2. Learning is continuous; it is a perpetual activity that takes place from 'womb to bomb'.

3. Learning results in improved performance.

4. Learning is purposive: A child's learning in and out of school is closely linked up with its goals, purposes and satisfactions. Nobody learns anything without a purpose.

5. Learning is multiple and integrative. For purpose of research, Psychologists often try to distinguish different kinds of learning such as verbal learning, perceptual learning, motor learning, conceptual learning, problem-solving and emotional learning; but these distinctions, through useful, are artificial. For example, a girl who learns shorthand does not learn a motor skill only. She also learns many arbitrary relationships between short visual symbols (verbal, motor and associative learning). At the same time, she certainly learns some attitudes about shorthand, the commercial world and herself (emotional learning).

6. Learning is contingent upon experience.
'Learning' is not something to be given; it is to be gained by self-experience. A person's knowledge or learning is the result of that person's experience.

5.3 TYPES OF LEARNING

Learning has been classified by psychologists in many ways depending upon the cognitive, affective and psychomotor domains like verbal learning, conceptual learning, attitudinal learning, perceptual learning, etc. Some specific types of learning are presented below.

1. Motor Learning: The learning of all types' motor skills may be included in this type of learning. Learning swimming, riding a horse, driving a car, flying a plane, playing the piano, hitting a moving target, drawing a diagram, performing experiments and handling various instruments are examples of such learning. Skills to perform such activities can be acquired through systematic and planned ways of learning methods and devices.

2. Perceptual Learning: Child gets sensation through sense organ. While giving meaning to this sensation, perception takes place. It means that objects around him are meaningful to him and he perceives them. He learns the names of different objects in order to differentiate them.

3. Associative Learning: New concepts are associated or linked with the old concepts and knowledge to acquire learning.

4. Conceptual Learning: A concept is a generalized idea about things, persons or events in the form of a mental image. The concept of 'house' is a mental image that throws up the similarities or common properties of all the different houses we know.

5. Animal Learning: Animal learning is a motor learning. Motor learning is done by actions, signs and symbols. Animals learn by motor activities like running, jumping, climbing, eating, drinking, etc.

6. Sensory Motor Learning: Learning is a sensory motor process. Sensory motor learning is a coordinative activity of both sensory organs and physical activities by using arms, hands, fingers, legs, toes, and the body movements.

7. Attitudinal Learning: Child develops certain attitudes towards the living or non-living things, through which learning takes place.

8. Verbal Learning: Human learning is mostly verbal. the language we speak and the communication devices we user are the product of verbal learning. Signs, pictures, symbols, words, figures, sounds and voices are employed by the individual as essential instruments for engaging in the process of verbal learning.

9. Discrimination Learning: When the child is presented with two or more stimuli which differ in some detail, the child distinguish the differences. In such a way, the child learns by discriminating the things or objects.

5.4 LEARNING THEORIES

The versatility of man's adjustment to diverse environments and the commanding heights achieved by him in arts, science, philosophy as well as his rich cultural accomplishments are all founded on his unparallel learning capacity. Learning is said to occur whenever one adopts new behavior patterns or attitude. Psychologists have observed different learning situations and studied the nature of the learning process. As learning is a complex phenomenon, different people view it differently, giving importance to one or the other aspects of learning process. Thus psychologists hold different views on the intrinsic and basic nature of learning process and each set of views attempting to explain learning process is came to be known as a theory of learning. Every theory of learning attempts to explain the following basic six questions pertaining to learning.

i. What is learning? Or how one learns?
ii. What are the reasons for individual differences in learning?
iii. How one forgets?
iv. What is role of practice and understanding in learning?
v. How learning in one area is transferred to other areas?
vi. What are the ways of motivating pupils to learn?

5.4.1 Classification of learning theories

A number of learning theories have emerged and these may be classified under two major systems-Association Theories and Field or Cognitive Theories

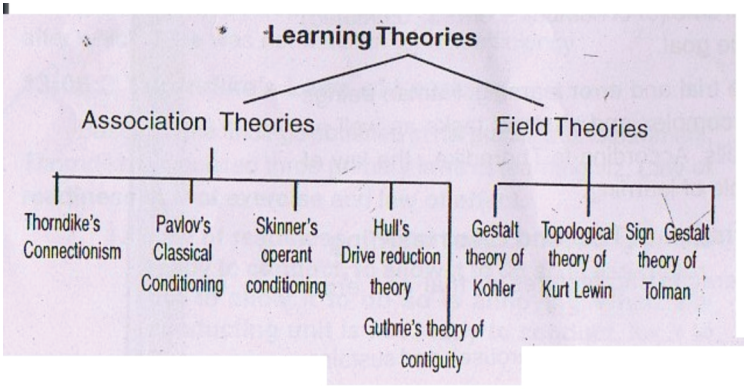


Fig 8: Classification of Learning Theories

5.4.2 Difference between association and field theories

Association theories (also known as S-R theories) include the various learning theories which try to explain learning as 'a matter of connections established between stimuli and responses'. Cognitive or field theories of learning are critical of mechanical associationism. They place greater emphasis on internal mental processes like perception, attitudes etc. and the cognitive structures which man might acquire from past experience as the basis of learning. Field theories of learning arose out of the Gestalt point of view according to which human experiences have certain " field properties" that make a 'total' or 'whole' phenomenon greater than the sum of its individual parts. Field is the total psychological world in which an individual operates at a given moment. An individual reacts not to the environment as it is but as he perceives it at the moment of behavior. What is important in learning is not the awareness of isolated elements but the meaning the situation has for the individual. Relation among elements is more important than the elements themselves. Learning "involves structuring the cognitive field and formulating cognitive patterns corresponding to the relation among stimuli in the environment". Due to learning our experiences are reorganized so as to make them systematic and meaningful patterns. Learning is not building simple perceptions into complex patterns, but one of proceeding from 'a complex unit that is partially understood to a gradual clarification'. Field theories emphasize organization, relationship, meaningfulness, insight and cognitive clarity.

The major differences between Association and Field theories are listed below:

Table 9: Differences between Association and Field theories

S.No	Association Theories	Field Theories
1	Learning is formation and strengthening of S-R connections, aided by reinforcements.	Learning is organization of experiences into a cognitive structure: central element of learning is the perception of relationship between whole and parts, means and results.
2	Learning proceeds from simple to complex; learning is additive and integrative.	Learning begins with the perception of the whole imperfectly and progressive clarification of the whole and of parts in relation to the whole.
3	Associationists are mechanistic in their interpretation of learning.	Field theorists interpret human behavior as dynamic, cognitive and purposeful.
4	Associationsists do not attribute any motive or purpose for human behavior, including learning.	All human behavior including learning are motivated and goal directed.
5	Emphasis is on drill and practice under condition of reinforcement.	Emphasis is on the development of 'insight'.
6	Transfer of learning is due to the principle of common or identical elements present in the two learning tasks.	Transfer is due to the transpossibility of relationships between the two tasks learned.

However, it now appears that learning tasks involve a mixture of associative and cognitive learning with simple conditioned responses which are most automatic depending more on associative process and complex and abstract human learning depending more on cognitive process. The following diagram clarifies this fact.

