PREFACE

In a bid to standardize higher education in the country, the University Grants Commission (UGC) has introduced Choice Based Credit System (CBCS) based on five types of courses viz. *core, discipline specific / generic elective, ability and skill enhancement* for graduate students of all programmes at Honours level. This brings in the semester pattern, which finds efficacy in sync with credit system, credit transfer, comprehensive and continuous assessments and a graded pattern of evaluation. The objective is to offer learners ample flexibility to choose from a wide gamut of courses, as also to provide them lateral mobility between various educational institutions in the country where they can carry their acquired credits. I am happy to note that the University has been recently accredited by National Assessment and Accreditation Council of India (NAAC) with grade "A".

UGC (Open and Distance Learning Programmes and Online Programmes) Regulations, 2020 have mandated compliance with CBCS for U.G. programmes of all the HEIs in this mode. Welcoming this paradigm shift in higher education, Netaji Subhas Open University (NSOU) has resolved to adopt CBCS from the academic session 2021-22 at the Under Graduate Degree Programme level. The present syllabus, framed in the spirit of syllabi recommended by UGC, lays due stress on all aspects envisaged in the curricular framework of the apex body on higher education. It will be imparted to learners over the six semesters of the Programme.

Self Learning Materials (SLMs) are the mainstay of Student Support Services (SSS) of an Open University. From a logistic point of view, NSOU has embarked upon CBCS presently with SLMs in English / Bengali. Eventually, the English version SLMs will be translated into Bengali too, for the benefit of learners. As always, all of our teaching faculties contributed in this process. In addition to this, we have also requisitioned the services of best academics in each domain in preparation of the new SLMs. I am sure they will be of commendable academic support. We look forward to proactive feedback from all stakeholders who will participate in the teaching-learning based on these study materials. It has been a very challenging task well executed, and I congratulate all concerned in the preparation of these SLMs.

I wish the venture a grand success.

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Vice-Chancellor

Netaji Subhas Open University
Under Graduate Degree Programme
Choice Based Credit System (CBCS)
Subject : Honours in Education (HED)
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Course : Psychological Foundation of Education

Course Code : CC-ED-04

Module - I
PSYCHOLOGICAL FOUNDATION OF EDUCATION

Module – II
EDUCATIONAL PSYCHOLOGY

Unit 1 □ Education and Psychology

Structure

1.1   Objectives

After the completion of the course, the learners are expected to —

- understand the concept of Psychology and its relation with Education;
- realize the Psychological knowledge as the foundation of Education;
- be acquainted with the developmental stages, its theories and applications in Education;
- understand about the Psychology of learning and its impact on Education;
- be acquainted with the aspects of human abilities and its impact on Education;
- understand different aspects of Psychology of learning and its relation with Education.

1.2 Introduction

Broadly, education refers to any act or experience that has a formative effect on the mind, character, or physical ability of an individual. In its technical sense, education is the process by which society, through schools, colleges, universities, and other informal and formal institutions, deliberately transmits socio-cultural heritage – its accumulated knowledge, values, and skills–from one generation to another" (George F. Kneller,1975). Education, in its general sense, is a form of learning in which the knowledge, skills, and habits of a group of people are transferred from one generation to the next through teaching, training, and/ or research. Thus, Education is also a product. It frequently takes place under the guidance of teachers, parents, seniors, peers and other members of the society, but it may also be auto-didactic. The Education, as an academic discipline traditionally stands on four basic foundational areas, namely, Philosophical Foundation, Historical Foundation, Sociological Foundation and Psychological Foundation.

The present course material has been developed focusing on the basic concepts of Psychological Foundation of Education. For better comprehension of the Psychological Foundation of Education some basic areas of Educational Psychology we should study at the under graduate level. The identified areas of study related to Education are – (i) Psychology, Education and Educational Psychology, (ii) Perspectives of Educational Psychology, (iii) Developmental Theories of Educational Psychology, (iv) Psychology of Personality, (v) Human Abilities and (vi) Psychology of Learning.

1.3 Psychology : Concept, Nature and Scope

Psychology is undoubtedly a very significant academic discipline with its different branches of study. To understand the importance of Psychology, it is necessary to understand first the gradual conceptual evolution of the term Psychology. Psychology is basically the study of human behavior. The basis of the study of Psychology is the micro-level study of the inner mental incidents that takes place within a human mind. The human behavior is found both natural and acquired; thus, these two areas are studied scientifically within the fold of Psychology. Animal behavior is studied as well so that a comparison can be drawn between the human and animal behaviors to draw the conclusive inferences. In the field of Psychology, various knowledge areas and techniques have been developed to study the human behavior intensively as well as extensively. To study Psychology as an academic

discipline, its conceptual frame, nature and method of study are very important to understand first.

1.3.1 Concept of Psychology

The word 'Psychology' has been derived from two Greek words—'Psyche' which means soul and 'logos' which means study. According to the literal meaning of Psychology, it is an academic discipline that studies human behavior.

The famous ancient philosophers like Aristotle and Plato considered Psychology a subject that studies about the 'soul' by keeping its literal meaning. The deûnitions given by these ancient thinkers and philosophers is now considered obsolete but those are significant as historical definitions. The contributions of philosophers of the 17th and 18th century like Leibnitz, Hobbes, Locke, Kant, Hume etc. are worth mentioning. These philosophers said that the word 'Psyche' is mind and the object of study of Psychology is 'Mind'. Therefore, Psychology was accepted as the study of 'mental science', in other words 'study of mind'. Till 1870 this primary definition given by the philosophers was accepted and psychology was studied as a branch of Philosophy and its object of study was the mind.

There were basically two limitations found in the deûnition given by these Philosophers. Firstly, 'Soul' or 'Mind' is very abstract idea that can neither be seen nor heard. Therefore, the studies using scientiûc methods and techniques are not possible nor any kind of practices can be applied on it. Secondly, after accepting psychology as study of 'mind' or 'soul' its object remains unclear as these words are used in different meanings and it is difficult to say in which context it is used in Psychology.

In 1879, Wilhelm Wundt set up the first laboratory of philosophy at the then Lipzig University in Germany. Through various objective studies, gradually psychology became an independent subject of study. As a result the subject matter of psychology was not restricted only to the mind or the soul; it further extended to 'mental activities' and the 'conscious experiences'. Then the 'Structuralists' first advocated the theory of psychology. Wilhelm Wundt and Titchener are the standing pioneers of the theory based on structuralism. According to them, Psychology is the study of the 'conscious experiences'. Here the meaning of conscious experience or immediate experience is related to sensation, imagination, image, feeling and other mental activities. According to Wundt, "sensation is called as the objective element of conscious experience, whereas feeling is the subjective element of conscious experience". But there were many limitations in this definition of 'structuralism'. The major limitation was described that, because the conscious experience cannot

be studied through objective method, hence this definition of psychology is not able to explain the practical nature of psychology. This definition only emphasizes on the study of conscious experiences, however all experiences of human are not conscious but they are mainly unconscious. So, this definition gives a clear picture that psychology studies all aspects of human mind.

Since there were many defects in the definition of structuralists so another definition of psychology was introduced by 'behaviorists'. J. B. Watson is important among the behaviorists. They accepted psychology as 'positive science of behavior'. This definition clarifies that conscious experience is diversified from the object of psychology and behavior replaced it, which is found more objective because that can be seen and heard. Running, crying, smiling, thinking etc. are the few main examples of behavior. In this definition, Psychology is accepted as 'positive science', because it studies all three aspects, such as what, why, and how related to the human behavior. In this definition the main defect was described that the behavior alone is meaningless. The fact is that the explanation of any kind of behavior is based on the foundation of our own experiences, and then only we can get the real meaning.

The meaning of Psychology introduced by the Modern Psychologists seems to be the juncture of all the deûnitions mentioned above. Atkinson, Smith and Hilgard have described, "Psychology is the scientiûc study of behavior and mental processes." This deûnition explains that Psychology is not only the study of behavior but also studies about those mental processes that cannot be seen but only be assumed on the basis of the expressed behavior. Morgan, King, Weisz and Schopler have also clarified that psychology is the science of study of human and animal behavior. They have further explained that while defining Psychology as a science of behavior, mind or internal mental events are not being differentiated but it is also included in the same.

In the words of Morgan, King, Weisz and Scoplar – "When we define psychology as a science of behavior, we do not differentiate mind we only say that whatever human does means his behavior is the avenue through which the study of internal mental event is being done." Thus, we can say that in the modern era "Psychology means a science in which both behavior and mental processes are studied."

1.3.2 Nature of Psychology

In understanding the nature of Psychology, apart from meaning of Psychology, let us try to ûnd out answers of a few basic questions - What is Psychology all about? What kind of science is it? What are its purposes and problems? What is

human being according to psychology? What is the contribution of psychology to the mankind?

By studying these aspects the nature of psychology can be better understood. For centuries Psychology was considered as a part of Philosophy. In the past fifty years, psychologists have introduced it as an independent subject and gave it a nature of science. The nature of psychology that we have now was different in the beginning. When it was considered as a science of 'soul', the purpose was investigation and thinking about soul. Thus, the psychology was related to spiritualism and was a part of philosophy. Till sixteenth century, psychology was considered as science of the soul. People could neither see the soul nor deûne it. Therefore, they became hesitant to accept it as the science of soul. In order to bring out the change people started calling it 'Science of mind'. But the nature of mind is also not certain like soul and so cannot be defined. That is why Psychology was not accepted as the science of mind and till now psychology could not get the place as pure science, it is considered as natural science.

i. Psychology as a Science

After studying intensively, psychologists observed there are influences of 'consciousness'. on human behavior. Therefore, psychology has also been accepted as 'science of consciousness', but few psychologists observed that the behavior of human is not always overpowered by consciousness, sometimes influence of unconscious thinking takes place in human behavior. Thus, psychology has also been accepted as the 'science of unconsciousness', but this definition creates some debates among the academicians and nature of psychology kept on changing. Now psychology is considered as the science of human and animal behavior. In psychology the goal is to study human behavior, but the basis of this study includes animal behavior too. Initially with the help of psychology, the experimental study of animal behavior takes place and then the comparison between human and animal behavior brings success in the study of human. There are two kinds of human behavior, 'natural' and 'learned' or acquired. The study of both types of human behavior consists in modern Psychology.

ii. Psychology as a Natural Science

Modern Psychology is now considered as a complete science. As in pure sciences, certain principles and rules and theories are being set on the basis of experiments. The study of human behavior is being done on the basis of these rules and principles. These bases conclude the discovery of the reason of behavior and the possibilities of past and future of behavior are also predicted and determined. Psychology is not the subject of mere thinking but these evidences are collected by

using scientific experimental methods. Whatever responses human reflects against one's own environmental stimuli, psychology studies the same. Therefore, we can say—"Psychology is the science of human behavior or is the study of the science of its own reflection of responses towards the stimulants based in the environment." In fact, Psychology can be considered as the 'Natural Science'. There is a speciûc and fundamental difference between the material science and natural science. In material science we can keep control over the matter or substance and attain success by doing desirable experiments in the laboratory. Opposite to that Psychology taken as subject is human instead of substance which is not controllable as substance. Speed of mind is not controllable. One moment you think of New York and the next New Delhi or New Town. If someone is busy in listening in the classroom, something else instantly revolves around one's thought of mind. Thus, it is not possible to control the human mind like substance.

When mental behavior is being studied or mind related rules and principles are determined on the basis of psychological experiments the inferences and the possibilities are necessarily be present. Universality is found in material science, while individuality and individual differences are always there in psychology. For example, when a psychologist studies human behavior in the laboratory his subject would be the mind of a particular human through which his/her behavior would be conducted to study. Psychology accepts three main methods of natural science – Observation, Experimentation, and Description. That is why it is called natural science.

iii. Branches of Psychology

Keeping objects in mind we can divide psychology into two main branches—(1) Normal or General Psychology (2) Abnormal Psychology. Normal or general psychology is the scientiûc study of entire behavior of human and animal. But abnormal psychology is the study of sick or abnormal state of human. In general, these two branches are further divided into other sub-branches like, general or normal psychology is divided into individual, group, social, applied and other sub-branches. Abnormal psychology is divided into only two sub- branches individual and group. There are a few more sub-branches other than these. Applied psychology inûuences only these scopes like educational psychology, Industrial Psychology, religious Psychology are the other sub-branches of applied psychology.

iv. Methods of Psychology:

Psychologists use many scientific methods for research purposes to understand various psychological issues more scientifically. These scientific methods reduce bias and errors in understanding various behavioral aspects. The relevance of these

scientific methods extends beyond testing and evaluating theories and hypotheses in psychology. Though there are many such methods used by psychologists, each has its own advantages and disadvantages. Some of the important methods are:

a. Introspection Method

Introspection or self-observation may be considered as an old method but it is something we are doing almost constantly in our everyday life. Introspection is a method of studying the consciousness in which the subjects report on their subjective experiences. It is a method that requires long and difficult training. It gives in-depth information about the individual. In introspection, the subject is taught to achieve a state of 'focused attention' in which he/she can closely observe his/her own conscious experiences. Thus, he/she will be able to report the smallest possible elements of awareness. Hence, the goal of introspection is to learn about the basic building blocks of experience and the principles by which they combine to give us our everyday consciousness.

b. Observational Method

This is the most commonly used Psychological method especially in relation to behavioral science, though observations are very common in everyday occurrences and specific observations are formulated in researches. It is systematically planned, recorded to check and control its validity and reliability.

In this method, we not only ask the subject to report his/her experiences, but also gather information by direct observation of overt behavior. When observations are carried out under standard conditions they should be observed with a careful understanding of the units, that is the style of recording observed information and the selection of dependent or related data of observation concerned, then it is called 'structured observation'. But observation takes place without these considerations it is called 'unstructured observation'.

Structured observation is useful in descriptive studies, while unstructured observation is useful in exploratory studies. Another way of classifying observation is that of participant and non-participant types of observation. In participant observation the observer makes the observer makes himself/herself a member of the group which is being observed.

In non-participant observation, the observer detaches himself/herself from the group that is being observed. Sometimes, it so happens that the observer may observe in such a way that his/her presence is unknown to the people he/she is observing. This is called 'disguised observation'.

The method of participant observation has a number of advantages, the researcher can record natural behavior of the group and he/she can gather information which cannot be easily obtained; if he/she stays outside the group, and also he/she can verify the truth of statements made by the subjects in the context of schedule or questionnaire.

c. Experimental Method:

The Experimental method is most often used in the laboratory. This is the method of observation of the behavior or the ability of the individual under controlled condition of fixed circumstances. It is based on conducting of an experiment that is rigidly controlled with highly structured observation of variable change. It allows researchers to infer the causes of a phenomenon. It basically aims to investigate a relationship between two or more variables by deliberately producing a change in one variable and observing the effects of other variables. The person who conducts the experiment is called the 'experimenter' and one who is being observed is called the 'subject'.

An experiment begins with a problem. Experimenter wishes to study the related variables of the problem. Then on the basis of existing knowledge base in the field, a 'hypothesis' is formed as suggested solution to the problem under experimentation. To test the hypothesis, relationship between/ among variables are examined. There must be at least two variables. An 'independent variable' is a variable that the experimenters selects to control that according to the requirements of the experiment. The 'dependent variable' that varies with the changes in the independent variable, i.e., subjects behavior.

From this method, it is possible to predict the nature of response(s) that may occur to a given stimulus (independent variable). The changes observed in the dependent variable may be influenced by the number of independent variables (factors). To establish a clear relationship between independent and dependent variables and all other possible influences must be controlled or eliminated.

d. Case-study Method:

It is a detailed description of a particular individual. It may be based on careful observation or formal psychological testing. For example, it may include information about the person's childhood dreams, fantasies, experiences, relationships, hopes etc., that throw light into the person's behavior.

Case studies on subject's memories of the past and such memories are highly reliable to understand deep into the problems. As case studies focus on individuals, so we cannot generalize about human behavior.

e. Questionnaire Method:

Questionnaire is a tool of data collection. It is also a method of data collection through which both the 'qualitative' and 'quantitative' data are collected by formulating a set of interrelated questions. A questionnaire consists of a number of questions in a definite order to which the respondents are supposed to response independently by writing the answers or verbally or through e-mails. This method of data collection is especially popular when large scale enquiries have to be made. This is considered as the heart of the survey method.

f. Interview Method:

This involves collection of data by having a direct verbal communication between two people. Personal interviews are popular but telephonic interview can also be conducted as well. This method is also called 'face-to-face' method.