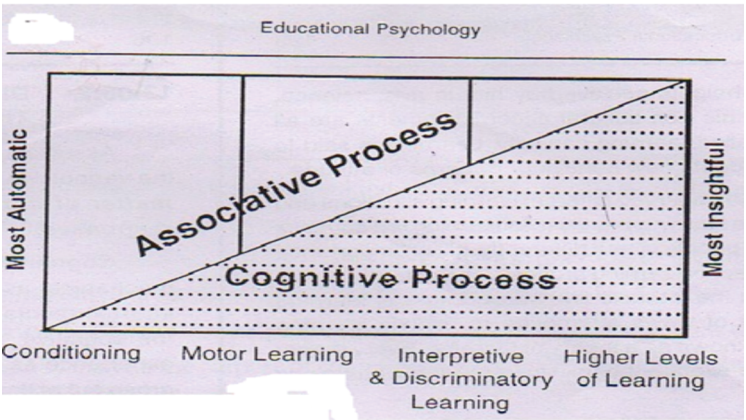


Fig 10: Diagrammatic Representation of Association and Field Theories in Learning

5.5 THORNDIKE'S TRIAL AND ERROR LEARNING THEORY

Thorndike's connectionism also referred to as 'trial and error learning' is based on experiments conducted by him. Thorndike spoke of learning as a trial and error process developing neural connections between stimuli and responses. When a stimulus is presented, the organism picks a response and connects it; by repeated trials the organism eliminates the errors and selects the appropriate response for the stimulus and connects it. Learning is a matter of accidental hitting of correct response which is 'stamped in' as a result of satisfaction. A trial is defined by the length of time (or of number of errors committed) in a single reaching of the goal. Animals mostly use trial and error learning. Human beings too resort to it to learn complex and abstract tasks as well as tasks involving motor skills. According to Thorndike, the law of effect is the basic principle of learning.

5.5.1 Characteristics of Trial and Error Learning

There are four characteristic features of trial and error learning.

i. There is some sort of motive that arouses and sustains the activity. This motive appears in the form of a need, a problem or goal. This impels one to activity.

ii. The organism makes several different kinds of responses to the situation i. e varied responses.

iii. There is a progressive elimination of the irrelevant, unsuccessful forms of activity.

iv. Finally, there is progressive integration and establishment of the response by which the goal is achieved.

5.5.2 Thorndike's Experiment

He placed a hungry can in the puzzle box. A piece of fish in a dish was kept outside the

box. The box could be opened by correctly manipulating a latch. On seeing the fish, the cat became restless and made frantic efforts such as biting, clawing, and dashing the walls before the latch moved accidently and the door opened. On subsequent trials such incorrect responses i.e. biting, clawing and dashing are gradually stamped out and the cat was found to have eliminated all the wasteful movements (errors) and it operated the mechanism (latch) with considerable ease in the first attempt itself. This experiment shows that learning is simply selecting and connecting the correct response with the given stimulus by a process of progressive reduction of incorrect responses and stamping in the correct response through trial-and error. If the trials were continued even after learning to do the tasks correctly, efficiency of performance of the cat increased (time taken to finish the task correctly, decreased) and reached the maximum level, after which there was not much in gain in efficiency.

5.5.3 Thorndike's Laws of learning

Based on the findings obtained in his puzzle box experiment, Thorndike enunciated three primary laws of learning viz. Law of readiness, law of exercise and law of effect.

1. Law of readiness: "When any conducting unit is ready to conduct, to allow it do so is satisfying, not to allow it do so is annoying. When any conducting unit is not ready to conduct, for it to conduct is annoying". Thorndike's law on readiness is a law of preparatory adjustment and not a law about growth.

Educational implications:

a) The teacher should see that the child is motivated to learn before he begins to teach. Motivation is the royal road to learning. Preparatory exercise that will hasten the state of readiness can be given. The teacher should introduce a lesson by relating it to the background experience of the child.

b) Interest inventories and aptitude tests can also be administered to know the entry behavior of the learners, especially in admitting students for specialized courses.

2. Law of Exercise: " When a modifiable connection is made between a stimulus and response, other things being equal, that connections strength increases if it it repeated a number of times". This is called the 'law of frequency'. This is akin to what we mean when we say practice makes perfect.

Another principle governing trial and error is that an act which has just recently been performed has an advantage of being repeated once again, for the simple reason that it is fresh in the experience of the organism. This principle is called 'law of recency'. These two laws of frequency and of recency are grouped together under the name of law of exercise.

Educational implications**:**

a) After learning anything, adequate practice or drill should be undertaken to ensure that learning becomes stable and effective.

b) Periodical review of learned material is necessary.

c) Mere drill or exercise is not enough' continuous feedback is also necessary.

d) Bad habits can be eliminated through disuse, leading to atrophy or forgetting.

3. Law of effect: It refers to the strengthening or weakening of a connection as a result its consequences. The law states, "when a modifiable connection is made between a stimulus and a response and is followed up by satisfying stable of affairs, its strength increases; when followed by dissatisfying state of affairs, its strength decreases".

Educational implications**:**

a) As rewards further learning behavior, judicious use of praise and encouragement in the class promotes better learning.

b) As " success leads to further success", school activities can be arranged in such a way that all learners may have some degree of success and confidence in their work i.e. all assignments should be so graded that everyone gets some success initially.

5.5.4 Limitations of Thorndike's Theory of learning

The following are the important limitations of Thorndike's theory of learning:

1. Thorndike's theory of trial and error is true only for motor learning and that too learning a complex task in an unfamiliar situation. All human learning does not take place at the physical level alone.

2. Thorndike's theory reduces to the capacity to form S-R bonds, i.e. learning becomes mechanical and the cognitive skills like thinking, reasoning, comprehending, imagining, etc. have no relevance in learning. This may be true in animal learning. Human beings are unique for their intelligence and the use of their sharpened cognitive capacities.

3. According to Thorndike, what fixes the correct pattern of activity is recency, frequency and effect of the elements that through association go to make up the pattern of activity. But this is not true in the case of complex high order learning. A complex algebraic problem cannot be solved by repeatedly doing the problem, without proper understanding.

5.6 PAVLOV'S CLASSICAL CONDITIONING THEORY

Russian physiologist Ian Pavlov, during his experimental work on dog's digestive process, accidentally noticed the secretion of saliva in the dog on the sight of food or hearing the footsteps of the caretaker. Conditioning can be defines as "a process in which a neutral stimulus which is not associated with any specific natural response, on pairing with a natural stimulus, acquires all the characteristics of natural stimulus" For example, if food is presented, saliva flows. Food is the 'natural stimulus' (or unconditioned stimulus-U.C.S.) that can elicit the 'natural response' (or unconditioned response-U.C.R.) 'salivating'. The sound of a bell which is a neutral stimulus, not associated with any specific response originally, when paired with food a number of times, acquires the characteristics of food and starts eliciting the response of salivation, even when presented alone. Now we say the dog has been conditioned to the sound of bell and we refer the bell sound as 'conditioned stimulus' (C.S) and 'salivation' as 'conditioned response' (C.R.). The classical conditioning of Pavlov is also called 'stimulus substitution' because we substitute a neutral stimulus, through the process of 'contiguity' (occurrence of two events in quick succession). Symbolic representation of classical conditioning is given below:

Stage I (Before conditioning)

UCS (Food) (Natural stimulus) → UCR (Salivation)

CS (Ringing of the bell) → No specific or unique response

Stage II (Process of conditioning)

CS + UCS (Bell sound + Food) → CR (Salivation)

Stage III (After conditioning)

CS (Bell sound) → CR (Salivation)

Conditioning appears to the simplest type of learning and the basis for further and more complex types of learning. Most of the animal leanings could be explained through the concept of conditioning. Conditioning appears to be an important means of learning among human beings too, particularly in childhood. Simple patterns of behavior, learning of words and their associated meanings, new emotional responses may be all satisfactorily explained using the concept of conditioning.

5.6.1 Educational Implications

1. Classical Conditioning is used in language learning by associating words with pictures or meaning

2. It can be used to develop favourable attitude towards learning, teachers, subjects and the school

3. Developing good habits in children such as cleanliness respect for elders punctuality etc through the use of conditioning

4. Breaking of bad habits and elimination of conditioned fear, through the use of deconditioning process.

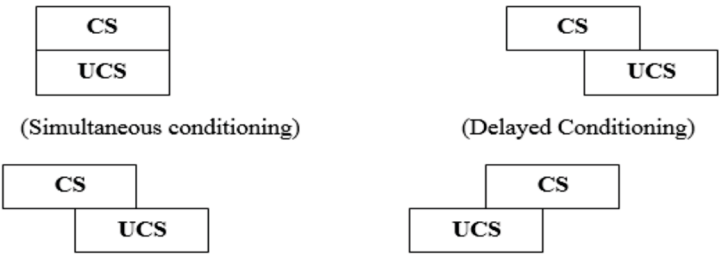
5.6.2 Limitations of Conditioning Theory of learning

Complex areas of learning involving generalization abstraction reasoning understanding and problem solving cannot be explained by conditioned process. It can describe only those learning related to emotional shaping and habit formation.