In personal interviews an interviewer asks questions generally in a face-to-face contact with the person being interviewed. In direct personal interview, the investigator collects information directly from the sources concerned. This is used when intensive investigation is required. But in some cases, an indirect interview is conducted where the interviewer cross-examines other persons who are supposed to have knowledge about the problem under investigation. If the interview involves the use of the standard techniques recording against the predetermined questions, known as 'structured interview'. Whereas, the 'unstructured interview' is flexible in its approach of questioning, where the interviewer is allowed greater freedom to ask supplementary questions, omit or change the sequence of questions, if necessary. Other types of interview are (a) Focused interview, (b) Clinical interview, (c) Non-directive interview etc.

g. Survey Method:

This method involves in asking large number of individuals to complete the given questionnaire(s) by interviewing people directly about their experiences, attitudes or opinions. Since surveys can provide more accurate prediction it is widely used for determining public opinion and prediction on different personal and social issues. For example, the method is used for determining prediction of exit poll (election preference), consumer reaction, health practices, public opinion, attitude etc.

h. Testing Method:

This method uses the carefully devised and standardized tests for measuring different psychological constructs or variables, viz., attitude, interest, achievement, intelligence, creativity of individuals.

Adopting any of the above methods in psychology, data are collected about human behavior to study that systematically.

1.3.3 Scope of Psychology

The field of psychology can be applied in different fields of human life making an attempt in meeting the comprehensive goals of psychology.

i. Physiological Psychology:

In the most fundamental sense, human beings are biological organisms. Our behavior depends upon our Physiological structure and functions that work together. 'Bio-psychology' is the branch that specializes in the area. Bio-psychologists can examine the ways in which specific sites in the brain which are related to disorders such as Parkinson's disease or they may try to determine how our sensations are related to our behavior.

ii. Developmental Psychology:

It covers the studies with respect to how people grow and change throughout their lives from prenatal stages, through childhood, adulthood and old age. Developmental psychologists work in a variety of educational settings like schools, colleges, healthcare centres, business centres, government and non-Govt. and voluntary organizations, etc. They are also very much involved in studies of the disturbed children and advising parents about helping such children.

iii. Personality Psychology:

This branch helps to explain both consistency and change in a person's behavior over time, from birth till the end of life, through the influence of parents, siblings, playmates, school, society and culture. It also studies the individual traits that differentiate the behavior of one person from that of another person.

iv. Health Psychology:

This explores the relations between the psychological factors and physical ailments and diseased. Health psychologists focus on health maintenance and promotion of behavior related to good health such as exercise, health habits and discouraging unhealthy behaviors like smoking, drug abuse and alcoholism. Health psychologists work in healthcare setting and also in colleges and universities where they conduct research. They analyse and attempt to improve the healthcare system and formulate health policies.

v. Clinical Psychology:

It deals with the assessment and intervention of abnormal behavior. As some observe and believe that psychological disorders arise from a person's unresolved conflicts and unconscious motives, others maintain that some of these patterns are merely learned responses, which can be unlearned with training, still others are contend with the knowledge of thinking that there are biological basis to certain psychological disorders, especially the more serious ones. Clinical psychologists are employed in hospitals, clinics and private practice. They often work closely with other specialists in the field of mental health.

vi. Counseling Psychology:

This focuses primarily on educational, social and career adjustment problems. Counseling psychologists advise students on effective study habits and the kinds of job they might be best suited for, and provide help concerned with mild problems of social nature and strengthen healthy lifestyle, economical and emotional adjustments. They make use of tests to measure aptitudes, interests and personality characteristics. They also do marriage and family counseling; provide strategies to improve family relations.

vii. Educational Psychology:

Educational psychologists are concerned with all the concepts of education. This includes the study of motivation, intelligence, personality, use of rewards and punishments, size of the class, expectations, the personality traits and the effectiveness of the teacher, the student-teacher relationship, the attitudes, etc. It is also concerned with designing tests to evaluate student performance. They also help in designing the curriculum to make learning more interesting and enjoyable to children. Educational psychology is used in elementary and secondary schools, planning and supervising special education, training teachers, counseling students having problems, assessing students with learning difficulties such as poor writing and reading skills and lack of concentration.

viii. Social Psychology:

This studies focus on the society - social thoughts, feelings and actions of people. Our behavior is not only the result of just our personality and predisposition. Social and environmental factors also effect predominantly the way we think, say and do. Social psychologists conduct experiments to determine the effects of various groups, group pressures and influence on behavior. They investigate on the effects of propaganda, persuasion, conformity, conflict, integration, race, prejudice and

aggression. These investigations explain many incidents that would otherwise be difficult to understand. Social psychologists work largely in colleges and universities and also in other organizations.

ix. Industrial and Organizational Psychology:

The private and public organizations apply psychology to management and employee training, supervision of personnel, improve communication within the organization, counselling employees and reduce industrial disputes. Thus, we can say that in organizational and industrial sectors not only the psychological effects of working attitude of the employees are considered but also the physical aspects are given importance to make workers feel healthy.

x. Experimental Psychology:

It is the branch that studies the processes of sensing, perceiving, learning, thinking, etc. by using scientific methods. The outcome of the experimental psychology is cognitive psychology which focuses on studying higher mental processes including thinking, knowing, reasoning, judging and decision-making. Experimental psychologists often do research in labs by frequently using animals as their experimental subjects.

xi. Environmental Psychology:

It focuses on the relationships between people and their physical and social surroundings. For example, the density of population and its relationship with crime, the noise pollution and its harmful effects and the influence of overcrowding upon lifestyle, etc.

xii. Psychology of Women:

This concentrates on psychological factors of women's behavior and development. It focuses on a broad range of issues such as discrimination against women, the possibility of structural differences in the brain of men and women, the effect of hormones on behavior, and the cause of violence against women, fear of success, outsmarting nature of women with respect to men in various accomplishments.

xiii. Sports and Exercise Psychology:

It studies the role of motivation in sport, social aspects of sport and physiological issues like importance of training on muscle development, the coordination between eye and hand, the muscular coordination in track and field, swimming and gymnastics.

xiv. Cognitive Psychology:

It has its roots in the cognitive outlook of the Gestalt principles. It studies thinking, memory, language, development, perception, imagery and other mental processes in order to peep into the higher human mental functions like insight, creativity and problem-solving. The names of psychologists like Edward Tolman and Jean Piaget are associated with the propagation of the ideas of this school of thought.

1.4   Psychology as the Foundation of Education

In English, the word 'Education' has been derived from the Latin word 'Educare', 'Educere' or 'Educatum'. The terms Educare and Educere mean 'to bring up' , 'to lead out', 'to draw out' or 'to propulsion from inward to outward'. Whereas, the term 'Educatum' denotes as 'the act of teaching'. It also means 'to train' or 'to mold'. All these terms mainly indicate the development of latent faculties of the child. In Indian point of view, the term *'Siksha'* has come from the Sanskrit word *'Shiksh',* which means 'to acquire knowledge' or 'to make others learn to attain knowledge'.

The term education stands for both the study of the field and for the system that is being studied. To understand this dual meaning, let us consider the basic definitions of Education. The first is a standard definition from American Heritage Dectionary:

  (i)   The act or process of educating or being educated.
 (ii)   The knowledge or skill obtained or developed by learning process.
(iii)   A program of instruction of a specified kind or level.
(iv)   The field of study that is concerned with pedagogy of teaching and learning.
 (v)   An instructive or enlightening experience.

The secondone is from the essay on 'Education' William Frankena in the Dictionary of 'History of Ideas' :

i. Relation between Education and Psychology

Education is closely related to Psychology. If Education is the modification of behavior in a desirable direction or in a controlled environment, Psychology is the study of behavior or science of behavior. To modify the behavior or to bring about some changes in the behavior, it is necessary to study the science of behavior. Thus,

Education and Psychology are logically related.   The characteristics of developmental stages of children are very essential factors which the teachers must know in order to be a successful teacher. The traditional Education was subject centered and teacher dominated. But the modern concept has been changed into learning centered to learner centered.

a.   Learner Centered Education:

It is the child who has to learn according to his/her needs, interests and capacities. Hence, there is no doubt that knowledge is quite essential for planning and organizing any educative effort. For this purpose all the great educators emphasize that Education must have a Psychological base. Pestalozzi tried to psychologize Education. Montessori and Froebel also advocated that Education must be based on Psychological principles.

b. Different Aspects of Psychological Principles:

i. The objectives of Education at different stages should have a Psychological base.

ii. Curriculum development for different stages should be as per age, ability and capacities of the learners based on some Psychological principles.

iii. Suitable methods of teaching, appropriate motivational techniques and teaching devices etc. are the contributions of Educational Psychology.

iv. Research based Solutions of different educational problems are the applications of theories of Educational Psychology.

v. Preparation of school timing and class time-tables has also the Psychological base.

vi. Effective institutional administration and organization need the knowledge of Psychology.

vii. Knowledge of Psychology is necessary to study the gifted, the retarded or the mal-adjusted children.

viii. The problem of maintaining discipline in the classrooms can be solved Psychologically without any corporal punishment.

ix. Educational Psychology provides knowledge about mental health of students and teachers.

x. Psychology provided knowledge about scientific evaluation procedure for better assessment of learning output.

xi. Better counseling and guidance can be provided for effective learning on the basis of Educational Psychology.

Besides the above, better student participation in classroom teaching, individualized learning, group activity, learning by doing etc., has a Psychological base. So, we cannot think without Education in modern.

The role of school is to help in harmonious development of the personality of the child. So, it becomes the duty and task of the teacher to guide child according to Psychological norms. Therefore, for every teacher, study of Psychology is essential in itsEducational applications.

Thus, Skinner had justly said, "Educational Psychology covers to entire range of behavior and personality as related to education."

1.5 Educational Psychology: Concept, Nature and Significance

Education and Psychology are closely related two disciplines. Thus, Educational Psychology is an applied branch of Psychology. Through psychology we gain knowledge about human mind. Therefore, its relationship with education is mandatory. In the ûeld of Psychology, Psychologists have explained behavior through different means. Educational Psychology is applied branch of psychology. To study the behavior of people from different point of views and instructor needs to have a thorough knowledge of serial development of psychology. So that he brings change in the behavior of his or her pupil by inûuencing him/her in order to attain the desirable goal. Difference in the ideas of psychologists in the development of psychology and the explanation of behavior resulted the origin of different schools. These schools explained not only the nature of behavior but also brought changes in the ideas of educational psychology.

As soon as a child takes birth, he/she becomes connected with the society in some way. How the individual or social human behavior is and what should be is determined by the educational processes. The basic goal of Educational Psychology is to bring changes in human behavior according to one's optimum ability and for the overall benefit of the society through the medium of Education.

Understanding the meanings of Education and Psychology that Education is a social process, whose objective is to transform the human behavior in a desirable way for the benefit of the society. Psychology as a science of behavior is also related to change in human behavior. Thus, Educational Psychology studies the various aspects related to the actions of learner, learning and teaching.

1.5.1 Concept and Definition of Educational Psychology

Educational Psychology takes its meaning both from Education and Psychology as both are related to the development of human personality. In the words of Skinner, "Educational Psychology utilizes those findings that deal with specifically with the experiences and behavior of human beings in educational situations."

Psychologists and Educationists have defined Educational Psychology in different ways:

"Educational Psychology describes and explains the experiences of an individual from birth to old age." (Crow & Crow)

"Educational Psychology is primarily concerned with the study of human behavior as it is changed and directed under the special process of Education," (Knall et.al.)

"The major of Educational Psychology is learning. It is that field of Psychology which is primarily concerned with scientific investigation of the Psychological aspects of Education." (Sware & Telford)

"Educational Psychology represents the application of scientifically derived principles of human reactions that affect teaching and learning" (Alice Crow)

"Educational Psychology is the application of findings and theories of Psychology in the field of Education." (Kalsanik)

According to 'Encyclopedia of Educational Psychology', this is such a field of study, in which experimental work is done to determine the procedures of studying behavioral concepts in Education.

On the basis of above definitions, let us discuss about the Nature of the Educational Psychology:

1.5.2 Nature of Educational Psychology

The nature of Educational Psychology is considered to be very scientific. Educational Psychology has established its general principles through the scientific studies of its problems and their solutions and can predict the behavior related to the process of Education.

The Educational Psychology is now a major behavioral science as it studies the 'what', 'why' and 'how' in human behavior. In dealing with problems in Education, the approach of Educational Psychology is essentially scientific. It seeks

to predict and control human behavior in educational situations. It assumes that all human behavior is the result of certain causes and influences and since these are very complex and largely unanalyzed, human behavior is not as predictable as some of the natural phenomena. But the study is nevertheless inspired by the same scientific spirit, and the body of knowledge called Educational Psychology is carefully organized and systematized based on observations and experiments in the classrooms, schools, Laboratories or counseling clinics.

Since Education is as large as life, its study is closely aligned to, and draws heavily upon all systems of knowledge which deal with human living. While facts of general and applied Psychology, Physiology, Abnormal Psychology, Social Psychology, Sociology, and Anthropology have a special relevance for Educational Psychology.

Thus, it may be said that although Educational Psychology is a branch of Psychology, yet it delivers its principles independently by resolving educational problems on the basis of researches. Thus, newer laws, principles, models and theories have been developing in the field of Educational Psychology.

1.5.3 Significance of Educational Psychology

The study of Educational Psychology can and should make a difference in individual learning of the learners and professional life of the teacher. With a better understanding of the springs of human behavior and its important influences in human life, the quality of teaching-learning process or education may be changed in a positive way.

All the schools of educational psychology have respective different ideologies to resolve the education related problems. These schools can be helpful in the process of education by giving contribution in their own speciûc ûeld. The main motto of educational psychology is to help in the holistic development of a child. The different schools of psychology try to understand human mind through their own point of views. Each school has studied the mental problems minutely. In the ûeld of education a few schools have researched on the areas related to learning process, mental development, personality development etc. and thus inûuenced the process of education.

The root of psychology lie deep in our curiosity to know ourselves and our fellow beings, to reach deeper and fuller understanding of the psychological principles that govern human and animal behavior. Etymologically the word 'psychology 'was derived from Greek word 'psyche' means 'soul' and 'logos' mean 'study'. However

the meaning and interpretation of the concept has been in a state of changing from time to time leading to subsequent changes in the ways of defining the term Educational 'psychology' as may be evident from the following:

I.   Nature of Educational Studies:

At the heart of Educational studies lies a critical analysis of key issues such as the nature of education, the content and development of curricula, teaching and learning, the relationship between ability, opportunity and success, and the policy issues encompassing all of these.

But it must not be assumed that educational studies are essentially school focused. The subject has enormous scope from the development of young children, through learning in Higher Education, to the workplace and a study of lifelong learning. The subject is significant with respect to many aspects of individual and social life.

II. Evolution of Educational Studies:

Education Studies as a subject of study, evolved from the pedagogical background of teacher training. The study developed to include many exciting new approaches to teaching and curriculum development, a variety of innovative assessment techniques. It provides teacher educators with a comprehensive preparation to be educators in a classroom or community setting. According to John Dewey, education is "freeing of individual capacity in a progressive growth directed to social aims." Education studies as a subject, equips students with the knowledge that would enable them to be actively involved in elements that create not only just a democracy, but also an equitable social order.

III. Characteristics of Educational Studies:

Whilst this rich diversity can be seen as a strength of the subject, the isolation of practitioners has caused problems and for many academics their initial introduction to the subject still proves a steep learning curve as their newly validated programmes grow rapidly. But there can not be no denying the fact that the subject has immense academic as well as practical significance.

Educational studies promote the analytical, critical and logical aspects of learning thereby leading to overall growth and development of an individual. It enlightens the teaching fraternity to share the current educational practices, types of methodology, validations, examinations etc.

Education has a wider meaning and application. Philosophy of education covers

aims of education, nature of education, importance of education, and function of education are its very old and essential part of education.

Scope of education can be defined as availability of different forms of educational operations in terms of different learning environments, major focus of the study of knowledge or the mode of imparting education.

Educational Studies is a program designed to help you graduate with a major and a minor in education with a non-license teaching degree. This major supports students who might be interested in working in the private education field but are not ready to fully teach in a public teaching setting.

IV. The future of Educational Studies:

Education studies as a subject of study has expanded rapidly over a comparatively short period of time. The initial Educational Studies courses often began on a very small scale. Practitioners tended to be isolated, working alone or in small teams, and as such the courses developed in very different ways depending upon institutional and regional circumstances.

V. Concept of Educational Psychology

While general science deals with behaviour of the individuals in various spheres, educational psychology studies the behaviour of the individual in educational sphere only. The scope of educational psychology is ever-growing due to constantly researches in this field.

Educational psychology is that branch of psychology in which the findings of psychology are applied in the field of education. It is the scientific study of human behaviour in educational settings.

According to Charles. E. Skinner, "Educational psychology deals with the behaviour of human beings in educational situations".

Thus, educational psychology is a behavioural science with two main references–human behaviour and education.

In the words of E.A. Peel, "Educational Psychology is the science of Education".

Education by all means is an attempt to mould and shape the behaviour of the pupil. It aims to produce desirable changes in him for the all-round development of his personality.