5.6.3 Laws of Conditioning

From his experiments of conditioning Pavlov derived the following five laws

1. Law of causation: According to this law a conditioned response is established by a series of contiguous pairings of CS and UCS. That is when the UCS and CS are presented in temporal contiguity (associated in time) a conditional response gets established.



(Temporal relationships in conditioning)

Best conditioning Occurs when the CS and UCS are presented simultaneously or CS is the signal heralding the occurrence of UCS.

2. Law of Experimental extinction: if the CR is elicited without reinforcement by the presentation of the UCS then the CR gets weakened and finally disappears. Suppose the salivation is conditioned by ringing the bell without presenting the reinforcing agent viz., food (UCS) after a few trails the response (the amount of saliva) gradually reduces and finally the response may not occur at all. The dog probably thinks that it cannot be fooled any further. However this disappearance of the CR is not permanent. When the dog is again brought from rest it once again salivates on hearing the bell. This immediate recovery of conditioned responses is called Spontaneous recovery.

3. Law of Generalization: Once the CR is established it may be elicited by any stimulus similar to the original CS. if conditioning was established using bell as the CS the CR will occur even for a buzzer. If fear response is obtained for a policeman it may be obtained for anybody in Khaki uniform.

4. Law of discrimination (or selective conditioning): A selective CR can be established by selective reinforcement. Suppose a CR is established to a bell sound the same generalization is shown to a buzzer sound also. If the CR that follows the bell sound is reinforcement by presenting the UCS and the CR that follows the buzzer sound is not reinforced then the CR to the buzzer sound gets weakened and becomes inactive.

5. Law of higher order conditioning: The pairing of a neutral stimulus with a UCS results not only in it's becoming a conditioned stimulus for the response but also in it's becoming a reinforcing stimulus in its own right. Thus what was formally a CS (say bell sound) can be used in a second pairing phase to phenomenon second order or higher order conditioning Second order conditioning is weak as compared to first order or primary conditioning.

5.6.4 Concept of Reinforcement

Any stimulus is a reinforce r if it increases the probability of occurrence of a particular desired response. For example in Pavlov's experiment, food was presented immediately after the dog heard the bell sound and started salivating. Here to increase the occurrence of the conditioned response viz. salivating on hearing the bell sound food was presented as reinforce.

Thus reinforcement could be defined as the phenomenon in which a desired response when emitted is strengthened by presenting reinforcement and thereby increasing the frequency of occurrence of that particular response.

5.7 SKINNER'S OPERANT CONDITIONING

B.F. Skinner believed that no stimulus is capable of eliciting a unique response from an organism. It is the organism which emits all kinds of responses spontaneously. For example a cat without any reason licks its face with its tongue a dog barks a pigeon pecks at dots. All such responses are emitted responses whenever an organism emits a desired response it could be made to occur frequently by suitably rewarding it by presenting a reinforcing stimulus. Thus reinforcement of desired response is the essence of operant conditioning whereas in classical conditioning stimulus substitution takes place by pairing the neutral stimulus with a natural stimulus or UCS. Operant conditioning is called type R-conditioning in contrast to classical conditioning in which there is type S (stimulus) conditioning. An important point in operant conditioning is that the reinforce must come after the desired response has been made and not before it. Here to get the reward or prize the organism has to operate in (or to deal with) its environment in a particular way. So this type of learning is also termed as operant conditioning. As the organism expresses a response or behavior pattern and through that tries to fetch the reward this type of learning is also known as instrumental conditioning.

5.7.1 Skinner's Experiment

Skinners box is a cage in which a white hungry rat is placed. A simple response of pressing a lever was chosen as a unit of desired behavior. The movements of the rat were electrically recorded and cumulative record of the behaviour of the rat was obtained. The rat by chance pushed their bar and got a pullet of food it repeatedly pressed the bar and got a pullet of food. After eating that pullet of food it repeatedly pressed the bar and every time got food pullets. Food reinforced the bar pressing responses and soon the rat became conditioned to that response. Reinforcement is central to operant conditioning. In another experiment conducted on pigeon, the pigeon moves about the cage. It was trained to peck a disk. Every time it pecked, food was supplied. Thus food reinforced the behaviour of pecking the disk, called an operant. The law of operant conditioning states that if the occurrence of an operant is followed by the presentation of a reinforcing stimulus, the strength of operant is increased. If the response (operant) is not reinforced, it results in the extinction of the response. Extinction of a response means its becoming less and less frequent.

5.7.2Schedules of Reinforcement

Schedule of reinforcement refers to the pattern according to which reinforces follow responses. There are mainly two types of schedules. One is continuous reinforcement, in which reinforces is given for every response. The second is intermittent reinforcement, in which only some of the responses are followed by reinforcement. If the intermittent reinforcement depends on the rate at which responses are emitted, this is called a ratio schedule. If, on the other hand, it depends on the passage of time, it is called an interval schedule. Furthermore, each of the ratio and interval schedule can be either fixed or variable. All these give us four main kinds of schedule:

i. Fixed ratio schedule: Here the reinforce is given after every fourth or every eighth or every tenth response.

ii. Variable ratio schedule: Here the reinforce is presented after a different number of responses on different occasions and not consistently after a particular number of responses as in the fixed ratio schedule.

iii. Fixed-interval schedule: Here a fixed interval of time must elapse after one reinforce is given before another can be goal. In this way when a fixed-interval two minute schedule is in operation, the subject cannot get more that one in two minutes, no matter how fast he responds. Therefore, in such a case he may as well respond only once in two minutes.

iv. Variable-interval schedule: Here a reinforce is given in a variable fashion, sometime sooner and sometimes longer after the previous one. Since the subject is unaware of when the reinforce will come, the only way for him to get all available reinforces as and when they are given would be to respond continuously. Experiments show that in general subjects make more responses per reinforce on any kind of intermittent schedule than on continuous reinforcement. If reinforcement is finally terminated altogether, resistance to extinction is also greater after intermittent than after continuous reinforcement. To obtain rapid steady responding a high resistance to extinction, the variable ratio schedule is the most effective.

5.7.3 Shaping

Shaping is the technique by which skinner trained animals to perform acts which are not within their normal range of behaviour. The complex behaviour is shaped through a series of successive approximations, each made possible by selectively reinforcing certain responses and not others. Thus, behaviour is gradually brought closer and closer to the designed pattern. By the shaping of operant behaviour skinner had trained rats to press a lever to obtain a marble, carry the marble to the other side of the cage, drop it in a hole and then run to a third place in the cage to get food. Similarly too, he half trained pigeons to play a game of ping-pong, pecking a ball back and forth across a table.

5.7.4 Skinner's Contribution to Education

Skinner's operant conditioning theory has found application in education in the following ways:

1. Individualization of instruction: Programmed learning, teaching machines, computer-assisted instruction, etc. have their basis in Skinner's theory of reinforcement of selective response.

2. Behaviour modification techniques:
- Use of instructional objectives;
- Performance contracting;
- Learning for mastery;
- Teacher Effectiveness Training (T.E.T).

5.7.5 Comparison between Classical and Operant Conditioning

Table 11: Comparison chart between Classical and Operant Conditioning

S.No	Classical Conditioning	Operant Conditioning
1	It was developed by Russian physiologist Pavlov and is called Type-S conditioning (respondent)	It was development by B.F. Skinner and is called type-R conditioning (operant)
2	Essence of learning is 'stimulus substitution'.	Essence of learning is response modification through selective reinforcement.

3	The occurrence of conditioned response (C.R.) is reflexively forced by unconditioned stimulus (UCS).	The response is more voluntary and spontaneously emitted.
4	Reinforcement (in the form of UCS) occurs without regard to subject's behaviour.	The reward is contingent upon the occurrence of desired response.
5	Law of contiguity is the basis of conditioning.	Law of effect is the basis of conditioning.
6	It is related and controlled by autonomous nervous system in the organism.	It is controlled by central nervous system in the organism.
7	It focuses on single S-R bondage.	A chain of sequential responses can be formed through 'shaping'.
8	Classical Conditioning	Operant Conditioning
9	The classically conditioned deflexed may have zero strength initially.	The operant cannot have zero strength because it has to occur atleast once before it can be reinforced.
10	Here UCR and CR are the same.	Here UCR and CR are different.
11	Respondent behaviour is internal.	Operant behaviour is external. It is the behaviour with which the organism operates on the environment.

5.7.6 Differences between Reinforcement and feedback

Reinforcement refers to the strengthening the probability of occurrence of a desired response either by presenting the organism after the operant response is exhibited, with a positive reinforcement be any rewards like food, toys, money, etc. Feedback refers to the knowledge of results of one's own actions. It has been demonstrated that in the case of growth up adults, knowledge of results of one's own action itself serves as a positive reinforce and enhance the level of performance. Thus 'feedback' is one of the means of achieving reinforcement of desired responses.

Though both rewards and feedback serve as means of reinforcement, the former operates at the physical level and the latter at the psychological level. Reinforcement rewards is highly suitable for children and animals while feedback proves to be more effective and satisfying as a reinforce for making adults.

5.8 GESTALT THEORY OF INSIGHT LEARNING

Meaning of 'Gestalt'

'Gestalt' the German word means 'whole', 'pattern' or 'configuration'. According to Gestalt psychology, the whole is always greater than the sum of the parts. The parts do not have any meaning outside the whole. For example when we analyse the following figure in terms of its components, it may appear to consist of a straight line, two dots two arcs and a triangle. But when we perceive the picture globally, it immediately becomes meaningful by reminding us the picture of a human head. We organise the individual parts

so as to form a meaningful pattern and the 'whole' conveys a new meaning. In this process (of perception) our past experience plays a leading role. To understand or learn a task means to perceive the whole with the structure of its components and their functional relationship. Thus learning, according to Gestalt psychologists, involves the reorganization of experience into systematic and meaningful pattern.

5.8.1Insight learning and its educational implications

Insight learning stresses learning as a cognitive process. 'Insight' is the mental process by which new and revealing combinations of data are suddenly perceived. Insight is restructuring the perceptual field resulting in the immediate comprehension of previously unseen relationship. Kohler's classical experiment on insight learning of chimpanzees is important. Thorndike's cat exemplified trial and error. But in Kohler's experiments, the chimpanzee learns by insight, recognizing immediately the relevance of a particular line of activity for reaching the goal. In one of Kohler's experiments, the chimpanzee, Sultan, was left inside a cage and a bunch of bananas was kept outside. Inside the cage two sticks were placed, one long and the other short. One was hollow at one end so that the other stick could be thrust into it ti form one long stick. The banana was so placed that neither of the two sticks will be long enough to reach it. When the experiment started, it attempted trying with the longer stick. On realizing that it could not reach, the monkey gave up the attempt and just sat down in a corner and was playing with these two sticks. While playing like this, accidently one stick fell into the hole of the other but not properly. This gave the animal a 'brain wave' or a 'flash of idea'. The animal straightaway joined the two sticks firmly and got the bananas. Kohler emphasizes the suddenness with which the right solution appeared. It was not a gradual learning or trial and error learning. What really happened in the case of the chimpanzee was not the learning of a particular skill of manipulating the sticks but learning to perceive the whole situation, the possibility of combining the two sticks and the possibility of thus reaching the bananas.

5.8.2 Factors that influence insight

a. Intelligence (capacity): The more intelligent the organism is, the greater will be the insight.

b. Experience: Past experience helps insightful solution

c. Presentation of the problem.

d. Initial effort; Initial efforts also develop insight. It may be called trial and error effort made by the learner.

e.

5.8.3 Steps involved in insightful learning

The following are the stages involved in insightful learning:

a. Preparation (sensing or survey of the problem

b. Incubation (period of apparently no action)

c. Insight or illumination (the solution appears as a flash)

d. Evaluation (verifying utility of the solution)

5.8.4 Comparison of insight learning and Trial & error learning

Table 12: Comparison chart between Insight learning and Trial & error learning

S.No	Trial Error Learning	Insight Learning
1	Advocated by Thorndike, an associationist.	Put forth by the Gestalt psychologists.
2	Learning is considered essentially consisting of selecting and connecting an appropriate response with the given stimulus through the process of trial and error.	Learning is through the development of insight, which is nothing but reorganization of the field of perception.
3	Learning is a mechanical process and does not involve any higher mental process.	Learning takes place as a result of meaningful experience.
4	Learning is perfect through practice or drill.	Learning relies more on one's background experiences and the ability to perceive the totally of given situation.
5	Reinforcement of learning is through the use of positive reinforces like rewards or negative reinforces like removal of electric shock.	Reinforcement of learning is through 'feedback'.
6	Forgetting of any task is attributed to the disuse of learned responses (theory of atrophy).	Forgetting is due to the interference of present experiences with those of the past due to retroactive and pro-active inhibitions. (theory of interference).
7	Transfer of learning from one situation to another, is primarily attributed to the presence of identical elements.	The Gestalists accept Judd's generalization theory of transfer. Generalized principles, common patterns of relationship are transferred.
8	Learning can be objectively observed and the amount of learning can be measured i.e. learning is objective and measurable.	Learning is a subjective experience and is qualitative in nature; hence it cannot be measured.
9	The solution to a task emerges gradually after repeated trials.	The solution to a task emerges in one stroke (insight). However associationists accuse that the organism may have a number of unsuccessful trials conceived by the organism mentally which is not observable from outside as in the case of trial and error experiments.
10	Exhibited by organisms of low intelligence. However human beings also resort to this when confronted with an unfamiliar difficult task.	Generally exhibited by organisms of higher intelligence like chimpanzee, human beings etc.

5.9 ROBERT GAGNE'S THEORY OF HIERARCHICAL LEARNING

Robert M. Gagne was one of those who had turned from the study of basic problem in a laboratory to the practical tasks of training in the air force during World War II. He found that the best known psychological principles like reinforcement are inadequate in their

application in certain fields like 'radar tracing', 'aerial gunning' etc. as a result; he proposed a taxonomy of learning known as 'hierarchy of learning'. Gagne proposed that all learning were not alike. He divided learning into 8 types or categories, and arranged them in a hierarchy because; each kind of learning begins with a different capability for performance. The mastery attained in performance of one type becomes the prerequisite for the next higher type of learning.

The varieties of learning that Gagne distinguished are:
1. Single Learning: The individual learns to make a general response to a signal. This is similar to the classical conditioned response of Pavlov.

2. S-R Learning: The learner acquires a precise response to a discriminated stimulus. What is learnt here may be connection as enunciated by Thorndike, or discriminated operant (Skinner).

3. Chaining: In what is acquired is a chain of 2 or more S-R connections. The conditions for acquiring this have been elaborated by Skinner.

4. Verbal Associations: This is the learning of chains that are verbal. The conditions for this resemble those for other chains like motor chains.

5. Discrimination Learning: the individual learns to discriminate and make a different identifying response to as many stimuli that may response each other in physical appearance.

6. Concept Learning: The learner learns to give a common response to a class of stimuli that may so differ from each other widely in physical appearance but have some common characteristics or attributes.

7. Rule Learning: a rule is a chain of 2 or more concepts. It helps to control behaviour in the manner suggested by a verbalized rule of the form, “If A, then B”, where A and B are two previously learned concepts.

8. Problem solving: It is a kind of learning that requires the internal events that are usually called thinking. Two or more previously acquired rules are somehow combined to produce a new capability that depends on higher order rule.