The essential knowledge and skill to do this job satisfactorily is supplied by Educational Psychology. In the words of E.A. Peel, "Educational psychology helps

the teacher to understand the development of his pupils, the range and limits of their capacities, the processes by which they learn and their social relationships."

In this way, the work of the Educational Psychologists resembles with that of an Engineer, who is a technical expert. The Engineer supplies all the knowledge and skill essential for the accomplishment of the job satisfactorily, for example, construction of a bridge.

In the same way, Educational Psychologists, who is a technical expert in the field of Education, supplies all the information, principles and techniques essential for understanding the behaviour of the pupil in response to educational environment and desired modification of his behaviour to bring an all-round development of his personality.

In this way, it is quite reasonable to call Educational Psychology as a science and also a technology of Education.

Thus, Educational Psychology is concerned primarily with understanding the processes of teaching and learning that take place within formal environments and developing ways of improving those methods. It covers important topics like learning theories; teaching methods; motivation; cognitive, emotional, and moral development; and parent-child relationships etc.

In short, it is this scientific discipline of study that addresses various questions related with the process and product of Education: "Why do some students learn more than others?" or "What can be done to improve the learning?"

VI. Nature of Educational Psychology:

Its nature is scientific as it has been accepted that it is a Science of Education. We can summarize the nature of Educational Psychology in the following ways:

W.A. Kelly (1941) listed the nature of Educational Psychology as follows:

  i.   To give a knowledge of the nature of the child
 ii.   To give understanding of the nature, aims and purposes of education
iii.   To give understanding of the scientific methods and procedures which have been used in arriving at the facts and principles of educational psychology
 iv.   To present the principles and techniques of learning and teaching
  v.   To give training in methods of measuring abilities and achievement in school subjects
 vi.   To give a knowledge of the growth and development of children

vii. To assist in the better adjustment of children and to help them to prevent maladjustment

viii. To study the educational significance and control of emotions and

ix. To give an understanding of the principles and techniques of correct training.

Thus, educational psychology is an applied, positive, social, specific and practical science. While general science deals with behaviour of the individuals in various spheres, educational psychology studies the behaviour of the individual in educational sphere only.

VII. Scope of Educational Psychology:

The scope of educational psychology is ever-growing due to constant researches in this field. The following factors will indicate the scope of educational psychology:

i.   The Learner:

The subject-matter of educational psychology is knitted around the learner. Therefore, it is the need of knowing the learner and the techniques of knowing well. The topics include – the innate abilities and capacities of the individuals, individual differences and their measurements, the overt, covert, conscious as well as unconscious behaviour of the learner, the characteristics of his growth and development and each stage beginning from childhood to adulthood.

ii.   The Learning Experiences:

Educational Psychology helps in deciding what learning experiences are desirable, at what stage of the growth and development of the learner, so that these experiences can be acquired with a greater ease and satisfaction.

iii. Learning process:

After knowing the learner and deciding what learning experiences are to be provided, Educational Psychology moves on to the laws, principles and theories of learning. Other items in the learning process are remembering and forgetting, perceiving, concept formation, thinking and reasoning, problem solving, transfer of learning, ways and means of effective learning etc.

iv. Learning Situation or Environment:

Here we deal with the environmental factors and learning situations which come midway between the learner and the teacher. Topics like classroom climate and group dynamics, techniques and aids that facilitate learning and evaluation,

techniques and practices, guidance and counselling etc. for the smooth functioning of the teaching-learning process.

v.   The Teacher:

The teacher is a potent force is any scheme of teaching and learning process. It discusses the role of the teacher. It emphasizes the need of **'knowing thyself'** for a teacher to play his role properly in the process of education. His or her conflicts, motivation, anxiety, adjustment, level of aspiration etc. It throws light on the essential personality traits, interests, aptitudes, the characteristics of effective teaching etc. so as to inspire for becoming a successful teacher.

Though the entire scope of Educational Psychology has included in the above mentioned five key-factors, it may be further expanded by adding the following:

It also studies (a) Human Behaviour in educational situations, (b) Growth and Development of the child, (c) Contributions of Heredity and Environment towards the growth of the individual, (d) Nature and Development of the Personality of an individual, studies individual difference, (e) Intelligence and its measurement, (f) Guidance and Counselling etc.

We can conclude by saying that Educational Psychology is narrower in scope than general psychology. While general psychology deals with the behaviour of the individual in a general way, educational psychology in concerned with the behaviour of the learner in an educational setting.

The scope of Educational Psychology is securing greater and greater importance in the field of education. Educational psychology is the combination of two i.e. Education and Psychology. So, educational psychology is the study of behavior of the teacher, taught and persons connected to educational environment.

Educational psychology is, therefore, that branch of educational content, which deals with human behavior and its modification.

1.6   Summary

Psychology is basically the study of human behavior. The basis of the study of Psychology is the micro-level study of the inner mental incidents that takes place within a human mind. In modern times, the application of psychology has been increased as an interdisciplinary study i.e., educational psychology, social psychology, cognitive psychology etc. The concept, nature and scope of psychology have been discussed in the beginning of the unit. Psychology plays its role as a major foundation

of education has been discussed in the middle of the unit. At the end, the concept, nature and significance of the educational psychology have been discussed.

1.7   Self Assessment Questions

1. What do you mean by psychology?
2. Define psychology.
3. Write any two scopes of psychology.
4. State any two nature of psychology.
5. What is psychological foundation of education?
6. What is educational psychology?
7. Define educational psychology.
8. State any two nature of educational psychology.
9. Discuss the importance of educational psychology.

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Unit 2 □ Growth & Developmentr

Structure

2.1   Objectives

After going through this unit, you will be able to —

- understand growth and development of a child;
- be acquainted with the perspective of Educational Psychology: Biological, Behavioral and cognitive;
- realize developmental stages and its impact on education.

2.2   Introduction

Changes are the characteristics of life. All the living beings of this planet are changing continuously. You know that a large banyan tree grows from a very small seed. Similarly, all animals including the human beings have been changing themselves. Some changes may remain unnoticed, suddenly that come to our notice. Such as, language development, decision-taking ability, control of emotion etc. Hence, changing is the natural quality of life. Education helps in desirable changes in human life. Modern educationists believe that ultimate qualitative

changes in human beings are possible through proper education only which is the combination of natural direction of individual development along with the individual and social aspirations. Scientific fusion between these two is one of the major goals of education. These changes may be of two types – (i) Growth and (ii) Development.

2.3 Growth and Development of a Child

Let us first understand the meaning of two important terminologies of the Sub-unit, viz., 'Growth' and 'Development', which are apparently used as synonymous terms. But, in fact, growth is different from development. Growth means an increase in size, height, weight, length etc. which can be measured quantitatively. Development, on the other hand, implies change in shape, form or structure resulting in improved working or in functioning. Improved functioning implies certain qualitative changes leading to maturity. Growth and Development both are the important characteristics of any living organism. But development involves a series of progressive, orderly and meaningful changes leading to the goals of maturity. Normally, growth contributes to Development. In reality though growth and development are different, but they are inseparable. Generally, both the processes of growth and development goes on simultaneously.

I. Concept of Growth and Development:

Human life starts from a single fertilized cell. This cell goes under constant changes interacting with the environment within the mother's womb and after birth with the outside world. This interaction leads to the Growth and Development of the child. Division of each cell and its growing into thousands and thousands in number, or their changing tissues, blood or bone, is part of the process of Development. The increasing size and weight of an organism or limb of the baby, is known as Growth.

Growth and Development are the continuous progressive changes in the organism. "Development means a progressive series of changes that occur in an orderly predictable pattern as a result of maturation and experience" (Hurlock). In the words of Piaget, "In reality, development is the essential process and the total development happens with the cumulative effects of the smallest units of learning." The primary elements of development are – Maturation, Experience, Social Transmission and Equilibrium in life. Human development occurs with the cross-interactions among these four elements in the appropriate educational environment.

II. Nature of Growth and Development:

Changes may be of any type - external, internal, quantitative or qualitative, but common nature of change would be a continuous, progressive, natural and controllable process. According to research findings of Sears, Erikson, Bandura, Piaget and Kohlberg, some basic principles have been identified. Those are:

i.   Interactions for Development:

Development is the product of interactions. It is also the result of continuous interactions between heredity and environment. Human development does not depend only on heredity or the inborn ability or potentiality, but also on how the present environment is influencing. It depends on their cross-interactions.

ii. Continuity:

In human life, development is a continuous process. The continuous changing process of development starts from birth and that continues till death. But the rate of development is not constant. Sometimes, it is slow and sometimes it is fast. Sometimes it is explicit and sometimes it is implicit. But it is always continuous.

iii. Orderliness:

Generally, the nature of human development follows a definite order. As for example, the child who cannot sit independently would not be able to stand or run alone. Generally, the primary level of development influences the next level development.

iv. Definite Direction:

Always human development occurs in definite direction. It has basically two directions - Cephalocaudal and Proximodigital. During early stage of development, the head is proportionately larger than the whole body. So, at this stage the other portion of the body develops rapidly than the head (bottom to up) to make it a balance. This is known as Cephsalocaudal development. Similarly, when the developmental process starts from the middle axis of the body and gradually it extends towards the extreme ends, is known as Proximodigital development.

v. Cumulative:

Development of an individual at any stage depends on the level of maturity, previous experiences, body balance etc. of the just previous stage. It has been proved by Hurlock that behavioural experience at any stage of development is the sum total experiences of previous stages.

vi. Individuality:

Though there are certain common characteristics of development, but it is also simultaneously controlled by the characteristics of individuality. Differences in Body structure, mental ability, experience, will-force, emotional expression or social expression are the characteristics of individuality which effects on developmental process.

vii. Complexity:

Human being himself is the complex combination of various dynamic entities. Each of these entities does not affect equally on the individual development. Besides that, there are some external factors like, nutrition, healthy environment, social environment, illiteracy etc. that influence upon the individual development. There is also a significant effect of 'critical period', in the process of developmental continuity.

viii. Unification:

Developmental process of an individual maintains a balance and the developmental factors influence each other. It tries to bring balance in life among different factors and forces of development.

ix. Context of Development:

Based on Heredity and Environment, there are three inter-connected contexts of Development, which normally influence each other. Education plays as the most important factor to bring harmony and stability in individual life. These dimensions are – Physical Development, Cognitive Development and Social-Emotional Development.

III. Principles of Development:

We should keep in our mind that there are several underlying principles of human development, those are:

a. Development is a life-long process and change is apparent across the whole lifespan.
b. Early experiences always affect on later development.
c. Development is multi-directional though each of those follows respective uniform rate.
d. The multi-dimensional Developments are held across the three basic dimensions, viz., Physical, Cognitive and Social-Emotional.

e. Development is characterized by plasticity or our individual ability to change.

f. Development is multi-contextual, that means, influenced by both nature and nurture or by heredity and environment.

IV. Dimensions of Development:

Development in human life is a multi-dimensional process. Hence, the total development of human beings cannot be explained be the single dimension. The multi-dimensional nature of human development is basically considered by following four dimensions:

a. Physical Development (Growth):

Every girl child thinks that she would be like her mother whenever she becomes adult. Similarly, a boy thinks he would be like his father later in his life. This type of thinking is primarily the thinking of growth or Physical Development. The growth of organs and sub-organs and its corresponding effect on explicit changes in human behavior from beginning to end of human life is known as Physical Development or Growth. So, growth is the structural, quantitative and qualitative changes in the body of a child. It may be related with the external structure (viz., height, weight, shape etc.), or it may be related with the internal systems of the body (viz., nervous system, muscular system, digestive system, skeleton system, reproductive system etc.).

b. Cognitive (Intellectual) Development:

It is an astonishing fact that a child who cannot speak a few day's back, how the baby learns to organize own thinking and able to speak with logic within a few months; or another child, who used to fail in remembering simple digits, how can she solve the complex mathematical problems easily. How are these possible? The mental processes within a neo-natal baby exist in a very simple form. Gradually, with the increase in age and experience, the maturation comes within the body in one hand, and on the other hand, child tries to interact with the immediate environment for adaptation as a living organism. According to the natural law of life, different types of simple mental activities gradually become logic based and more complex in nature. Generally, such type of development is known as Cognitive or Intellectual Development. It is not only related with intelligence, but also with the cumulative development of logic based mental processes, which continuous from birth to death in human life. According to Piaget, Cognitive mental processes of an individual are related with perception, learning, memorization, thinking, imagination, intelligence, concept formation etc. of an individual.

c. Emotional Development:

The sensation driven force behind our expressed behavior is emotion. So, emotion is a type of drive-feeling that facilitate as well as control the level of expressed behavior. It is a type of functional experience that tries to adapt and generalize internally and stimulates the mental structure in such a way that expressed any explicit style of behavior. Pleasure, sadness, arrogance etc. are the examples of emotional feelings. Sharpness of explicit feelings gradually changes with the learning, experience and time. The overall specific direction of this change is known as emotional development. Actually, the main purpose of emotional development is to make dynamic adaptation of individual's feelings with the maturity.

d. Social Development:

Man is a social being. As it is not possible to live alone in this world, human beings have learned to form groups to live together. By birth, child is socially neutral. That means, during birth, child has only biological entity, no social base. To maintain the existence of biological entity, the child needs supports from parents and others. On the other hand, the biological entity has an infinite internal power of adaptation with the world. So, with the time, from the social entity gradually the social development occurs. Hence, the social development is a conscious effort of gradual progression towards the socially desired goals.

V. Stages of Growth and Development:

Both Growth and Development are continuous processes. So. It is very difficult to find out distinct stages of Growth and Development. We can take an example of clock for measuring time to understand this complexity. Let us imagine the 'continuity of time'. We do not know when it has been started and how long it will continue, but, to understand the segments of time at present and to utilize that in our daily life, we have made it artificially divided the continuous time-flow into century, year, month, week, day, hours, minutes, seconds etc. Similarly, the process of Growth and Development of Human Life has been divided by the Psychologists and Educationists into the following stages:

i. Heredity and Pre-natal Growth (About 266 Days in Mother's Womb):

Now, we should look at what happens genetically during conception and what happens during Pre-natal Development. Let us discuss the impact that both father and mother equally effect on developing the fetus. We know Development is the product of 'Heredity' (Nature) and 'Environment' (Nurture). It is difficult to isolate the root of a single characteristic of development either from Heredity or from

Environment. In fact, almost all human features are 'Polygenic' (a result of many genes) and multi-factorial (a result of both Genetic and Environmental factors). This bi-directional interplay between Nature and Nurture is known as 'Epigenetic Framework' which suggests that environment can affect the expression of Genes as Genetic Predispositions which can also impact upon person's potential. During the beginning of life, normally the' zygote' with single nucleus having the genetic information from the parents is formed to start its journey of development at the safe environment in the mother's womb (Uterus). The embryo takes about 38 weeks for total development into a fetus

ii. Physical Development in Newborn (Birth to 2 Months):

After around 266 days inside the mother's womb, comes the child birth by arduous process. After birth, new born has to regulate his/her own body temperature, breathe for oneself and take in the nutrition through feeding.

The 'Apgar Assessments' are conducted at one minute and five minutes just after the birth. This is a very quick way to assess the newborn's overall physical conditions on the basis of five primary measures, viz., (a) Heart Rate, (b) Respiration, (c) Muscle Tone, (d) Reflex Response and (e) Color. Newborns are also routinely screened for different conditions. It is very important to locate genetic or congenital at the early stage for proper treatment.