According to Gagne, one should master a lower order leading, before attempting to learn the next higher order learning. For example if one should get the skill of solving a particular type of problem in mathematics he should get the skill of solving a particular type of problem in mathematics he should know the rules and the formulae related to that type of problem. To know these formulae and the rules to apply them, he should know the concepts involved in these rules or formulae. To get at the concepts, one should know the general methods of linking numbers and the differences among the method of thinking. For example, though 'addition' and 'multiplication' belong to a similar type of linking of numbers, yet 'addition' and 'multiplication' are different. One should know when to add and when to multiply. Similarly the similarity and difference between 'division' and 'subtraction' should also be known. The prerequisite for these is the knowledge of different symbols to link numbers, the prerequisite for which is the skill of spelling and writing numbers. All these varieties of learning occur in a school situation. Most instruction in school deals with discrimination, concept formation, rules and problem solving. Each of these requires different conditions of instruction

5.10 COGNITIVE THEORIES-KOHLER'S EXPERIMENT

5.10.1 Cognitive Theories

Other names of the cognitive theories are Gestalt theories and field theories. Cognitive theorists' viewers are different from behaviorists. They emphasized more importance on mind in learning than stimulus-response mechanism. Their concern with mental events is reflected in topics such as memory, attention, perception and concept learning. The cognitive psychologists recognize individual different in cognitive development. Some cognitive theories are discussed below.

5.10.2 Learning by insight theory

Wolfgang Kohler, a German psychologist, postulated the theory of learning by insight. This gestalt theory is based on the concept of 'whole is meaningful than sum of its parts". Similarly, learning is taking place not as a part but as a whole. Insight is learning that appears to occur in a flash and that involves the solving of a problem. It is a form of problem solving that appears to involve the (often sudden) understanding of how elements of a situation are related or can be recognized to achieve a solution (Wade, 1998).

5.10.3 Kohler's Experiment

Kohler (1925) put the Chimpanzee inside a cage. A bunch of bananas were hung from the roof of the cage. A box was placed inside the cage. The Chimpanzee tried to get the bananas by jumping but could not get due to height. The Chimpanzee finally used the box placed below the hanging banana and climbed on the box and got the bananas. In another experiment, the Chimpanzee required two or three boxes to reach the banana. The Chimpanzee namely Sultan was able to learn placed of one box on the other and succeeded in getting the banana. In another experiment, a bunch of bananas were kept outside the cage. Two sticks were placed inside the cage. After several trials, the animal joined the two sticks and pulled the bananas in with a stick.

5.10.4 Characteristics of insight learning

The following are the characteristics of insight learning.

1. Insight is the sudden grasping of the solution for a problem.
2. Insight alters the perception of the essential relationships in total situation.
3. Insight is facilitated by the previous experience.
4. Insight is related to intellectual ability of the learner.
5. Insight learning involves understanding and reasoning about the problem.
6. Insight poses alternative mode of trial suddenly to solve the problem.

5.10.5 Educational Implications of Kohler's Theory

The following are the educational implications of Kohler's theory of insight learning.

1. The teacher should present the concept as a whole to facilitate insight learning.

2. The theory focuses the motivational part also. So the teacher should try to arouse the motivation among the learners to learn.

3. The theory observes that understanding is essential for solving the problem. The teacher should encourage the students to understand the task by avoiding of route learning and mere mechanical repetition.

4. The intellectual capacity of the learners is also contributing for the insightful learning. The learning tasks are to be graded based on the intellectual capacity of the children.

5.11 LEARNING CURVE

The Measured results of growth in learning especially of motor skills can be represented by means of a learning curve.

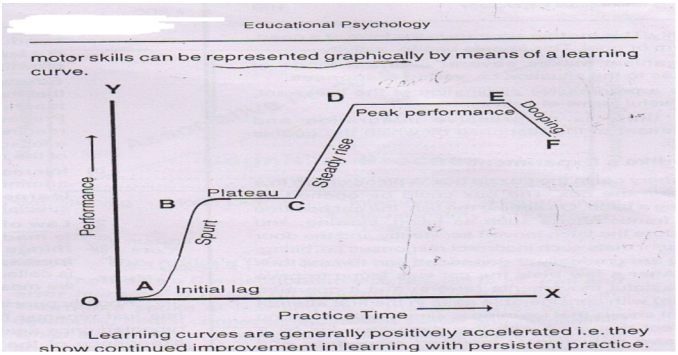


Fig 13: Graphical representation of Learning Curve

Learning curves are generally positively accelerated i.e. they show continued improvement in learning with persistent practice. Positively accelerated learning curves exhibit certain general characteristics.

In the initial stage (OA) the gain is slow and gradual. This may be due to the fact that the individual often does not possess sufficient practice in all the basic skills for the learning activity undertaken.

After the initial slow rate there will be spurt (AB) in learning due to familiarity with the task. It is followed by Plateau (BC) which is a period of apparently no progress in learning in spite of continued practice. If the learner persists in his learning activity he makes steady progress further (CD) and reaches the maximum limit or zenith (DE) which is different for different individuals always determined by the physiological limits of the individual. The portion EF of the curve represents the decline in the performing due to 'aging'.

5.11.1 Plateau in the learning curve and the reasons for it

In any task of learning, the rate of learning will be slow at the start due to newness of the task. After gaining certain degree of familiarity with the task, there occurs a spurt in the rate of learning, and is followed by a 'period of no progress' (called plateau). 'Plateau' may arise due a number of factors like

i. Decline in interest and motivation, after initial phase of learning

ii. Boredom and fatigue due to continued practice.

iii. Absence of feedback resulting in loss of involvement in learning

iv. Low level of aspiration which makes the learner satisfied with the progress already achieved

v. Choice of inappropriate method of learning does not allow progress beyond a particular level. (e.g. primary school children who learn by role memorization, become slow learners after 8th standard).

vi. Modern psychologist believes that plateaus are 'periods of consolidation' during which earlier learners are organdies and established, before launching new strategies to acquire further learning. It is just like a 'base camp' in mountaineering where in stock taking is done and new strategies are planned for further assault.

Changing methods of learning, using reinforces, prescribing realistic levels of achievement, fostering self confidence, etc. are some of the means which teachers can adopt to help pupils cross plateaus while learning.

5.12 TRANSFER OF LEARNING

Learning is transferable. One kind of learning facilitates other kinds of learning. The influence of previous learning on present is said to be 'transfer of learning". Transfer helps in optimizing learning. Transfer of learning is defined as the thinking, feeling, habit, knowledge and skill that are carried over from one learning task to another task.

The following are some of the definitions given by psychologists.

- Sorenson (1948) stated, 'transfer refers to the knowledge, training and habits acquired in one situation to another situation"
- Peterson. M.J.(1957) defined, 'Transfer is generalization, for it is the extension of idea to a new field"
- Bigge. B.L.(1964) focuses, "Transfer of learning occurs when a persons' learning in one situation influences his learning and performance in another situation".

Therefore, the influence of previously learned or task on new situations or tasks are known as transfer of learning.

5.12.1 Types of Transfer

Based on the influence of prior learning task on the new task, the following three types of transfer of learning occur.

1. Positive transfer: A positive transfer takes place when the previous learning task facilities the present learning task. For example, the knowledge of addition and subtraction in mathematics facilities the learning of multiplication and division. Learning Urdu may help to learn Hindi. Learning pedaling of tricycles makes the pedaling of bicycles easier.

2. Negative Transfer: Transfer is negative when learning in one situation hinders, interferes or workers the learning in another situation. For example, having learned to drive on right-hand side by USA people may find it difficult to drive in India where vehicles are to be driven on the left-hand side.

3. Zero Transfer: when one learning situation does not influence the learning in another situation significantly, it is said to be zero transfer. For example, learning of mathematics has no effect on the learning of swimming.

5.12.2 Theories of Transfer of learning

The various theories of transfer of learning explain how transfer takes place from one situation to another situation.

1. Theory of Mental Discipline (Faculty Theory)

This is also known as formal discipline theory. This theory focuses the mind which is composed of several facilities such as memory, attention, imagination, reasoning and judgement. These facilities are strengthened through exercise or practice. Such properly strengthened faculties function automatically in all the situations. For example, learning mathematics and grammar gives training to the mind, which will be helpful in learning other subjects.