The dimensions of physical characteristics of newborn are – Size, Weight, Body proportion, Brain development, Skull change, Sleep, Reflexes, Sensory capacities, Vision, Hearing, Touch & Pain and Taste & Smell.

iii. Physical Development in Infancy and Toddlerhood (2 Months to 24 Months):

The development from infancy through toddlerhood, from birth continues until about two years of age. This part of the life span draws more attention by the contemporary educationists. Healthcare Providers and Parents are being focused in this period because they build the foundation for one's life to come. Major characteristics of this period are:

a. Rapid Physical Changes due to Human Growth Hormone (HGH) ,

b. Proportionate Development of the Body,

c. Child becomes equipped with a number of Reflexes (Non-voluntary responses to stimuli), viz., sucking or grasping,

d. Gross Motor Skills are acquired by the Infants and Toddlers very first. The description is given in the following table:

Age	Gross Motor Development	Fine Motor Skills
2 Months	Can hold head, smoother movements with arms and legs;	Grasp reflexively, Holds hands in fist, Does not reach for object;
4 Months	Head becomes steady, Pushes down on legs, Hands to mouth, Able to roll over;	Can use hands and eyes together, Hold toys with palmer grip (whole hand), Can follow moving things;
6 Months	Rolls over in both directions, Begins to sit without support, Rocks back & forth, Stands with support;	Reaches with both hands, Brings things to mouth, Can pass thing from one hand to other;
9 Months	Stands-holding on, Crawls & Sits;	Moves things smoothly, Uses princer grip with thumb and index;
12 Months	Walks holding on, Stands alone, takes few steps without help	Can use one hand, Put things in a container, Use Index finger;
18 Months	Walks a few steps alone, Can run, pull toys while walking;	Scribbles on own, Drinks from a cup, Eats with spoon, Stacks;
24 Months	Stands on tiptoe, Kicks a ball, Throws ball overhand, Climb and walk up and down stairs.	Can build towers with blocks, Can copy straight lines or circles, Enjoys pouring and filling.

iv. Physical Development in Early Childhood (3 to 5 Years):

In an effort to better understand the large spectrum of cognition that Infants and Toddlers go —

Age	Gross Motor Development	Fine Motor Skills
3 Years	Climbs well, Runs easily, Pedals Tricycle, Walks up & down stairs, putting one foot on each step.	Copies circle with pencil & crayon, Turns book pages one at a time, Builds towers with more than six blocks, Can screw/ unscrew jar-lids and door handles to open/shut.
4 Years	Hops and stands on one foot, Catches a bounced ball most of the time	Draws a person with 2 to 4 body parts, Uses scissors, Starts to copy some capital letters, Mixes own food.
5 Years	Stands on one foot for 10 seconds or more, Hops & can skip, Can do somersault, Use toilet on own, Swing & climb.	Can draw a person with at least six body parts, Write some letters or numbers, Copy a triangle or other geometric shapes, Use milk bottle, fork, spoon etc.

v. Physical Development in Middle Childhood (6 to 11 years):

Children at this stage go through tremendous changes in the growth and development of the brain. Gradually they become physically more capable and coordinated. Children are more mindful of their greater abilities in school and are becoming more responsible for their health and diet.

i. Brain Development:

The Brain reaches about its adult size at about the age of 7 yrs. Between 10-12 years of age, the Frontal Lobes become more developed and thus improved processes of logic, planning and memorization are evident. The child is better able to plan and coordinate activity using both the left and right Hemispheres of the Brain, which control the development of Emotion, physical abilities and intellectual capabilities.

ii. Physical Growth:

Children come out with all shapes and sizes – height, weight, abilities and disabilities. Growth rate at this stage is generally slow but steady. A child gains weight about 5-7 Pounds and 2 inches a year on an average. They also tend to be slim down and gain muscle strength. The rate of growth for the extremities is faster than the trunk, which results in more adult-like proportions.

iii. Development

Development refers to the qualitative changes in the organism as whole. Development is a continuous process through which physical, emotional and intellectual changes occur. It is a wider and comprehensive term than growth. It is also possible without growth. In Webster's dictionary development is defined as "the series of changes which an organism undergoes in passing from an embryonic stage to maturity." In Encyclopedia Britannica, the term development has been defined as "the progressive change in size, shape and function during the life of an organism by which its genetic potential are translated into functioning adult system." So, development includes all those psychological changes that take in the functions and activities of different organs of an organism. Development is continuous and gradual process (Skinner). According to Crow and Crow (1965), "development is concerned with growth as well as those changes in behavior which results from environmental situation." Thus, development is a process of change in growth and capability over time due to function of both maturation and interaction with the environment.

Table : Comparison between Growth and Development

Growth	Development
Refers to physiological changes in the individual.	Refers to overall changes in the individual.
Quantitative changes	Qualitative changes
Growth stops after maturity.	Development continues progressively throughout life.
Growth occurs due to the multiplication of cells.	Development occurs due to both maturation and interaction with the environment.
Growth is one of the parts of the develop-mental process.	Development is a wider and comprehensive term.
Growth is cellular.	Development is organizational.
The changes produced by growth are observable, measureable, and quanti-fiable.	Development brings qualitative changes which are difficult to measure directly, but may be assessed through keen observations.

2.4 Perspectives of Educational Psychology: Biological, Behavioral and Cognitive

2.4.1 Biological Perspectives of Educational Psychology

Biological perspective is one amongst the various perspectives in psychology, which has helped the psychologists in understanding the association between physiological forces, brain, neuro-transmitters and human behavior. The perspective has helped researchers in discovering real world solutions or practical applications for dealing with behavioral or psychological problems.

It is a way of looking at psychological issues by studying the physical basis for animal and human behavior. It is one of the major perspectives in psychology and involves such things as studying the brain, nervous system, immune system, genetics and effects of biological variables. Biological perspective of genetic studies is considered as the most scientific form of investigation in the modern world, as it relies heavily on experimental techniques which provide validity to this approach. Studies which are held using this approach are performed in controlled lab settings

and their research results are reliable as well as predictable. The research results achieved are also objective as the findings are based on scientific investigation of the biological variables instead of subjective factors or mere observations. As a result of which, biological perspective has excellent contributions towards treatment of serious psychological or mental activities and its disorders. One of the major limitations of this approach is that it is considered to be restrictive as the biological perspective fails to take into consideration the other influences on behavior such as environmental factors, socio-cultural factors, childhood experiences, human emotions and the like.

The Biological Perspective or Biopsychology is a latest development in the field of psychology which has acquired increasing importance as a specialized branch of psychology in recent times. This branch of psychology is also known by different names like Psycho-biology, Biological Psychology, Behavioral Neuroscience and Physiological Psychology. The Biological Psychology attempts to analyze the relationship between physiological or biological processes on the behavior or psychological processes of the individual. This specialized branch of psychology studies how our brain or the neurotransmitters and other biological parameters influence our psychology and behavior, feelings as well as thoughts. Bio-psychologists pay attention to understanding how various biological factors or parameters influence our mental processes, emotions and cognitive functioning

2.4.2 Behavioral Perspective of Educational Psychology

Behaviorism defines learning as observable behavioral change that occurs in response to environmental stimuli. Positive stimuli — or "rewards" — create positive associations between the reward and a given behavior; these associations prompt one to repeat that behavior. Behaviorism, also known as behavioral psychology, is a theory of learning based on the idea that all behaviors are acquired through conditioning and conditioning occurs through interactions with the environment. Behaviorists believe that our responses to environmental stimuli shape our actions. Behaviorism, also known as behavioral psychology, is a theory of learning based on the idea that all behaviors are acquired through conditioning. Conditioning occurs through interaction with the environment. Behaviorists believe that our responses to environmental stimuli shape our actions.

There are various approaches in contemporary psychology. An approach is a perspective (i.e., view) that involves certain assumptions (i.e., beliefs) about human behavior; the way they function, which aspects of them are worthy of study and what research methods are important for undertaking the study. There may be several different theories within an approach, but they all share these common assumptions.

The six major perspectives in educational psychology are Behaviorist, Psychodynamics, Humanisticl, Cognitive, Biological and Evolutionary .

Most psychologists would agree that no one approach is correct, although in the past, in the early days of psychology, the behaviorist used to say that their perspective was the most scientific one.

Each approach has its own strengths and weaknesses, and brings something different to our understanding of human behavior. For this reason, it is important that psychology does have different perspectives on the understanding and study of human and animal behaviors.

Below is a summary of the six main psychological approaches (sometimes called perspectives) in psychology:

i. Behaviorist Perspective

Behaviorism is different from the most other approaches because they view people (and animals) as controlled by their environment and specifically that we are the result of what we have learned from our environment. The behaviorist perspective is concerned with how environmental factors (called stimuli) affect observable behavior (called the response).

This perspective proposes two main processes whereby people learn from their environment: namely, classical conditioning and operant conditioning. Classical conditioning involves learning by association, and operant conditioning involves learning from the consequences of behavior.

Behaviorism also believes in scientific methodology (viz., controlled experiments), and that only observable behavior should be studied because this can objectively be measured. Behaviorism rejects the idea that people have free will, and believes that the environment determines all behavior. Behaviorism is the scientific study of observable behavior working on the basis that behavior can be reduced to learn S-R (Stimulus-Response) units only. Behaviorism has been criticized in the way it under-estimates the complexity of human behavior. Many studies used animals which are hard to generalize to humans, and it cannot be explained.

ii. Psychodynamic Perspective

Freud believes that events in our childhood can have a significant impact on our behavior as adults. He also believed that people have little free will to make choices in life. Instead, our behavior is determined by the unconscious mind and childhood experiences. Many expressions of our daily life come from Freud's theories

of psychoanalysis - subconscious, denial, repression and anal personality to name only a few.

Freud's psychoanalysis is both a theory and therapy. It is the original psychodynamic theory and inspired other psychologists such as Jung and Erikson to develop their own psychodynamic theories. Freud's work is vast, and he has contributed greatly to psychology as a discipline.

Freud, the founder of psychoanalysis, explained the human mind is like an iceberg, with only a small amount of it being visible, that is our observable behavior, but it is the unconscious, submerged mind that has the most, underlying influence on our behavior. Freud used three main methods of accessing the unconscious mind: free association, dream analysis and slips of the tongue.

He believed that the unconscious mind consisted of three components: the 'id, 'ego and the 'super ego'. The 'id' contains two main instincts: 'Eros' is the life instinct, which involves self-preservation and sex which is fuelled by the 'libido' the energy force. 'Thanatos' is the death instinct, whose energies, because they are less powerful than those of 'Eros' are channeled away from ourselves and into aggression towards others.

The 'id' and the 'superego' are constantly in conflict with each other and the 'ego' tries to resolve the discord. If this conflict is not resolved, we tend to use defense mechanisms to reduce our anxiety. Psychoanalysis attempts to help patients to resolve their inner conflicts.

An aspect of psychoanalysis is Freud's theory of psychosexual development. It shows how early experiences affect adult personality. Stimulation of different areas of the body is important as the child progresses through the important developmental stages. Too much or too little can have bad consequences in later life.

The most important stage is the phallic stage where the focus of the libido is on the genitals. During this stage little boys experience the 'Oedipus complex and little girls experience the 'Electra complex.' These complexes result in children identifying with their same-sex parent, which enables them to learn sex-appropriate behavior and a moral code of conduct.

However, it has been criticized in the way that it over emphasizes the importance of sexuality and under emphasized the role of social relationships. The theory is not scientific, and can't be proved as it is circular. Nevertheless, psychoanalysis has been greatly contributory to psychology in that it has encouraged many modern theorists to modify it for the better, using its basic principles, but eliminating its major flaws.

iii. Humanistic Perspective:

Humanistic psychology is a psychological perspective that emphasizes the study of the whole person (know as holism). Humanistic psychologists look at human behavior, not only through the eyes of the observer, but through the eyes of the person doing the behaving.

Humanistic psychologists believe that an individual's behavior is connected to his or her inner feelings and self-image. The humanistic perspective centers around the thought on the view that each person is unique and individual, has the free will to change at any time in his or her life.

The humanistic perspective suggests that we are responsible for our own happiness and well-being as humans. We have the innate (i.e., inborn) capacity for self-actualization, which is our unique desire to achieve our highest potential as human.

Because of this focus on the person and his or her personal experiences and subjective perception of the world the humanists regarded scientific methods as inappropriate for studying human behavior. Two of the most influential and enduring theories in humanistic psychology that emerged in the 1950s and 1960s are those of Carl Rogers and Abraham Maslow.

iv. Cognitive Perspective

Psychology was institutionalized as a science in 1879 by Wilhem Wundt, who found the first psychological laboratory. His initiative was soon followed by other European and American Universities. These early laboratories, through experiments, explored areas such as memory and sensory perception, both of which Wundt believed to be closely related to physiological processes in the brain. The whole movement had evolved from the early philosophers, such as Aristotle and Plato. Today this approach is known as cognitive psychology.

Cognitive Psychology revolves around the notion that if we want to know what makes people tick then the way to do it is to figure out what processes are actually going on in their minds. In other words, psychologists from this perspective study cognition which is 'the mental act or process by which knowledge is acquired.'

The cognitive perspective is concerned with 'mental' functions such as memory, perception, attention, etc. It views people as being similar to computers in the way we process information (e.g., input-process-output). For example, both human brains and computers process information, store data and have input and output procedure.

This had led cognitive psychologists to explain that memory comprises of three stages: encoding (where information is received and attended to), storage (where the information is retained) and retrieval (where the information is recalled).

It is an extremely scientific approach and typically uses lab experiments to study human behavior. The cognitive approach has many applications including cognitive therapy and testimony.

v. Biological Perspective

The biological psychology states that all thoughts, feeling and behavior ultimately have a biological cause. It is one of the major perspectives in psychology and involves such things as studying the brain, genomics, hormones, and the immune and nervous systems.

Theorists in the biological perspective who study behavioral genomics consider how genes affect behavior. Now that the human genome is mapped, perhaps, we will someday understand more precisely how behavior is affected by the DNA we inherit. Biological factors such as chromosomes, hormones and the brain all have a significant influence on human behavior, for example, the gender psychology.

The approach believes that most behavior is inherited and has an adaptive (or evolutionary) function. For example, in the weeks immediately after the birth of a child, levels of testosterone in fathers drop by more than 30 percent. This has an evolutionary function. Testosterone-deprived men are less likely to wander off in search of new mates to inseminate. They are also less aggressive, which is useful when there is a baby around.

Biological psychologists explain behaviors in neurological terms, i.e., the physiology and structure of the brain and how this influences behavior. Many biological psychologists have concentrated on abnormal behavior and have tried to explain it. For example, biological psychologists believe that schizophrenia is affected by levels of dopamine (a neurotransmitter).

These findings have helped psychiatry take off and help relieve the symptoms of mental illness through drugs. However, Freud and others argue that this just treats the symptoms and not the cause. This is where health psychologists take the finding that biological psychologists produce and look at the environmental factors that are involved to get a better picture.

vi. Evolutionary Perspective

A central claim of evolutionary psychology is that the brain (and therefore the mind) evolved to solve problems encountered by our hunter-gatherer ancestors during the upper Pleistocene period over 10,000 years ago. The Evolutionary approach explains behavior in terms of the selective pressures that shape behavior. Most behaviors that we see/display are believed to have developed during our EEA (environment of evolutionary adaptation) to help us survive.

Observed behavior is likely to have developed because it is adaptive. It has been naturally selected, i.e., individuals who are best adapted to survive and reproduce. Behaviors may even be sexually selected, i.e., individuals who are most successful in gaining access to mates leave behind more offspring.

The mind is therefore equipped with 'instincts' that enabled our ancestors to survive and reproduce. A strength of this approach is that it can explain behaviors that appear dysfunctional, such as anorexia, or behaviors that make little sense in a modern context, such as our biological stress response.

Therefore, in conclusion, there exist so many different perspectives in psychology to explain the different types of behavior and viewed from different angles. No one perspective has explanatory powers over the rest.

Only with all the different approaches of psychology, which sometimes contradict one another (nature-nurture debate), overlap with each other (e.g. psychoanalysis and child psychology) or build upon one another (biologist and health psychologist) can we understand and create effective solutions when problems arise, so we have a healthy body in a healthy mind.

The fact that there are different perspectives that represent the complexity and richness of human (and animal) behavior. A scientific approach, such as Behaviorism or cognitive psychology, tends to ignore the subjective (i.e., personal) experiences that people have.

2.4.3 Cognitive Perspectives of Educational Psychology

Among the current educational psychologists, the cognitive perspective is more widely held than the behavioral perspective, perhaps because it admits causally related mental constructs such as traits, beliefs, memories, motivations, learning, emotions etc. The cognitive perspective is basically concerned with 'mental' functions such as memory, perception, attention, etc. It views people as being similar to computers in the way we process information (e.g., input-process-output). The cognitive approach has many applications including cognitive therapy and eye witness testimony.

Cognition refers to mental activity including thinking, remembering, learning and using language. When we apply a cognitive approach to learning and teaching, we focus on the understanding of information and concepts. If we are able to understand the connections between concepts break down information and rebuild with logical connections, then our retention of material and understanding will increase.

When we are aware of these mental actions, monitor them and control our learning processes it is called meta-cognition, which varies from situation to situation, will greatly affect how individuals behave in a given situation. Understanding of

language, or psycholinguistics, is essential to our understanding of print and oral acquisition of knowledge. Comprehension and perception will allow individuals to interpret information.

2.5 Developmental Stages and its Impact on Education

"Is this child's development on track?" A question may often be asked by parents, relatives, pediatricians, educators, or caregivers over and over again in different forms as child grows and changes. To help to provide exact answer to this significant question, child development experts have created lots of different charts and checklists that can help us to keep track of child development across the several broad key-domains, like:

- Physical development

- Cognitive development (thinking skills)

- Language development

- Social-emotional development

It may also help to think of development as an individual progression, rather than as a list of boxes you should tick at certain prescribed intervals. If progress stops or seems to stop, it's time to talk to your child's healthcare provider.

If there is a delay, identifying it early can sometimes make a big difference for the child.

I. Milestones of Human Development

Milestones are the targets of different phases that a child can achieve or perform by a certain age. Most children develop skills and abilities roughly in the same order, but the timeframes are not exact. They vary from child to child, just as height and colors do. Every child grows and develops at an individual pace. Here's a quick look at some common milestones for each age period of development.

i.   Birth to 18 months

During this period of profound growth and development, babies grow and change rapidly. Doctors recommend that parents speak to their baby a lot during this phase, because hearing your voice will help your baby to develop communication skills. Other suggestions include:

- Short periods of tummy time to help strengthen your baby's neck and back muscles — but make sure baby is awake and you're close by for this playtime.

● Respond right away when your baby cries. Picking up and comforting a crying baby builds strong bonds between the two of you.

ii. Development table: Birth to 18 months

	1-3 months	4-6 months	5-9 months	9-12 months	12-18 months
Cognitive	Shows interest in objects and human faces May get bored with repeated activities	Recognizes familiar faces Notices music Responds to signs of love and affection	Brings hands up to mouth Passes things from one hand to the other	Watches things fall Looks for hidden things	Has learned how to use some basic things like spoons Can point to named body parts
Social and Emotional	Tries to look at you or other people Starts to smile at people	Responds to facial expressions Enjoys playing with people Responds differently to different voice tones	Enjoys mirrors Knows when a stranger is present	May be clingy or prefer familiar people	May engage in simple pretend games May have tantrums May cry around strangers
Language	Begins to coo and make vowel sounds Becomes calm when spoken to Cries differently for different needs	Begins to babble or imitate sounds Laughs	Responds to hearing their name May add consonant sounds to vowels May communicate with gestures	Points Knows what "no" means Imitates sounds and gestures	Knows how to say several words Says "no" Waves bye-bye
Movement / Physical	Turns toward sounds Follows objects with eyes Grasps objects Gradually lifts head for longer periods	Sees things and reaches for them Pushes up with arms when on tummy Might be able to roll over	Starts sitting up without support May bounce when held in standing position Rolls in both directions	Pulls up into standing position Crawls	Walks holding onto surfaces Stands alone May climb a step or two May drink from a cup

iii. Development during Toddler Year from 18 months to 2 years

During the toddler years, children continue to need lots of sleep, good nutrition, and close, loving relationships with parents and caregivers.

Doctors generally offer the following advice to mothers for creating a safe, nurturing space to maximize your child's early growth and development:

- Create predictable routines and rituals to keep your child feeling secure and grounded.
- Toddler-proof your home and yard so kids can explore safely.
- Use gentle discipline to guide and teach children. Avoid hitting, which can cause long-term physical and emotional harm.
- Sing, talk, and read to your toddler to boost their vocabularies.
- Watch your child for cues about the warmth and reliability of all caregivers.
- Take good care of yourself physically and emotionally, because your child needs you to be healthy.

	18 months	24 months
Cognitive	May identify familiar things in picture books. Knows what common objects do Scribbles. Follows single-step requests like "Please stand up"	Builds towers from blocks. May follow simple two-part instructions. Groups like shapes and colors together. Plays pretend games
Social and Emotional	May help with tasks like putting away toys. Is proud of what they have accomplished Recognizes self in mirror; may make faces May explore surroundings if parent stays close by	Enjoys play dates. Plays beside other children; may start playing with them. May defy directions like "sit down" or "come back here"

	18 months	24 months
Language	Knows several words. Follows simple directions. Likes hearing short stories or songs.	May ask simple questions. Can name many things. Uses simple two-word phrases like "more milk". Says the names of familiar people Runs.
Movement / Physical	Can help in getting dressed. Begins to run. Drinks well from a cup. Eats with a spoon. Can walk while pulling a toy. Dances. Gets seated in a chair.	Jumps up and down. Stands on tip-toes. Can draw lines and round shapes. Throws balls. May climb stairs using rails to hold on

iv. Development during Pre-School Stage from 2 years to 5 years

During these pre-school years, children grow more and more independent and capable behaviours. Their natural curiosity is likely to be stimulated because their world is expanding: new friends, new experiences, new environments like daycare or kindergarten.

During this period of development of the child, parents or care givers can —

- Keep reading to your child daily.
- Show them how to do simple chores at home.
- Be clear and consistent with your expectations, explaining what behaviors you want from your child.
- Speak to your child in age-appropriate language.
- Help your child problem solve when emotions are running high.
- Supervise your child in outdoor play spaces, especially around water and play equipments.
- Allow your child to have choices about how to interact with family members and strangers.

a. Normal Development Table:

	3 years	4 years	5 years
	Can put together a 3-4 part puzzle Can use toys that have moving parts like buttons and levers Can turn door knobs Can turn book pages	May be able to count Can draw stick figures May be able to predict what will happen in a story May play simple board games Can name a few colors, numbers, and capital letters	Draws more complex "people" Counts up to 10 things Can copy letters, numbers, and simple shapes Understands the order of simple processes Can say name and address Names many colors
	Shows empathy for hurt or crying children Offers affection Understands "mine" and "yours" May get upset if routines are changed Can get dressed Knows how to take turns	May play games that have roles like "parent" and "baby" Plays with, not just beside, other kids Talks about their likes and dislikes Pretends; may have trouble knowing what's real and what's pretend	Is aware of gender Likes to play with friends Sings, dances, and may play acting games Switches between being compliant and being defiant Can tell the difference between made-up and real
	Talks using 2-3 sentences at a time Has the words to name many things used daily Can be understood by family Understands terms like "in," "on," and "under"	Can talk about what happens in daycare or at school Speaks in sentences May recognize or say rhymes Can say first and last name	May tell stories that stay on track Recites nursery rhymes or sings songs May be able to name letters and numbers Can answer simple quest-ions about stories

	3 years	4 years	5 years
	Can walk up and down steps with one foot on each stair Runs and jumps with ease Catches a ball Can slide down a slide Dances. Gets seated in a chair.	Can hammer a peg into a hole Walks backwards Climbs stairs confidently Can hop Pours liquids with some help	May be able to somersault Uses scissors Hops or stands on one foot for about 10 seconds Can swing on swingset Goes to the bathroom in the toilet Dances. Gets seated in a chair.

b. School-age Development During 6 to 18 Years

During the school years, children gain independence and competence quickly. Friends become more important and influential. A child's self-confidence will be affected by the academic and social challenges presented in the school environment.

As kids mature, the parenting challenge is to find a balance between keeping them safe, enforcing rules, maintaining family connections, allowing them to make some decisions, and encouraging them to accept increasing responsibility.

Despite their rapid growth and development, they still need parents and caregivers to set limits and encourage healthy habits.

Here are some tips you can do to ensure that your child continues to be healthy:

● Make sure they get enough sleep.

● Provide opportunities for regular exercise and individual or team sports.

● Create quiet, positive spaces for reading and studying at home.

● Limit screen time and monitor online activities carefully.

● Build and maintain positive family traditions.

● Talk to your children about consent and setting boundaries with their bodies.

	6-8 years	9-4 years	12-14 years	15-18 years
Cognitive	Can complete instructions with 3 or more steps Can count backward Knows left and right Tells time	Can use common devices, including phones, tablets, and game stations Writes stories and letters Maintains longer attention span	Develops views and opinions that may differ from parents' ideas Grows awareness that parents aren't always correct Can understand figurative language Ability to think logically is improving, but prefrontal cortex is not yet mature	Internalize work and study habits Can explain their positions and choices Continues to differentiate from parents
Social and emotional	Cooperates and plays with others May play with kids of different genders Mimics adult behaviors Feels jealousy May be modest about bodies	May have a best friend Can see from another person's perspective Experiences more peer pressure	May become more independent from parents Displays moodiness Increased need for some privacy	Increased interest in dating and sexuality Spends more time with friends than family Growth in ability to empathize with others
Language	Can read books at grade level Understands speech and speaks well	Listens for specific reasons (like pleasure or learning) Forms opinions based on what's heard Can take brief notes Follows written instructions Draws logical inferences based on reading Can write about a stated main idea Can plan and give a speech	Can use speech that isn't literal Can use tone of voice to communicate intentions; i.e. sarcasm	Can speak, read, listen, and write fluently and easily Can have complex conversations Can speak differently in different groups Can write persuasively Can understand proverbs, figurative language, and analogies

	6-8 years	9-4 years	12-14 years	15-18 years
Movement / Physical	Can jump rope or ride a bike Can draw or paint Can brush teeth, comb hair, and complete basic grooming tasks Can practice physical skills to get better at them	May experience signs of early puberty like breast development and facial hair growth Increased skill levels in sports and physical activities	Many females will have started periods Secondary sex characteristics like armpit hair and voice changes continue Height or weight may change quickly and then slow down	Continues to mature physically, especially boys

c. What to do if you are concerned:

If you're wondering whether some aspect of a child's development may be delayed, you have several options:

First, talk to your child's pediatrician and ask for a developmental screening. The screening tools used by doctors are more thorough than online checklists, and they may give you more reliable information about your child's abilities and progress.

You can also ask your pediatrician for a referral to a developmental specialist like a pediatric neurologist, occupational therapist, speech/language therapist, or a psychologist who specializes in evaluating children.

If your child is under the age of 3, you can reach out to the early intervention as far as possible.

If your child is 3 yr. or older, you can speak to the special education director at the public school near your home (even if your child isn't enrolled at that school) to ask for a developmental evaluation. Make sure you write down the date and director's name so you can follow up, if necessary.

It's really important that you act right away if you suspect a developmental delay or disorder, because many developmental issues can be addressed more effectively with early intervention.

During a screening, the healthcare provider may ask you questions, interact with your child, or conduct tests to find out more about what your child can and cannot yet do.

If your child has a medical condition, was born early, or was exposed to an environmental toxin like lead, the doctor might conduct developmental screenings more often.

Significance of Development in Human life

Growth and development go together but at different rates. The assessment of growth and development is very helpful in **finding out the state of health and nutrition of a child**. Continuous normal growth and development indicate a good state of health and nutrition of a child. Abnormal growth or growth failure is a symptom of disease.

Human resource **development** is **essential** for any organization that desires to be dynamic and growth-oriented. **Human** resources have unlimited potential capabilities that can only be used by creating a workforce that can continually identify, bring to the surface, and use the capabilities of individuals.

The importance of human development in terms of living conditions in different countries, human development is very important in terms of living conditions in different countries. The statement "any society committed to improving the lives of its people must also be committed to full and equal rights for all" is true.

2.6 Summary

Human growth and development have become very important issue to be discussed not only for medical science but equally important in the field of psychology and education. The entire issue of human growth and development have been discussed in brief in this unit. Along with the human growth and development, the perspective of educational psychology like biology, behavioural and cognitive have also been discussed in this unit. At the end of the unit, developmental stages and its impact on education like right direction of development and potentiality of acquiring knowledge through education have been explained.

2.7 Self-Assessment Questions

1. What are the basic differences between growth and development?
2. What is physical development?
3. What do you mean by cognitive development?

4. Elucidate the concept emotional development.

5. Illuminate at least two principles of development.

6. What do you mean by perspectives of educational psychology?

7. Explain cognitive perspective of educational psychology.

8. What do you mean by milestones of human development?

9. Write the importance of psychology in education.

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Unit 3 □ Theories of Development

Structure

3.1   Objectives

After going through this unit, you will be able to –

- understand Piaget's Cognitive Developmental Theory;

- be acquainted with Erikson's Psycho-social Developmental Theory;

- analyze Kohlberg's Moral Developmental theory.

3.2   Introduction

Psychological development is the development of human beings' cognitive, emotional, intellectual, and social capabilities and functioning over the course of a normal life span, from infancy through old age. It is the subject matter of the discipline known as Developmental Psychology. Traditionally, the Child psychology has been the major focus of research for long days, but since the mid-20th century much has been learned about infancy and adulthood as well and its developmental phases. In educational Studies, the study of developmental psychology is essential in understanding how humans learn, mature and adapt. Educationists conduct researches to help to people reach their full potential — for example, studying the difference between learning styles in babies and adults.

Theories of development play an important role in understanding different aspects of human development scientifically. In the following sections, three important theories

of psychological development have been discussed to have a basic idea of human learning, namely, (i) Piaget's Cognitive Development Theory, (ii) Erickson's psycho-Social Development Theory, and (iii) Kohlberg's Moral Development Theory.

3.3 Piaget's Cognitive Development Theory

Piaget believed that children take an active role in the learning process, acting much like little scientists as they perform experiments, make observations, and learn about the world. As kids interact with the world around them, they continually add new knowledge, build upon existing knowledge, and adapt previously held ideas to accommodate new information.

Piaget was born in Switzerland in the late 1800s and was a precocious student, publishing his first scientific paper when he was just 11 years old. His early exposure to the intellectual development of children came when he worked as an assistant to Alfred Binet and Theodore Simon as they worked to standardize their famous IQ test. Much of Piaget's interest in the cognitive development of children was inspired by his observations of his own nephew and daughter. These observations reinforced his budding hypothesis that children's minds were not merely smaller versions of adult minds. Based on his observations, he concluded that children are not less intelligent than adults, they simply think differently. Albert Einstein called Piaget's discovery "so simple only a genius could have thought of it."

Piaget's stage theory describes the cognitive development of children. Cognitive development involves changes in cognitive process and abilities. In Piaget's view, early cognitive development involves the processes based upon actions and later progresses to changes in mental operations.

Piaget's theory of cognitive development is a comprehensive theory about the nature and development of human intelligence. It was originated by the Swiss developmental psychologist Jean Piaget (1896–1980). The theory deals with the nature of knowledge itself and how humans gradually come to acquire, construct, and use it. Piaget's theory is mainly known as a developmental stage theory.

In 1919, while working at the Alfred Binet's Laboratory School in Paris, Piaget was intrigued by the fact that "children of different ages made different kinds of mistakes while solving problems". His experience and observations at the Alfred Binet Laboratory were the beginnings of his theory of cognitive development.

Piaget believed that children are not like 'little adults' who may know less; children just think and speak differently. By thinking that children have great cognitive abilities, Piaget came up with four different cognitive development stages, which he put out into testing. Within those four stages he managed to group them with different ages. In each stage he realized how children managed to develop their cognitive skills. For example, he believed that children experience the world through actions, representing things with words, thinking logically, and using reasoning.

I. Progressive Reorganization:

To Piaget, cognitive development was a progressive reorganization of mental processes resulting from biological maturation and environmental experience. He believed that children construct an understanding of the world around them, experience discrepancies between what they already know and what they discover in their environment, and then adjust their ideas accordingly. Moreover, Piaget claimed that cognitive development is at the center of the human organism, and language is contingent on knowledge and understanding acquired through cognitive development. Piaget's earlier work received the greatest attention. Child-centered classrooms and open education are direct applications of Piaget's views. Despite its huge success, Piaget's theory has some limitations that Piaget recognized himself; for example, the theory supports sharp stages rather than continuous development (horizontal and vertical.

II. Reality to Child:

Piaget noted that reality is a dynamic system of continuous change. Reality has been defined with reference to the two conditions that define dynamic systems. Specifically, he argued that reality involves transformations and states. 'Transformations' refer to all manners of changes that a thing or person can undergo. *States* refer to the conditions or the appearances in which things or persons can be found between transformations. For example, there might be changes in shape or form (for instance, liquids are reshaped as they are transferred from one vessel to another, and similarly humans change in their characteristics as they grow older), in size (a toddler does not walk and run without falling, but after 7 yrs of age, the child's sensory motor anatomy become well developed and now acquires skill faster), or in placement or location in space and time (e.g., various objects or persons might be found at one place at one time and at a different place at another time). Thus, Piaget argued, if human intelligence is to be adaptive, it must have functions to represent both the transformational and the static aspects of reality. He

proposed that operative intelligence is responsible for the representation and manipulation of the dynamic or transformational aspects of reality, and that figurative intelligence is responsible for the representation of the static aspects of reality.

III. Operative intelligence:

It is the active aspect of intelligence. It involves all actions, overt or covert, undertaken in order to follow, recover, or anticipate the transformations of the objects or persons of interest. *Figurative intelligence* is the more or less static aspect of intelligence, involving all means of representation used to retain in mind the states (i.e., successive forms, shapes, or locations) that intervene between transformations. That is, it involves perception, imitation, mental imagery, drawing, and language. Therefore, the figurative aspects of intelligence derive their meaning from the operative aspects of intelligence, because states cannot exist independently of the transformations that interconnect them. Piaget stated that the figurative or the representational aspects of intelligence are subservient to its operative and dynamic aspects, and therefore, that understanding essentially derives from the operative aspect of intelligence. At any time, operative intelligence frames how the world is understood and it changes if understanding is not successful. Piaget stated that this process of understanding and change involves two basic functions – Assimilation and Accommodation.