2. Theory of Apperception

Apperception is a process of relating new ideas to old one. The storage of old ideas is called as appreciative mass. Apperceptionists like Herbert advocate the building up of a necessary appreciative mass in the minds of the learners for promoting transfer. Old ideas or mental states may lie in the sub-conscious mind which may be utilized for further learning in the shape of transfer of memory to the conscious layer of our mind.

3. Theory of Identical elements

Thorndike is the author of this theory. According to his theory, transfer takes place from one situation to the other because there are a number of common identical elements between the practiced and to be practiced activity. If some elements present in the original situation must also be present in the new, they facilitate transfer. Transfer takes place from one situation to another to the extent that there are identical or common elements to both.

4. Theory of Generalization

This theory was put forth by Charles Judd in 1908. Judd's theory of generalization emphasizes that what is learned in one situation is transferred to another situation because while learning in the first situation the individual grasps the general principles. These principles are then applied to new situations. According to Judd, transfer of learning can be facilitated by teaching the students general principles rather than specific solutions.

5. Theory of Transposition

This theory was put forward by Gestalt psychologists. They emphasized the role of insight in the mechanism of transfer of learning. The process of gaining or-developing insight into the use of concepts and generalizations in one situation and employing it afterwards in other situations is called transposition.

6. Theory of Ideals

This theory was put forward by W.C. Bagley. He tried to explain mechanism of transfer in terms of ideas. The ideals like love for wisdom, thirst for knowledge, tolerance for difference of opinions, spirit of enquiry etc., are transferred from one situation to another. Therefore, every attempt should be made to develop desirable ideas among the children.

5.12.3 Factors affecting Transfer

Some of the factors that influence the transfer of learning are pinpointed as below.

1. Generalization is the crux of transfer of learning. Our teaching learning process should follow the method of generalization.

2. Identical components between the two learning situations should be properly identified by the learner from which the learner can transfer from one situation to another.

3. Positive attitude and self-confidence make an effect on transfer of learning.

4. Transfer of learning is more effective if teachers and students are conscious of the goals.

5. The amount of transfer is closely related to the intelligence of the learner. Brighter students tend to transfer their learning more effectively than dull students.

6. Transfer is more likely to occur among extroverts than introverts.

7. Learner should avoid rote learning. He must develop the habit of learning through proper understanding and insight.

8. Over learning is the factor which influences the transfer.

9. A student who has mastered the instructional material accurately and thoroughly will achieve greater transfer.

5.12.4 Educational Implications of Transfer of Learning

The mechanism of transfer of learning has educational implications as follows;

1. Curriculum should be based on the principles of generalization and identical elements. This would help the students to gain the experiences and these experiences are applied to the new learning.

2. Positive transfer is ensured by avoiding of negative transfer in learning situation.

3. The students are trained in such a way to identify association, similarities and dissimilarities among the learning situations. This will help them to transfer the previous knowledge to the new one.

4. Teacher should train the students to use insight in learning a new task.

5. The learner is provided multi-media and sensory aids for proper understanding and gaining of the required knowledge and skills.

6. Ideals possess a great transfer value. Therefore, the curriculum should have the ideals to teach the learners which will enable them to transfer it in all activities of life.

5.13. TEACHING FOR TRANSFER

Many of the things we do or perform in day-to-day life are often influenced by our precious experiences of learning and teaching. The learning of addition and subtraction helps a child in learning multiplication and division. Learning of Mathematics helps in solving numeric problems in Physics. Similarly, if one has learned to play tennis one finds it easier to lean playing ping pong or badminton. In this way learning or teaching in one situation influences our learning or performance in some other situation. This influence is usually referred to the carryover of learning from one task to another. The learning or skill acquired in one task is transferred or carried over to other tasks. Not only the learning of

the tricks of a trade or the knowledge and skill acquired in a particular subject is transferred to other situations, but also the habits, interests and attitudes get transferred and try to influence the activities of the individual in future.

5.13.1 Habit interference

The second major theory of forgetting holds the mechanism of interference responsible for forgetting. Interference is the negative inhibiting effect of one learning experience on another. This theory holds that we forget things because of such interference. The interfering effects of things previously learnt and retained in our memory with the things of more recent memory can work both backward and forward. The psychological terms used for these types of interference are retroactive inhibition and proactive inhibition. In Retroactive inhibition the acquisition of new learning works backward to impair the retention of the previously learned material. For example, a second list of words, formulae or equation may impair the retention of a first list. Proactive inhibition is just the reverse of the retroactive inhibition. Here the old learning or experiences retained in our memory works forward to disrupt the memory of what we acquire or learn afterwards. For example, we may find it difficult to learn a second language when vocabulary or grammar from the first interferes; or learning a new formula may be hampered on account of the previously learned formulae in one's memory.

In both types of these inhibitions, it can be easily seen that when similar experiences follow each other, they produce more interference than dissimilar experiences. Because in this latter case all experiences are so intermingled that a state of confusion prevails in the mind and consequently the individual faces difficulty in retention and recall. The interference theory, as a whole, has successfully provided an adequate explanation of nature and normal forgetting for both, short-term and long-term memory. However, for explaining abnormal or morbid forgetting we need to look for explanation elsewhere.

5.14 REMEMBERING (MEMORY)

Memory denotes the ability or power of mind to retain and reproduce learning. This power of ability helps in the process of memorization. Both the terms 'memorization' and 'remembering' carry the same meaning. While differentiating memory and remembering, Levin (1978) says:

"Memory can be linked to a giant filling cabinet in the brain, with data sorted, classified and cross-filed for future reference. Remembering depends on how the brain goes about coding it input". It is this sense that the terms memory and remembering, in spite of their being noun and verb respectively are used synonymously.

5.14.1 Memory

What we learned are stored in our brain. This process is technically called as memory. We learn a lot of things in our life. But we remember very selective things, remaining are faded. This fading of information from our memory is technically called as forgetting. So, forgetting is the failure to recall the information stored in our mind. Memory is a store house. It stores information. This information is recollected. Memory in general is an ability to remember things that happened a short or long time ago. So, our mind has the power of retaining and reproducing the information. According to Woodworth, four main elements involved in memory are learning, retention, recall and recognition.**5.14.2**

Definitions of memory

Psychologists put forth various definitions for memory. Some of the important definitions of the eminent psychologists are presented as below.

- Guilford (1968):"Memory is retention or storage of information in any form"

- Eysenck (1970):"Memory is the ability of an organism to store information from earlier learning process, experience, retention and reproduce that information in answer to specific stimuli".

- Bootzin (1991):"Memory is the cognition process of preserving current information for later use".

5.14.3 Stages of Memory

Memory has three stages: encoding, storage, and retrieval.

ENCODING →	STORAGE →	RETRIEVAL
Put into Memory	Maintain in memory	Recover from memory

The first stage, encoding consists of the placing information in memory. This occurs when we study. The second stage is storage, when the information is retained in memory. The third stage, retrieval, occurs when the information is recovered from storage-for example, when we take an examination.

5.14.4 Nature and Types of memory

Information arriving from the environment is placed in our brain. Memorization takes place in terms of learning, retention, recall and recognition. Memory processes differ, based on storing during of matters. Sense organs are the gate ways of knowledge.

1. Sensory store or memory contains all the information from the environment captured by the sense organs. Sensory memory holds images for a fraction of a second. This process is known as Sensory Register. Sensory memory includes several types such a iconic memory, echonic memory etc.

a) The brief holding of visual data is called iconic memory.
b) The capacity to hold onto sounds for a short time is called echonic memory.

Sensory register is a brief holding point for sensory information. During this brief period we select information for further processing. Some of the information captured by sense organs are transformed to brain for memory stores.

'Memory stores' is the capacity of the brain that records the learnt information through sensory receptors. The memory stores can be categorized based on the duration of storage of information such as short-term memory and long-term memory.