IV. Assimilation and Accommodation:

Through his study in the field of education, Piaget focused on two processes, viz., assimilation and accommodation. Assimilation means integrating external elements into structures of lives or environments, or those we could have through experiences. It is the process of fitting new information into pre-existing cognitive schemas through perception and adaptation. Assimilation, in which new experiences are reinterpreted to fit into, or assimilate with, old ideas and It occurs when humans are faced with new or unfamiliar information and refer to previously learned information in order to make sense of it. In contrast, accommodation is the process of taking new information in one's environment and altering pre-existing schemas in order to fit in the new information. This happens when the existing schema (knowledge) does not work, and needs to be changed to deal with a new object or situation. Accommodation is imperative because it is how people will continue to interpret new concepts, schemas, frameworks, and more. Piaget believed that the human brain has been programmed through evolution to bring equilibrium, which is what he believed ultimately influences structures by the internal and external processes through assimilation and accommodation. Assimilation and accommodation cannot exist without the other. They are like two sides of a coin. For instance, to

recognize (assimilate) an apple as an apple, one must first focus (accommodate) on the contour of this object. To do this, one needs to roughly recognize the size of the object. Development increases the balance, or equilibration, between these two functions. When in balance with each other, assimilation and accommodation generate mental schemas of the operative intelligence. When one function dominates over the other, they generate representations which belong to figurative intelligence.

V. The Stages of Cognitive Development:

Through his observations of his children under study, Piaget developed a stage theory of intellectual development that included four distinct stages:

a. The Sensory-motor Stage (Birth to 2 years)

Major Characteristics and developmental changes of this stage are:

  i. The infant knows the world through their movements and sensations;
  ii. Children learn about the world through basic actions such as, sucking, looking, and listening;
  iii. Infants learn that things continue to exist even though they cannot be seen (Object permanence);
  iv. They are separate beings from the people and objects around them;
  v. They realize that their actions can cause things to happen in the world around them.

During this early stage of cognitive development, infants and toddlers acquire knowledge through sensory experiences by manipulating objects. A child's entire experience at the earliest period of this stage occurs through basic reflexes, senses, and motor responses.

It is during the sensory-motor stage that children go through a period of dramatic growth and learning. As kids interact with their environment, they are continually making new discoveries about how the world works.

The cognitive development that occurs during this period takes place over a relatively shorter period of time and involves a great deal of growth. Children not only learn how to perform physical actions such as crawling and walking; they also learn a great deal about language from the parents and others with whom they interact. Piaget also broke this stage down into a number of six sub-stages. It is during the final part of the sensory-motor stage that early representational thought emerges.

Sensory-Motor Development

	Sub-stage	Period	Activity
1.	Simple reflexes	Birth–6 weeks	"Coordination of sensation and action through reflexive behaviors". Three primary reflexes are described by Piaget: sucking of objects in the mouth, following moving or interesting objects with the eyes, and closing of the hand when an object makes contact with the palm. Over the first six weeks of life, these reflexes begin to become voluntary actions. For example, the palmar reflex becomes intentional grasping.
2.	First habits and primary circular reactions phase	6 weeks–4 months	"Coordination of sensation and two types of Schema: habits (reflex) and primary circular reactions (reproduction of an event that initially occurred by chance). The main focus is still on the infant's body". As an example of this type of reaction, an infant might repeat the motion of passing their hand before their face. Also at this phase, passive reactions, caused by classical or operant conditioning, can begin.
3.	Secondary circular reactions phase	4–8 months	Development of habits. "Infants become more object-oriented, moving beyond self-preoccupation; repeat actions that bring interesting or pleasurable results" This stage is associated primarily with the development of coordination between vision and apprehension. Three new abilities occur at this stage: intentional grasping for a desired object, secondary circular reactions, and differentiations between ends and means. At this stage, infants will intentionally grasp the air in the direction of a desired object, often to the amusement of friends and family. Secondary circular reactions or the repetition of an action involving an external object begin; for example, moving a switch to turn on a light repeatedly. The differentiation between means and ends also occurs. This is perhaps one of the most important stages of a child's growth as it signifies the dawn of logic.
4.	Coordination of secondary circular reactions stages	8–12 months	"Coordination of vision and touch—hand-eye coordination; coordination of schemas and intentionality". This stage is associated primarily with the development of logic and the coordination between means and ends. This is an extremely important stage of development, holding what Piaget calls the "first proper intelligence". Also, this stage marks the beginning of goal orientation, the deliberate planning of steps to meet an objective.
5.	Tertiary circular reactions, novelty, and curiosity	12–18 months	"Infants become intrigued by the many properties of objects and by the many things they can make happen to objects; they experiment with new behavior". This stage is associated primarily with the discovery of new means to meet goals. Piaget describes the child at this juncture as the "young scientist," conducting pseudo-experiments to discover new methods of meeting challenges.
6.	Internalization of schemas	18–24 months	"Infants develop the ability to use primitive symbols and form enduring mental representations". This stage is associated primarily with the beginnings of insight, or true creativity. This marks the passage into the preoperational stage.

Piaget believed that for developing object permanence or object constancy, understanding of that objects continue to exist even when they cannot be seen, was found an important element at this point of development.

By learning that objects are separate and distinct entities and that they have an existence of their own outside of individual perception, children are then able to begin to attach names and words to objects.

Piaget's theory of cognitive development is a comprehensive theory about the nature and development of human intelligence. The theory deals with the nature of knowledge itself and how humans gradually come to acquire, construct, and use it. Piaget's theory is mainly known as a developmental stage theory.

b. The Pre-operational Stage (2 to 7 years)

Major Characteristics and developmental changes of this stage are:

i. Children at this stage tend to be egocentric and struggle to see things from the perspective of others;

ii. While they are getting better with language and thinking, they still tend to think about things in very concrete terms;

iii. The foundations of language development may have been laid during the previous stage, but it is the emergence of language that is one of the major hallmarks of the preoperational stage of development;

iv. Children become much more skilled at pretend play during this stage of development, yet continue to think very correctly about the world around them.

v. Child begins to learn to speak and lasts up until the age of seven.

vi. Children do not yet understand concrete logic and cannot mentally manipulate information.

vii. Children's increase in playing and pretending takes place in this stage.

However, the child still has trouble seeing things from different points of view. The children's play is mainly categorized by symbolic play and manipulating symbols. Such play is demonstrated by the idea of checkers being snacks, pieces of paper being plates, and a box being a table. Their observation of symbols exemplifies the idea of play with the absence of the actual objects involved.

They also often struggle with understanding the idea of constancy.

For example, if you take a lump of clay, divide it into two equal pieces and give two children separately with a choice between two pieces of clay to play with.

One piece of clay is rolled into a compact ball while the other is smashed into a flat pancake shape. Since the flat shape looks larger, the pre-operational child being confused likely to choose the flat shaped clay as a larger one though the two pieces are exactly the same volume.

c.   The Concrete Operational Stage (7 to 11 years)

Major Characteristics and developmental changes of this stage are:

i.   During this stage, begin to think logically about concrete events;

ii. They begin to understand the concept of observation; that the amount of liquid in a short, wide cup is equal to that in a tall, skinny glass, for example;

iii. Their thinking becomes more logical and organized but still not very concrete;

iv. Children begin using inductive logic. Or reasoning from specific information to a general principle.

v.   While children are still very concrete and liberal in their thinking at this point of development, they become much more adept at using logic.

vi. The egocentrism of the previous stage begins to disappear as kids become better at thinking about how other people might view a situation.

vii. They become much more logical during the stage and kids at this point in development tend to struggle with abstract and hypothetical concepts.

viii. Children also become less egocentric and begin to think about how other people might think and feel. Kids in the concrete operational stage also begin to understand that their thoughts are unique to them and that not everyone else necessarily shares their thoughts, feelings, and opinions.

ix. They start solving problems in a more logical hypothetico-deductive reasoning. The children undergo a transition where the child learns rules such as inductive reasoning and conservation.

For example, a child will understand that "A is more than B" and "B is more than C". However, when asked "is A more than C?", the child might not be able to logically figure the question out mentally. Two other important processes in the concrete operational stage are logic and the elimination of egocentrism.

d.   The Formal Operational Stage (12 years and above)

Major Characteristics and developmental changes of this stage are:

i.   At this stage, the adolescent or young adults begin to think abstractly and reason about hypothetical problems;

ii. Abstract thoughts emerge;

iii. Teens begin to think more about moral, philosophical, ethical, social and political issues that require theoretical and abstract reasoning;

iv. Begin to use deductive logic, or reasoning from a general principle to specific information.

v. The ability to thinking about abstract ideas and situations is the key hallmark of the formal operational stage of cognitive development.

vi. The ability to systematically plan for the future and reason about hypothetical situations are also critical abilities that emerge during the stage.

The final stage of Piaget's theory involves an increase in logic, the ability to use deductive reasoning, and an understanding of abstract ideas.ÿþ At this point, people become capable of seeing multiple potential solutions to problems and think more scientifically about the world around them.

It is important to note that Piaget did not view children's intellectual development as a quantitative process; that is, kids do not just add more information and knowledge to their existing knowledge as they get older. Instead, Piaget suggested that there is a qualitative change in 'how' children think as they gradually process through these four stages. A child at age 7 doesn't just have more information about the world than he did at age 2; there is a fundamental change in 'how' he/she thinks about the world.

d. Some Important Concepts of Piaget's Cognitive Development Theory:

To better understand some of the things that happen during cognitive development, it is important first to examine a few of the important ideas and concepts introduced by Piaget.

The following are some of the factors that influence how children learn and grow:

i.   **Schemas**

A schema describes both the mental and physical actions involved in understanding and knowing. Schemas are categories of knowledge that help us to interpret and understand the world. In Piaget's view, a schema includes both a category of knowledge and the process of obtaining that knowledge. As experiences happen, this new information is used to modify, add to, or change previously existing schemas.

For example, a child may have a schema about a type of animal, such as a dog. If the child's sole experience has been with small dogs, a child might believe that all dogs are small, furry, and have four legs. Suppose, then that the child encounters an enormous dog. The child will take in this new information, modifying the previously existing schema to include these new observations. Schemas Play following important roles in the Learning Process of the learner

ii. Assimilation

The process of taking in new information into our already existing schemas is known as assimilation. The process is somewhat subjective because we tend to modify experiences and information slightly to fit in with our preexisting beliefs. In the example above, seeing a dog and labeling it "dog" is a case of assimilating the animal into the child's dog schema.

iii. Accommodation

Another part of adaptation involves changing or altering our existing schemas in light of new information, a process known as accommodation. Accommodation involves modifying existing schemas, or ideas, as a result of new information or new experiences. New schemas may also be developed during this process.

iv. Equilibration

Piaget believed that all children try to strike a balance between assimilation and accommodation, which is achieved through a mechanism Piaget called equilibration. As children progress through the stages of cognitive development, it is important to maintain a balance between applying previous knowledge (assimilation) and changing behavior to account for new knowledge (accommodation). Equilibration helps to explain how children can move from one stage of thought to the next.

v. Educational Implications:

One of the most important elements to remember Piaget's theory is that it takes the view that creating knowledge and intelligence is an inherently 'active' process. Piaget said, "I find myself opposed to the view of knowledge as a passive copy of reality," He explained. "I believe that knowing an object means acting upon it.

Piaget's theory of cognitive development helped to add our understanding of children's intellectual growth. It also stressed that children are not merely passive recipients of knowledge. Instead, kids are constantly investigating and experimenting as they build their understanding of how the world works.

Piaget stated that –

- *Hypothetico-deductive reasoning* becomes important during the formal operational stage with the following mental operations;

- *Abstract* thought emerges during the formal operational stage. Children tend to think very concretely and specifically in earlier stages, and begin to consider possible outcomes and consequences of actions;

- *Metacognition*, the capacity for "thinking about thinking" that allows adolescents and adults to reason about their thought processes and monitor them;

- *Problem-solving* is demonstrated when children use trial-and-error process to solve problems. The ability to systematically solve a problem in a logical and methodical way emerges.

Children in primary school years mostly use inductive reasoning, but adolescents start to use deductive reasoning. Inductive reasoning is when children draw general conclusions from personal experiences and specific facts. Adolescents learn how to use deductive reasoning by applying logic to create specific conclusions from abstract concepts. This capability results from their capacity to think hypothetically.

3.4 Erikson's Psycho-Social Development Theory

Erik Erikson (1902–1994) was a stage theorist who took Freud's controversial theory of psychosexual development and modified it as a psychosocial theory. Erikson emphasized that the ego makes positive contributions to development by mastering attitudes, ideas, and skills at each stage of development. This mastery helps children grow into successful, contributing members of society. During each of Erikson's eight stages, there is a psychological conflict that must be successfully overcome in order for a child to develop into a healthy, well-adjusted adult.

The key idea in Erikson's theory is that the individual faces a conflict at each stage of life, which may or may not be successfully resolved within that stage. For example, he called the first stage 'Trust vs. Mistrust'. If the quality of care is good in infancy, the child learns to trust the world to meet her needs.

Erikson's psycho-social theory essentially states that each person experiences eight 'psychosocial crises' (internal conflicts linked to life's key stages) which help to define his or her growth and personality.

I. Stages of Psycho-social Development

Erikson's stages of psycho-social development are based on (and expand upon) Freud's psychosexual theory. Erikson proposed that we are motivated by the need to achieve competence in certain areas of our lives. According to his psychosocial theory, we experience eight stages of development over our lifespan, from infancy through late adulthood. At each stage there is a crisis or task that we need to resolve. Successful completion of each developmental task results in a sense of competence and a healthy personality. Failure to master these tasks leads to feelings of inadequacy. He also added to Freud's stages by discussing the cultural implications of development; certain cultures may need to resolve the stages in different ways based upon their cultural and survival needs.

i. Trust vs. Mistrust:

From birth to 12 months of age, infants must learn that adults can be trusted. This occurs when adults meet a child's basic needs for survival. Infants are dependent upon their caregivers, so caregivers who are responsive and sensitive to their infant's needs help their baby to develop a sense of trust; their baby will see the world as a safe, predictable place. Unresponsive caregivers who do not meet their baby's need can engender feelings of anxiety, fear, and mistrust; their baby may see the world as unpredictable. If infants are treated cruelly or their needs are not met appropriately, they will likely grow up with a sense of mistrust for people in the world.

ii. Autonomy vs. Shame/Doubt:

As toddlers (ages 1–3 years) begin to explore their world, they learn that they can control their actions and acts on their environment to get results. They begin to show clear preferences for certain elements of the environment, such as food, toys, and clothing. A toddler's main task is to resolve the issue of *autonomy vs. shame and doubt* by working to establish independence. This is the "I do it" stage. For example, we might observe a budding sense of autonomy in a 2-year-old child who wants to choose her clothes and dress herself. Although her outfits might not be appropriate for the situation, her input in such basic decisions has an effect on her sense of independence. If denied the opportunity to act on her environment, she may begin to doubt her abilities, which could lead to low self-esteem and feelings of shame.

iii. Initiative vs. Guilt:

Once children reach the preschool stage (ages 3–6 years), they are capable of initiating activities and asserting control over their world through social interactions

and play. According to Erikson, preschool children must resolve the task of *initiative vs. guilt.* By learning to plan and achieve goals while interacting with others, preschool children can master this task. Initiative, a sense of ambition and responsibility, occurs when parents allow a child to explore within limits and then support the child's choice. These children will develop self-confidence and feel a sense of purpose. Those who are unsuccessful at this stage—with their initiative misfiring or stifled by over-controlling parents—may develop feelings of guilt.

iv. Industry vs. Inferiority:

During the elementary school stage (ages 6–12), children face the task of *industry vs. inferiority.* Children begin to compare themselves with their peers to see how they measure up. They either develop a sense of pride and accomplishment in their schoolwork, sports, social activities, and family life, or they feel inferior and inadequate because they feel that they don't measure up. If children do not learn to get along with others or have negative experiences at home or with peers, an inferiority complex might develop into adolescence and adulthood.

v. Identity vs. Role Confusion

In adolescence (ages 12–18), children face the task of *identity vs. role confusion.* According to Erikson, an adolescent's main task is developing a sense of 'self'. Adolescents struggle with questions such as "Who am I?" and "What do I want to do with my life?" Along the way, most adolescents try on many different selves to see which one fits; they explore various roles and ideas, set goals, and attempt to discover their "adult" selves. Adolescents who are successful at this stage have a strong sense of identity and are able to remain true to their beliefs and values in the face of problems and other people's perspectives. When adolescents are apathetic, do not make a conscious search for identity, or are pressured to conform to their parents' ideas for the future, they may develop a weak sense of self and experience role confusion. They will be unsure of their identity and confused about the future. Teenagers who struggle to adopt a positive role will likely struggle to "find" themselves as adults.

vi. Intimacy vs. Isolation:

People in early adulthood (20s through early 40s) are concerned with *intimacy vs. isolation.* After we have developed a sense of self in adolescence, we are ready to share our life with others. However, if other stages have not been successfully resolved, young adults may have trouble developing and maintaining successful relationships with others. Erikson said that we must have a strong sense of self before we can develop successful intimate relationships. Adults who do not develop a

positive self-concept in adolescence may experience feelings of loneliness and emotional isolation.

vii. Generativity vs. Stagnation:

When people reach their 40s, they enter the time known as middle adulthood, which extends to the mid-60s. The social task of middle adulthood is *generativity vs. stagnation.* Generativity involves finding your life's work and contributing to the development of others through activities such as volunteering, mentoring, and raising children. During this stage, middle-aged adults begin contributing to the next generation, often through childbirth and caring for others; they also engage in meaningful and productive work which contributes positively to society. Those who do not master this task may experience stagnation and feel as though they are not leaving a mark on the world in a meaningful way; they may have little connection with others and little interest in productivity and self-improvement.

viii. Integrity vs. Despair:

From the mid-60s to the end of life, we are in the period of development known as late adulthood. Erikson's task at this stage is called *integrity vs. despair.* He said that people in late adulthood reflect on their lives and feel either a sense of satisfaction or a sense of failure. People who feel proud of their accomplishments feel a sense of integrity, and they can look back on their lives with few regrets. However, people who are not successful at this stage may feel as if their life has been wasted. They focus on what "would have," "should have," and "could have" been. They face the end of their lives with feelings of bitterness, depression, and despair.

II. The Strengths of Erickson's Psycho-social Theory:

- As a stage theory, it explains developmental stages of individual;
- Explains Ego-identity formation right from birth;
- Every individual has to go through crisis in his/her life.

III. The Weaknesses of Erickson's Theory:

- Focus on competing forces rather than emotional development of individual;
- Difficult to be tested scientifically as it is not possible to measure some of the concepts upon which the theory is based;
- Fails to specify the effect of failure in one stage impacts with other stages.

IV. Educational implications of Erikson's Theory:

● These are possible depending upon the age group of the learner and the tasks they are expected to perform;

● Allowing the child to play with various natural, simple materials, and role-playing for the expression of fantasy and imagination;

● Games, stories and songs can be used.

● Real-life activities like serving, chopping vegetables or making tea, prepare children for preparation in the community around them;

● Child-directed activities where the child chooses his or her activity and repeats it as often as they want must be encouraged.

● Educational Implications

● Erikson mentioned that personality develops in a predetermined order through the eight stages of psychosocial development, from infancy to adulthood. According to the theory, successful completion of each stage results in a healthy personality and the acquisition of basic virtues.

● Provide a portion of the day when children can choose their own activities.

● Have a classroom library where children can pick their own books during reading time. This allows children the opportunity to learn how to make decisions for themselves. Break instruction and activities down into small steps.

From the above discussions, it may be concluded that Erickson's Psycho-social theory is a very powerful way for building self-awareness and for improving oneself, as it helps to understand a person's learning according to his / her personal uniqueness.

3.5 Kohlberg's Moral Development Theory

Lawrence Kohlberg was a 20th century psychologist known primarily for his research into moral psychology and development. He was born in Bronxville, New York on October 25, 1927. Kohlberg enrolled in the University of Chicago with high examination scores, he was excused from many required courses and received his bachelor's degree in just one year. He received his PhD in psychology from the University of Chicago in 1958. His dissertation was based on his research into the moral choices of adolescent boys and led to a life devoted to the exploration of moral and ethical development in young people.

In 1959, Kohlberg joined the Yale University as an assistant professor of

psychology. Over several years, he worked as an associate professor and director of Child Psychology Training Program at the university level. The remainder of his career was spent as a professor of education and social psychology at Harvard University between 1968 and 1987.

I. Kohlberg's Contribution to Psychology

Kohlberg's stages of moral development were influenced by the Swiss psychologist Jean Piaget's stage-based theory. He expanded on Piaget's two stages, identifying six stages of moral development. He argued that correct moral reasoning was the most significant factor in moral decision-making, and that correct moral reasoning would lead to ethical behavior. Kohlberg believed that individuals progress through stages of moral development just as they progress through stages of cognitive development.

I. Kohlberg's theory of Moral Development

The theory of mortal development includes three levels and six stages:

Level I : Pre-conventional Morality:

Stage one : Obedience and Punishment

The child is motivated to avoid punishment and has little or no independent moral reasoning.

Stage two : Individualism and Exchange

Individuals are focused on fulfilling their own self-interests, while acknowledging that different people have different views.

Level II: Conventional Morality:

Stage three : Maintaining interpersonal relationships

At this stage, individuals emphasize the importance of being kind to other people, engaging in 'good' behavior and showing concern for others. This stage includes a strong emphasis on gaining approval.

Stage four : Law and order

The individual is determined to obey the rules, focusing on the value that the law adds to human life. A person at this stage might argue that breaking the law is wrong because the law is designed to protect people. Individuals focus on maintaining the social order and upholding cultural norms.

Level III : Post-Conventional Morality

Stage five : Social contract

Individuals at this stage of development focus on doing what is best for society as a whole and respecting individual rights. Civil disobedience would be endorsed by people in both stages of post-conventional morality.

Stage six : Universal principle

At this stage, individuals are focused on upholding principles of universal justice, fairness, and ethics. They believe in the democratic process, but also endorse disobeying unjust laws.

According to Kohlberg, few people reach stages five and six; most tend to stay within stage four.

II. Kohlberg's Assumptions of Moral Development

In his unpublished 1958 dissertation, Kohlberg wrote what are now known as Kohlberg's stages of moral development. These stages are planes of moral adequacy conceived to explain the development of moral reasoning. While studying psychology at the University of Chicago, the theory was inspired by the work of Jean Piaget and a fascination with children's reactions to moral dilemmas. Kohlberg proposed a form of 'Socratic' moral education and reaffirmed John Dewey's idea that development should be the aim of education. He also outlined how educators can influence moral development without indoctrination and how public school can be engaged in moral education consistent with the State Constitution.

Kohlberg's approach begins with the assumption that humans are intrinsically motivated to explore, and become competent at functioning in their environments. In social development, this leads us to imitate role models we perceive as competent and to look to them for validation. Thus, our earliest childhood references on the rightness of our and others' actions are adult role models with whom we are in regular contact. Kohlberg also held that there are common patterns of social life, observed in universally occurring social institutions, such as families, peer groups, structures and procedures for clan or society decision-making, and cooperative work for mutual defense and sustenance. Endeavoring to become competent participants in such institutions, humans in all cultures exhibit similar patterns of action and thought concerning the relations of self, others, and social world. Furthermore, the more one is prompted to imagine how others experience things and imaginatively to take their roles, the more quickly one learns to function well in cooperative human interactions.

The sequence of stages of moral development thus corresponds to a sequence of progressively more inclusive social circles (family, peers, community, etc.), within which humans seek to operate competently. When those groups function well, oriented by reciprocity and mutual care and respect, growing humans adapt to larger and larger circles of justice, care, and respect. Each stage of moral cognitive development is the realization in conscious thought of the relations of justice, care, and respect exhibited in a wider circle of social relations, including narrower circles within the wider one.

Kohlberg's theory holds that moral reasoning, which is the basis for ethical behavior, has six identifiable developmental constructive stages – each is more adequate at responding to moral dilemmas than the last. Kohlberg suggested that the higher stages of moral development provide the person with greater capacities/abilities in terms of decision making and so these stages allow people to handle more complex dilemmas. In studying these, Kohlberg followed the development of moral judgment beyond the ages originally studied earlier by Piaget, who also claimed that logic and morality develop through constructive stages. Expanding considerably upon this groundwork, it was determined that the process of moral development was principally concerned with justice and that its development continued throughout the life span, even spawning dialogue of philosophical implications of such research. His model "is based on the assumption of co-operative social organization on the basis of justice and fairness."

Kohlberg studied moral reasoning by presenting subjects with moral dilemmas. He would then categorize and classify the reasoning used in the responses, into one of the six distinct stages, grouped into three levels: pre-conventional, conventional and post-conventional. Each level contains two stages.

III. Moral Education :

Kohlberg is well known among psychologists for his research in moral psychology, but among educators he is also known for his applied work of moral education in schools. The three major contributions Kohlberg made to moral education were the use of Moral Exemplars, Dilemma Discussions, and Just Community Schools.

    i. Kohlberg's first method of moral education was to examine the lives of moral exemplars who practiced principled morals such as Martin Luther King, Jr., Socrates, and Abraham Lincoln. He believed that moral exemplars' words and deeds increased the moral reasoning of those who watched and listened to them. Kohlberg never tested to see if examining the lives of

moral exemplars did in fact increase moral reasoning. Recent research in moral psychology has brought back the value of witnessing moral exemplars in action or learning about their stories. Witnessing the virtuous acts of moral exemplars may not increase moral reasoning, but it has been shown to eplicit an emotion known as moral elevation that can increase an individual's desire to be a better person and even has the potential to increase pro-social and moral behavior. Although Kohlberg's hypothesis that moral exemplars could increase moral reasoning might be unfounded, his understanding that moral exemplars have an important place in moral education has growing support.

ii. Dilemma discussion in schools was another method proposed by Kohlberg to increase moral reasoning. Unlike moral exemplars, Kohlberg tested this method by integrating moral dilemma discussion into the curricula of school classes in humanities and social studies. Results of this and other studies using similar methods found that moral discussion does increase moral reasoning and works best if the individual in question is in discussion with a person who is using reasoning that is just one stage above their own.

iii. The final method Kohlberg used for moral education was known as "just communities". In 1974, Kohlberg worked with schools to set up democracy-based programs, where both students and teachers were given one vote to decide on school policies. The purpose of these programs was to build a sense of community in schools in order to promote democratic values and increase moral reasoning. Kohlberg's idea and development of "just communities" were greatly influenced by his time living in an Israeli kibbutz when he was a young adult in 1948 and when he was doing longitudinal and cross-cultural researches of moral development.

Kohlberg's theory states that moral growth begins early in life and continues in stages throughout childhood, adolescence, and adulthood. Understanding Kohlberg's theory of moral development can help to teachers to guide the moral development of their students in the classroom. He argued that correct moral reasoning was the most significant factor in moral decision-making, and that correct moral reasoning would lead to ethical behavior. Kohlberg believed that individuals progress through stages of moral development just as they progress through stages of cognitive development.

Moral development occurs as we grow and helps us to choose between right and wrong. There are three levels (pre-conventional, conventional, and post-conventional moral development) and six stages (following rules, self-reward, social conformity, law and order, cultural norms, and universal justice).

Moral development is an important part of the socialization process. The term refers to the way people learn what society considered to be 'good' and 'bad', which is important for a smooth functioning society. The theory also suggests that moral logic is primarily focused on seeking and maintaining justice.

By using children's responses to a series of moral dilemmas, Kohlberg established that the reasoning behind the decision was a greater indication of moral development than the actual answer.

He used Piaget's storytelling technique to tell people stories involving moral dilemmas. In each case, he presented a choice to be considered, for example, between the rights of some authority and the needs of some deserving individual who is being unfairly treated.

3.6 Summary

In the first sub unit Piget's theory of cognitive development has been discussed in details. Piaget was born in Switzerland in the late 1800s and was a precocious student, publishing his first scientific paper when he was just 11 years old. Piaget's stage theory describes the cognitive development of children. His early exposure to the intellectual development of children came when he worked as an assistant to Alfred Binet and Theodore Simon as they worked to standardize their famous IQ test.

Erik Erikson is also important in the field of educational psychology. Erik Erikson (1902–1994) was a stage theorist who took Freud's controversial theory of psychosexual development and modified it as a psychosocial theory. In the last sub unit, Lawrence Kohlberg's theory of moral development has been discussed. Lawrence Kohlberg was a 20th century psychologist known primarily for his research into moral psychology and development.

3.7 Self Assessment Questions

1. What is schema according to Piaget?

2. What do you mean by assimilation?

3. Discuss two characteristics each of sensory motor stages.

4. What do you mean by objective permanence?

5. How many stages are there in the psychosocial theory of Erikson?

6. What is meant by autonomy vs guilt?

7. What is moral development?

8. What is moral education according to Kohlberg?

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Unit 4 □ Psychology of Personality

Structure

4.1   Objectives

After the completion of the Course, the learners will be able to —

■ Know the meaning and concept of personality, its characteristics, types and significance in human life;

■ Understand theories of personality proposed by Allport and Eysenck and their applications;

■ Assess the personality based on Type Theory and its impact on Education.

4.2   Introduction

If you ask a man about the meaning of the term 'Personality', probably in most of cases he/she would not be able to give specific answer to this simple question, though we use the term at random. The reason behind it is that there are different connotations of the term and that is why it is used in different perspectives.

Thus, it has become one of the most fascinating topics of Psychology and its related disciplines. Tremendous researches have been going on the topic, but final conclusion in definite terms yet to be determined, though the term 'personality' is closely associated with our day to day life. Thus, Human personality is so complex a phenomenon that it can be interpreted in many ways. In this unit, an attempt has been made to understand the concept of personality and its significance, Basic Theories of Personality, Measurement of Personality and its impact on Education.

4.3   Psychology of Personality

Concept and Characteristics, Types and Significance in human Life

Personality is the combination of behavior, emotion, motivation, and thought patterns that define an individual. Personality psychology attempts to study similarities and differences in these patterns among different people and groups. To arrive at its meaning of 'personality', we have to trace the historical root of the word. The term personality has been derived from the Latin word 'Persona', which means mask, generally used by the actors in the Greek theatres. The mask, worn by the actors, was called 'persona'. According to the concept of mask, personality was thought to be the effect and influence which the individual wearing a mask left on the audience. Even today, it is commonly said that the mask for persona of the actor implied a cover for the real person behind it. It was developed on the basis of Plato's Idealistic Philosophy who believed that personality is a mere facade for some substance.

4.3.1 Concept and Characteristics of Personality

I. Various Approaches to define the term Personality :

i.   Personality as a Social Stimulus :

Some Psychologists define personality in terms of its social stimulus. How an individual affects other persons with whom he/she comes in contact, whether he/she is impressive or repulsive, dominating or submissive can determine his/her personality. It considers the total picture of the individual's organized behavior.

ii. Personality as a Summative Approach :

It emphasizes the importance of sum total of different processes and activities of the individual. As for example, innate dispositions, habits, impulses, emotions etc. This approach was criticized by Gestalt Psychologists who objected to the idea of aggregation or sum total of parts without introducing the concept of organization and integration of parts into a total whole.

iii. Integrative Approach :

The definitions of this category lay emphasis on the integrative aspects of personality and definite pattern of organization. It is the integrative organization of all the cognitive, affective, cognitive and physical characteristics of an individual as it manifests itself in focal distinction from others.

iv. Totality View :

In this approach, personality puts more emphasis on integration, unlike the summative approach. It forgets the part. According to this view, the general characterization or pattern of an individual's total behavior is his/her personality. Thus, personality is the characteristic pattern of behaviors, cognitions and emotions which may be experienced by the individual and/or manifest to others.

v. Personality as Adjustment :

An individual since birth, attempts to adjust to his or her environment. Behavior of an individual can be defined as an adjustment to the environment. Every individual develops his own unique way of adjustment in the society. According to this approach, personality is an individual's characteristic pattern of behavior. Individual, through continuous reactions, attempts to adjust himself or herself with the environment. Thus, it may be said that sum of the individual's movements to adopt oneself with the environment is individual's personality.

II. Comprehensive Definitions of Personality:

We have discussed the various approaches to define the term Personality. Below we may examine some important definitions of Personality:

Fredenburgh, in his book, *The Psychology of Personality and Adjustment* tried to summarize the various definitions in a single definition – "Personality is a stable system of complex characteristics by which the life pattern of the individual may be identified."

Allport (1961), who most of his time engaged for research on personality defines, "Personality is the dynamic organization within the individual of those psychophysical systems that determine individual unique adjustment to his environment."

Guilford (1959) defines personality as, "a trait is any distinguishable, relatively enduring way in which one individual differs from another."

Though there is diversity of views, but even then psychologists agree on certain common basic characteristics of Personality. Those are:

(a) Personality is unique. No two individuals, even the identical twins have alike personality.

(b) Personality is the product of one's own functioning with the surrounding environment. It is dependent on our accumulated experiences of the past.

(c) It stresses importance of the characteristics of individual differences.

4.3.2 Types of Personality and its Significance :

Psychologists have developed several theories of Personality to study the structure and growth of it. Following theories have been identified to describe different types of Personality:

i. Type Theory :

From ancient times, it has been the nature of persons to name and classify objects in the universe as well as human beings into different categories called 'Types'. The old system of typology still continues even in the modern times. Physicians and Psychologists have developed various typologies. Greek physicians were the first in the fifth B.C., who classified people into four broad categories on the basis of Emotional and Temporal characteristics.