2. Short-Term Memory (STM). "A memory store holds a limited amount of information for a relatively short period (approximately 20 seconds). After that, information will disappear unless rehearsal". So, a limited-capacity store that can maintain unrehearsed information for about 20 seconds. Short-term store, the information that is attended to, has been renamed working memory. Working memory has two distinct stores: phonological store and visual-spatial sketchpad. Phonological is responsible for holding and manipulating material relating to speech, words, and numbers. Visual-spatial sketched stores information in a visual or spatial code.

3. Long-term Memory (LTM):"A apparently permanent and for practical purpose unlimited memory store can be termed as TLM". So, LTM is an unlimited capacity store that can hold information over lengthy period of time. LTM has two long term memory systems declarative memory and procedural memory. Declarative memory is the storehouse of factual information such as dates, names, facts, places and past experiences. This declarative memory has two types namely, episodic memory and semantic memory. Episodic memory recollects past experience in a organized and orderly way. Semantic memory stores words, facts, general information, concepts, and rules of learning most of the things. Procedural memory contains memory of motor skills. For example, tying shoes, playing musical instruments, riding a bicycle, hitting a ball, typing etc..

4. Episodic Memory:"Memory for information tied to a particular place and time, especially information about the events or episodes of one's own life, is called episodic memory". So, episodic memory is connected with episodes and events associated with one's life. For example, if a person has been on an excursion and, on his return, narrates all that he did or experienced, he is able to do by the exercise of his episodic memory.

5. Semantic Memory:"Semantic memory is memory for meaning, including words, facts, theories, and concepts declarative knowledge'. Semantic memory is thus based on general knowledge coupled with meaning interpretation, generalized rules, principles and formulae.

6. Photographic Memory (Eidetic imagery). According to Haber (1979) the term 'photographic' stands for a kind of memory possessed by an individual who can remember a scene in photographic detail.

7. Paranormal Memory: This is the unusual type of memory which traces concerning one's previous life or lives that can be partly completely retrieved by the individual.

8. Working Memory: Baddeley (1986) defines, 'Working memory is the temporary storage of information that is being processed in any range of cognitive tasks."Working memory is not exactly the same as short–term memory because short-term memory usually means just storage. But, working memory includes both temporary storage and active processing the work bench of memory-where active mental effort is applied to new and old information.

5.14.5 Factors of Recall

There are several factors responsible for recall. Some of the factors are given below:

1. Association of ideas: Recall is influenced by association of ideas. Sequential ideas, similarity of things, relationship of matters, frequent usage of methods and materials make to have better recall.

2. Mental set: It influences recall. For example, a person who is interested on cricket recalls all information related to it easily.

3. Motive: Motivation helps to recall the events.

4. Sound body and mind: Healthy body and mind make recall easier.

5. Feelings: Painful and pleasure events are easier to recall than simple or ordinary events.

6. Effort: Sincere effort makes recollection of things favourably.

7. Absence of inhibition: Recall is better in the absence of any inhibition.

8. Perfection of clues: Clues are essential for the recall of anything in the mind.

5.14.6 Recognition

That form of remembering indicated by a feeling of familiarity when something previously encountered is again perceived.

- Perceiving something as having been experienced before, as being familiar, a method of measuring memory.
- Identification of recalled materials is recognition.
- Wade & Tavris (1998) define, "Recognition is the ability to identify previously encountered material'.

Types of Recognition

There are two types such as indefinite and definite recognition.

- Indefinite recognition. We are vague in familiarity to identify the place or person or event.
- Definite recognition. We are definite to identify the thing or place in our past experiences.

Factors of recognition

1. Confidence: Even correct recognition becomes infected due to absence to confidence.

2. Mental set: favourable mental set facilities correct recognition and unfavourable mental set is responsible for incorrect recognition.

5.14.7 Difference between Recall and Recognition

Peterson (1967), Kintsh (1968), and Anderson & Bower (1972) said that recall and recognition are different processes

Table 14: Difference between Recall and Recognition

S.No	Recall	Recognition
1.	It implies revival of memorized things.	It implies the identification of memorized things.
2.	Clues are essential for recall	Recognition is possible even in the absence of recall.
3.	It is the process of retrieval of memorized things.	It requires only decision not retrieval.
4.	Recall needs effort, it is more difficult consists of series of processes: a search through memory retrieval, and then a decision.	It is easier than recall because it involves fewer and steps.

5.	It depends upon learning, retention and recognition.	Memory to a great extent depends on recognition.
6.	In recall, a specific piece of information must be retrieve like fill-in-the blanks question.	In recognition person is asked to identify the correct one in a list of alternatives.
7.	Recall is active. When a teacher gives and extempore lecture without any hints then it is recall.	Recognition is passive. He speaks with the help of hints.

5.15 FORGETTING

The inability to retrieve previously stored information is called forgetting. Anything stored in the memory is subject to forgetting. Forgetting may be slow or fast depending upon the individual, the situation and the nature of the information.

5.15.1 Definitions of Forgetting

Psychologists define forgetting scientifically. Some of the definitions are focused at follows.

- Drever (1952):'forgetting means failure at any time to recall an experience when attempting to do so or to perform an action previously learned'
- Munn (1967):"forgetting is the loss, permanent or temporary, of the ability to recall or recognize something learned earlier"

5.15.2 Ebbinghaus's curve of forgetting

The first research on forgetting was conducted by German psychologist Ebbinghaus in 1885 by using non-sense syllables. He himself worked as a subject for his research and described his results by plotting a curve of forgetting. He memorized a list of non-sense syllabus and then tested himself at various intervals. The result of material forgotten was as follows:

Time elapsed	Amount forgotten
20 minutes	47%
One day	66%
Two days	72%
Six days	75%
Thirty-one days	79%

Ebbinghaus concluded that : (a) the amount of learnt forgotten depends upon the time lapsed after learning; and (b) the rate of forgetting is very rapid initially and then gradually reduces proportionately as the interval lengthens.

5.15.3 Types of forgetting

Based on the nature of forgetting and the manner in which it occurs, forgetting is classified as follows:

1. Normal or Nature Forgetting: In nature forgetting, forgetting occurs with the lapse of time in a quite normal way without any intention of forgetting on the part of the individual.

2. Abnormal or Morbid Forgetting: An individual intentionally trying to forget something is called abnormal or morbid forgetting. We don't want to remember some unpleasant and painful experiences and memory in our life. As a result, we deliberately repress such memory into the unconscious level.

3. General forgetting: An individual suffers a total loss in his recall of some previous learning.

4. Specific forgetting: The individual forgets only one or the other specific parts of his earlier learning.

5. Physical or organic Forgetting: A person loses his memory due to factors of age, diseases, biological malfunctioning of the brain and nervous system, accidents, and consumption of liquor or other intoxicating material, which is termed as physical or organic forgetting.

6. Psychological Forgetting: the loss of memory occurs due to psychological factors like stress, anxiety, and conflict, and temper provocation, lack of interest, aversion, apathy, and repression or similar other emotional and psychological problems and this is termed as psychological forgetting.

5.15.4 Causes and theories of forgetting

Psychologists focus a number of theories of forgetting. Some of the main theories are presented as below.

1. Decay of Memory Trace: The learning results in the formation of 'memory trace or engram' in the brain. What is learnt or experienced is forgotten with the lapse of time. The cause of such forgetting is considered to be disuse of information over a period of time. When time passes, through disuse, these memory traces or learning impressions get weaker and weaker and finally fade away. The theory his proved a failure in many instances, for example, swimming, riding a bicycle, where forgetting does not occur even after years of disuse.

2. Interference Theory: This theory holds that we forget things because of some interference. The previously learnt blocks or interferences with the recall of more recent memory. This is termed as interference. There are actually two kinds of interference (a) Proactive, and (b) Retroactive.

a) Proactive Interference/Inhibition: Acting forward. In proactive interference, something previously learned interferes with recall of newly learned material. For example, we find it difficult to remember a friend's new phone number, because of the interference of the old number we have already learnt.

b) Retroactive Interference/Inhibition: Action backward. It refers to difficulty to recall of old information because of learning new information. For example, one has difficulty on a biology subject test because of the new learning of psychology.

3. Repression theory: The repression is also known as motivated forgetting. Repression, according to Freud's psychoanalysis, is mental function, which actually pushes the unpleasant and painful memories into the unconscious and so tries to avoid. This kind of forgetfulness is motivated and intentional.

4. Amnesia: Amnesia refers to loss of memory. The loss of memory is much more extensive than normal forgetting. Some people cannot remember anything about their past. Others can no longer recall specific events, people, places, or objects.

There are several types of amnesia:

- Localised amnesia involves inability to recall events that occurred in a specific period of time (e.g., the first few hours after a profoundly disturbing event).

- Selective amnesia refers to the inability to recall only a certain subset of events related to a particular period of time.

- Generalized amnesia refers to the inability to recall any events of the person's past life. This type occurs rarely.

- Continuous amnesia refers to the inability to recall events subsequent to a specific time, up to and including the present.

- Systematized amnesia is the loss of memory for certain categories of information, such as memories relating to a particular person or place.

5.16 MEASURES FOR PROMOTING RETENTION

The following points answer the question 'How do we promote retention?'

1. One has to schedule his study timing which will help him to go with the materials in time. It will avoid rushing, missing, and by passing of materials what is to be learnt.

2. Robinson (1970) suggested the SQ3R method-Survey, Question, read, Recite and Review. This method has proved helpful to the students.

3. Over learning improves the retention of material. So, we have to study the material until we feel we know all of it and then go over it several more times.

4. One has to use distributed practice instead of mass practice. Studying at a stretch will not give full benefit whereas spaced learning will be helpful for remembering.

5. Systematic logical sequence of organizing material in memory would help us to recall in a better way.

6. One has to use acronym to remember the material in order. An acronym is a term formed the first letters of a series of words, for example, SQ3R, VIBGYOR and USA.

7. To establish a good memory for names and faces, we should

a) Be sure we hear the name clearly when introduced,

b) Repeat the name when acknowledging the introduction,

c) If the name is unusual, polite ask to spell it. The names are to be associated with their individual characteristics like hair-style, style of behaving, talking style etc.

d) Providing our own examples to the concept learnt will help for easy understanding and remembering.

e) Practice of summarizing the learnt materials makes us to recall the materials. This will avoid forgetting.

f) Periodical revision of the learnt materials helps us to remember the materials.

Ausubel's method always begins with an advanced organizer. This is an introductory statement of a relationship. As indicated earlier the function of advanced organizers is to provide scaffolding for new information. This is a kind of conceptual bridge between the new material and student's current knowledge. The organizers can serve three purposes. They can direct your attention to what is important, they can highlight the relationship among ideas, they can remind you of the relevant information you already have. In teaching a lesson on the caste system in India, the organizer may deal with the classification of classes in a society. A teacher introducing a unit in poetry might ask what poetry is. Then provide a poetic quote defining poetry, while writing text books, and lessons we first give an over view. This can be treated as an example of advanced organizer.

5.17 SUMMARY

Understanding the nature of the learning process help us in solving the problems related to the educational processes. To understand as to how human beings learn is, therefore, important for attaining competence in teaching. Psychologists differ in opinion regarding the nature of the leaning process. However, they point towards the fact that learning is more or less a permanent modification of behaviour. Which results from activity, training, or observation? Learning is directed towards some goal and takes place when an individual interacts within learning situation. There are some behaviours which are the outcome of reflex actions, biological instants and maturation, these are not categorised as learned behaviours.

Several theories have been proposed to explain the process of learning. The underlying principles of these theories are not mutually exclusive rather they differ in their emphasis; therefore, we cannot find a single theory which may explain all the aspects of the learning process. There are certain conditions which influence learning of the students. The type of curriculum, teaching methods and maturity level of the student are just a few of such influencing conditions. Though maturation and learning are two different process, both are important for proper development of the child. Concept refers to some categories or classes of stimuli members which possess common characteristics. So they can be learned by applying the process of comparison on the basis of concept attributes, attribute values and the number of attributes.

One of the important characteristic of learning is that it is transferable. But the amount of transfer may vary. There is no complete transfer of learning from one subject to the other. The transfer is possible between two situations, if there is identity of the context, identity of procedures and identify of attitudes and ideals. Thus transfer help in optimizing learning. Memory is a special faculty of the mind to conserve or retain what has been previously experienced or acquired through learning and then, at some later stage, to retrieve or reproduce it in the form of recall or recognition to enable us to utilize such learning in different situations of daily life.

How we remember can be explained through the models of memory. The levels of processing model suggested by Gain and Lockhart emphasizes that the ability to remember depends on the levels at which we process the information. The deeper the processing of the information, the longer it can be remembered. The other model,

Atkinson and Schifrin's storage and transfer model put forward the concept of three separate kinds of storage for the three types of sensory memory, short-term and long-term.

5.18 PRACTICE EXERCISES

1. Take any topic of your interest and try to identify the processes of differentiation, integration and restructurisation of the cognitive approach.

2. Give an article from any journal to two groups of students and ask them to read and be ready to answer the question on it. When they complete the reading ask some specific questions on the content discussed in the article. On the basis of answers, analyze, categories and classify students as the deep learners and the surface learners.

3. Discuss the educational implications of any Three Learning Theories.

4. Select a child from your neighborhood or from the class you teach, who despite being intellectually normal fails to get good marks in particular subject(s) or passes a class after several repetitions.

a) Meet his/her teachers, guardians, friends, brothers and sisters. Find out what they say about this problem. Write down systematically the information you collect.

b) On the basis of the information you have collected and your own impression, write down the possible reasons the learning problems of the child.

c) What remedies do you suggest to resolve the problem?

d) Clearly write down the theoretical bases underlying the causes and remedies you mention.

5.19 QUESTIONS AND ANSWERS

1. List three types of transfer of learning.

a) Positive Transfer: Learning of one activity sometimes makes the learning of another activity easier.

b) Negative Transfer: When previous perform puts hindrance in the performance of the subsequent task.

c) Zero Transfer: Previous learning has no effect on the subsequent learning.

2. One learning does not influence another learning in the_____transfer of learning.

a) Positive b) Negative c) zero
Answer is c) Zero

3. Whose theory represents the theory of identical elements in transfer of learning?
a) Pavlov b) Thorndike c) Watson d) Skinner
Answer is b) Thorndike

4. Verbal learning is
a) Learning a new language b) Oral Practice c) Understanding Verbal information
Answer is c) Understanding verbal information

5. Verbal learning takes place through
a) Subsumption b) Dissociation c) Subsumer
Answer is a)Subsumption

5.20 REFERENCES

- Aggarwal,J.C.(2007).*Essentials of educational psychology*. New Delhi: Vikas Publishing House Private limited
- Mangal, s.K.(2003).*Advanced Educational psychology*. New Delhi: Prentice Hall of India Pvt.Ltd
- Mangal,S.K.(2007).*Psychology of teaching-Learning Process*. Punjab: Tandon Publications, Ludhiana
- Manivanan,M.(2007).*Understanding Educational Psychology*. Erode: Vellalar College of Education.
- Mohan (1993). *Educational psychology*. New Delhi: Wiley Eastern Ltd.
- Roa.S.Narayan(1990).*Educational Psychology*. New Delhi: Wiley Eastern Ltd.
- Saravanakumar. AR (2010) *Essential of Educational Psychology*, M.A. Education Course Material , DDE, Alagappa University, Karaikudi.
- Skinner, C.E.(2005). *Educational Psychology*. New Delhi: Prentice Hall of India Pvt.Ltd.
- Saravanakumar. AR (2016) *Metacognition and Attention Activation,* Lambert Academic Publishing, Germany. ISBN: 978 – 3 – 659 – 94421 – 5.
- Saravanakumar. AR (2008) *Attention An Overview,* Arivu Pathippagam, Chennai – 14. ISBN: 81 – 88048 – 65 – 6.
- Saravanakumar. AR (2008) *Metacognitive Perspectives,* New Century Book House (P) Ltd, Chennai – 98. ISBN: 81 – 234 – 1508 – 7.