(a) Traditional Types :

Aristotle and his disciples theorized that human body consists of four fluids, the dominance of any fluids determine the temperament and characteristics of personality characteristics.

In ancient India, we had an advanced system of *Ayurveda,* in which our ancient physicians broadly categorized all human beings on the basis of three elements – *Pitt,* (Bile), *Bate* (Wind) and *Kuf* (Mucus).

Apart from that a number of typologies have been attempted by Philosophers and Psychologists. Some of those are discussed below:

(b) Constitutional Type :

Ernest Kretschmer, a German Psychiatrist, classified human beings on the basis of physical constitution. He attempted to establish relationship between personality characteristics and body build. Those are:

S. No.	Type	Characteristics
1.	Pyknic	Stocky, Full-chested, Popular
2.	Aesthetic	Weak, Tall-sensitive, thin
3.	Athletic	Strong, Well-built body structure
4.	Dysplastic	Mixed type

(c) Somatic Type:

Dr. W.H. Sheldon, an American Surgeon, divided all human beings into three broad categories of physical dimensions and their corresponding temperamental characteristics. He believes that physical structure of the body is the determinant of personality characteristics :

S.No.	Physical Characteristics	Temperament
1.	Endomorphic (soft, round)	Viscerotonic (sociable, extrovert, affectionable)
2.	Mesomorphic (muscular, strong)	Somatotonic (energetic, muscular, prefer risk/ chance)
3.	Ectomorphic (thin,tall)	Cerebrotonic (fearful, artistic, introvert, restrained)

(d) Spranger's Type :

German philosopher E. Spranger divided human beings on the basis of interests in the following categories:

1. Theoretical – neglects social and political participations.

2. Economic – interested in money-hoarding.

3. Aesthetic – lover of beauty and is busy in sensuous gratification.

4. Social – interested in social activities.

5. Political – dominating and desirous of power.

6. Religious – devote themselves to religious activities and believes in mysticism.

(e) Jung's Typology:

Jung, a Swiss Psychiatrist, attempted to classify human beings into two behavioral dimensions – (1) Introvert and (2) Extrovert:

1. Introvert – A man who tends to withdraw into himself, especially when faced by emotional conflicts and stress in his environment. Introvert individual is shy, avoids people and enjoys to be alone. By nature, many scientists and philosophers are found introverts.

2. Extrovert – in contrast, extrovert persons' orientation is towards the external world. They deal people intelligently in social situations. They are conventional, outgoing, social, friendly and free from worries. Social Workers, Politicians, Business Executives are generally found extroverts.

(f) Freud's Typology:

Freud, on the basis of his theory of Psycho-sexual development, identified three types of personality. The types are dependent on the fixation of sexual energy (libido) at a particular stage of development. The five types are as follows:

1. **Oral-Erotic Type :** Sex in infancy is located in mouth. Membrane in mouth, when irritated gives pleasure to the infant, sexual gratification at this stage involves activities related to mouth. Oral-erotic type of personality shows excessive degree of pleasure associated with the oral activity. Sucking or putting anything in the mouth gratifies the sex in infancy. Fixation at the oral stage results in two types of personality in later life – Oral Passive Type and Oral Sadistic Type.

2. **Anal Type :** It is the second stage of sex development, when the child obtains gratifications through anal activities. Some traits of personality develop due to fixation of sex energy at this stage. These include obstinacy, miserliness, orderliness etc. in later life.

3. **The Genital Stage :** At this stage, the child's interest gets shifted from the eliminating organs to the genitals. The children now come to note the biological differences between the sexes and drive pleasure from playing and manipulating the genital organs.

4. **The Latency Stage :** this period starts from six years in the case of girls and seven to eight years in the case of boys and extends till the onset of puberty.

5. **Phallic Type :** The third stage of psycho-sexual development is Phallic. In this type person shows self-love, exhibitionism etc. usually they draw the attention of others. These characteristics are found in the early adolescence.

In modern Psychology, Type approach is not so widely used, rather it focuses on other scientific theories.

(b) Trait Approach :

The 'Trait' in daily life is used simply to indicate the nature of a person. In the simplest sense by 'Trait' we mean a mode of behavior which is manifested in number of the situations consistently. It is any distinguishable relatively enduring way in which one individual varies from other. "Trait may be defined as a property within the individual that accounts for his unique but relatively stable reactions to environment."

Some properties of Traits are –

1. *Scialability* – Traits are scialable and that can be measured quantitatively.

2. *Inference from Behavior* – Personality traits are not directly observable but they are manifested in a number of activities and behavioral expressions.

3. *Flexibility* – Traits are not static in nature. The more flexible traits in the childhood become stable with maturity and experience, but some variability is always there.

4. *Universality* – There are certain traits which are universal in nature as height and weight.

5. *Functional Unity* – it means that there must be different indications which may vary or are manifested consistently in behavior of the individual.

6. *Traits as higher order habits* – Guthrie conceived that a trait is a higher order habit which recurs in the behavior frequently.

7. *Traits as mental sets* – Trait has been defined as mental set of an individual. It is a readiness to respond to any variety of situations in a consistent way.

8. *Traits as frame of reference* – Personality of an individual is an organized whole of beliefs, emotions etc. about the environment. In this reference, traits are organized frame of references.

9. *Traits are learned* – Traits are learned in the interaction with the environmental stimuli. They are biologically determined as the disposition and intellectual potentialities of the individual.

Two significant basic Trait Theories of Personality proposed by G.W. Allport and H.J. Eysenck have been discussed in details in the next sub-unit.

(c) Psychoanalytic Approach :

The Psychoanalytic theory of personality has important explanations on the dynamics of human behavior. Freud was the first psychologist who systematically attempted to explore the unconscious part of the human personality. According to

him, greater part of our personality lies buried in unconscious state of our mind. He compared mental phenomenon with an iceberg floating on the surface of the ocean whose greater portion remains under the surface of the water. We cannot study a human being by observing his overt behavior only, because most of the repressed desires, thoughts and feelings remain in unconscious mind and continually influence our behavior.

Freud placed great importance on instincts as the determinant of human behavior. He proposed two instincts – (i) *Eros,* the love and the self-preservation and (ii) *Thanatos,* the death instinct, as the ultimate cause of all human activity.

Psychic Energy comes from *Libido,* which denotes as sexual energy. It is defined as the energy of all the life instincts. It is the primary driving force of the personality.

The *Id* is inborn, the function of which is to discharge the psychic energy to produce tension through the personality system. It cannot differentiate between good and bad and operates on pleasure principle.

The *Ego* is an organized portion of the *Id,* which becomes modified by the contact of external reality and experience. It distinguishes between subjective reality and things in the external environment. The *Ego* is called the executive of personality. It formulates a plan for the satisfaction of the need and executes it, keeping into consideration the reality principle. It ofen integrates the conflicting demands of *Id,* the *Super Ego* and the external world.

The *Super Ego* is the agency, which internalizes the parental influences and ideals of society through early childhood experiences. It represents the ideal rather than the real and strives for perfection. It works in accordance with the moral standards authorized by the agents of society.

The dynamics of personality, as explained by Freud is that human organism is a complex energy system which derives its energy from food it consumes. This biological energy is transformed into Psychic Energy. The dynamics of personality involves a continuous interaction and clash between *Id* impulses seeking release and inhibition imposed by the *Super Ego.*

(d) Phenomenological Approach :

Personality has been explained on the basis of several models of human behavior developed by philosophers, with the development of scientific psychology in the beginning of last century. Thus, models have been evolved by psychologists as Behaviouristic, Humanistic, Existential or Phenomenological human behavior. Carl

Rogers, G.Kelly and Kurt Lewin had developed the concept of the Phenomenological theory. The common characteristics of Phenomenological Theories are:

1. It emphasizes the importance on subjective experiences of person instead of objective approach of learning theory.

2. It emphasizes the importance of perception, organization and structuring of experiences. Perceptual process is the essential determinant of personality.

3. More emphasis is given on the self-concept in the development of personality.

4. Emphasis is given on the importance of present experiences, the way in which a person perceives events in his/her environment, determines and his/her mode of action.

(e) Learning Theory Approach :

Psychologists, notably Pavlov, Watson, Guthrie, Thorndike, Skinner, Dollard & Miller, and others considered the study of personality as a branch of general field of learning. They worked on the problems of behavior changes through experiences and attempted to integrate those characteristics in the development of personality. Almost all learning theorists agree on two basic assumptions in explaining personality – (1) all behavior is learned by the organism in the process of constant interactions with external stimuli; (2) objectivity of behavior is important to understand personality. Experimental psychologists are convinced that learning theory is the most reliable and objective approach to understand personality.

(f) Social Behavior Approach :

According to Bandura and Walters, the most fundamental and significant principle of social learning is the principle of reinforcement. Reinforcement is the most significant component of social behavior. Since the scope of response acquired through reinforcement is unlimited, different types of behavior patterns are expressed. Bandura and his associates emphasized four interrelated sub-processes in observational learning – (1) Attention Process, (2) Retention Process, (3) Motor Reproduction of Skills and (4) Role of Reinforcement.

(g) Rotter's Model of Expectancy-Reinforcement Approach:

J.B. Rotter, a leading social learning theorist emphasizes the importance of the interactions of the individual with his/her meaningful environment. According to him, personality is stable and independent behavior. He further assumes that personality can change only with the new experiences. Behavior is a goal directed movement towards the goal and is governed by two variables – (1) Reinforcement

and (2) Individual's Expectancy level to achieve the goal. On the basis of these two concepts, he developed the 'Expectancy-Reinforcement model of personality.

Four basic aspects of the approach are discussed below:

1. Behavioral Potential (BP) – refers to the potential for a behavior to occur in a specific situation as a function of its relationship to a specific set of reinforcement.

2. Expectancy (E) – as a concept means the probability held by the individual that a particular reinforcement will follow; a specific behavior in a specific situation. This expectancy is to be independent of the value of the reinforcement.

3. Reinforcement Value (RV) – refers to one's personal preference for one reinforcement over the other reinforcement if the possibility of occurrence for each reinforcement is equal.

4. Psychological Situation (S) – refers to any part of the situation to which the individual is responding in terms of his subjective reaction to that situation. The essential component of this concept is the meaning that the individual gives to the situation. According to Rotter, behavior of the organism occurs in a situation and is influenced by the perception of that situation.

4.4 Basic theories of Personality Development : Allport and Eysenck

Initially, Allport used the word trait for personal characteristics but later he substituted the word dispositions for traits and usage of traits was reserved for common traits. Let us now see the important features of above definitions of Personal Traits and Dispositions:

a. A personal disposition produces equivalences in function and meaning between various perceptions, beliefs, feelings, and actions that are not necessarily equivalent in the natural world, or in anyone else's mind. Personal dispositions have also been termed as 'Morphological Traits'.

b. Personal dispositions guide and motivate a person's specific acts of adjustment.

c. Personal dispositions are important as they reflect the structure and organization of personality.

d. A person with the personal disposition of fear of certain phenomenon, as for example fear of speaking in public, may consider all persons who hesitate to speak in public as similar to himself and respond to them in the same way. But according to Allport it must be kept in mind that one person may be basically an introvert and may not want to talk in public, another may have no idea about the language and so may not want to talk in public and yet the third person may find the topic uninteresting and so may not want to talk in public. Hence the individual concerned will have to interact with them differently and not in the same manner as he would respond to a person like him who is afraid of talking in public. Thus the personal dispositions are concrete, can be easily recognized and they are invariably consistent.

e. Allport also believes that traits are essentially unique to each individual, as for example, one person's "fear of speaking in public for instance may not be the same for two different individuals, as mentioned above. If one has to understand the person and his behavior, it is important to study the individual in detail and in depth. This can be done by interviewing the person, or observing the person or analyzing his speeches and writings to get a clear view of what is making the person afraid to speak in public. This method was termed as the *idiographic* method by Allport.

4.4.1 Allport's Trait Theory of Personality

Gordon Allport's theory is considered to be one of the more scientific theories which has put forward the concept of traits in understanding personality. He takes the biological approach to an extent and mentions about how children are born with reflexes and as they use the reflexes continuously, how in course of time, these reflexes become a habit and how habits by indulging in them continuously turn into traits, which are relatively permanent entities in the individual and which are reflected in the individual's behaviors in different situations. Allport's theory puts forward the new idea of 'functional autonomy' in which he says a particular behavior indulged in initially for some specific purpose, becomes the constant behavior in the individual in course of time. For instance, a person who initially goes to a hill station because the doctor advised, later on goes to the hill station every year as it gives him a satisfaction and his urge gets fulfilled.

The theory is considered 'humanistic' in one sense and 'personalistic' in another sense. He combines the opposites in his theory such as 'objectivity and subjectivity', 'rationality and irrationality' etc. Here, we will discuss (1) Definition and Structure of Personality as conceived by Allport, his ideas about (2) traits, the (3) types of

traits and (4) personal dispositions, etc. We may also consider the dynamics of personality and how traits help in making a person behave in a certain way. We will deal with the concept of Program and functional autonomy which are the two important concepts of Allport's theory.

i. Definition of Personality :

According to Allport (1938), "personality is the dynamic organization within the individual of those psycho-physical systems that determine his unique adjustment to his environment." This definition has put forward many aspects. Let us have a look at these aspects –

a. Psychophysical Systems - consists of both psychological and physical aspects, those interact between themselves. The interacting factors include at the physiological level on the endocrinal system. As for the interacting factors in the psychological aspects these include, traits, emotions, intellect, temperament, character and motives. All these interact with the physiological aspects and contribute to the personality development and behavior.

b. Dynamic Organization - of different elements of psychological system is independent but functions in an interlocking manner with physiological and other systems amongst themselves and is subject to change. However, this change can take place in a gradual manner over a long period of time.

c. Unique Adjustment to Environment - is characterized by a dynamic organization of psychological traits that makes his/her adjustment. The reason for this is that experiences of every person are unique and therefore, their reaction to the environment is also unique. It is well known that the identical twins though are from the same fertilized egg; do show considerable variations in their behavior because of such unique aspects within them.

ii. Personality Traits or Dispositions :

According to Allport, traits constitute the basic unit of individual's personality. He defined traits as the predisposition to respond and react in the same or similar manner to stimuli in the environment. According to him, there are two types of Traits *(i) Common Traits and (ii) Personal Traits or Dispositions*. Some of the important characteristics of Common Traits and Personal Traits are as given below:

a.   **Common Traits:**

1. Common Traits are not theoretical structures or constructs but are real and found within the individual.

2. Traits guide and direct behavior and enable the individual to behave in a particular manner.

3. Traits are verified empirically.

4. Different traits are not absolutely independent of each other but have overlapping functions.

5. Stable traits can also be changed over time.

6. Persons belonging to a certain country or a community within a society behave similarly in a number of situations. They hold the same view points and behave in like manner as others. This is so because cultural factors play a very significant role in the development of personality. These are known as Common Traits.

b. Personal Traits :

1. Allport was of the view that personal disposition is something unique to the individual and this disposition makes him/her behave consistently in the same way in a number of situations that are similar.

2. It is a generalized neuro-psychic structure that is unique to the individual concerned and this makes for the difference in the behaviors of many individuals even though they may face the same situation. For example, in a TV program when a sad scene is shown one person cries, another turns the other way from the TV not wanting to see the scene, and the third criticizes the scene as most unreasonable and unrealistic. These three different reactions are typically due to the personal disposition of the three different individuals. In his own words,

3. Allport defined (1938) this disposition as "a generalized neuro-psychic structure, unique to the individual, with the capacity to render many stimuli functionally equivalent, and to initiate and guide consistent or equivalent forms of adaptive and stylistic behavior."

c. Personal Dispositions :

1. **Cardinal Traits :** These are central to the individual and these traits manifest themselves in almost all situations and in the individual's very personality. For instance, if we take compassion as a cardinal trait in one person, you will see that this compassion is manifested in almost all aspects of the individual's behavior, as for instance, if he sees a child begging, he will offer her some eatable or money. Such a person may also join many NGOs that are dealing with orphans and destitute, so as to help these needy persons. He would also write in newspapers and magazines about the conditions of

such people and call for help and assistance to be given to them. So, his behavior will be reflecting this unique disposition of compassion in almost all aspects of his behavior. Thus, Cardinal traits have an overwhelming influence on the behavior of the individual in that they guide and direct almost all types of behavior of the person. These traits are at the very core of the personality. These are considered as building blocks of Allport's Trait Theory of Personality the individual's personality. When you describe someone, you are likely to use words that refer to these central traits: aristocratic, street smart, timid, aggressive, arrogant etc. According to Allport each individual has about 5 to 10 such cardinal traits in them. One of these is indeed dominant while others do dominate but do not have the overriding influence on the person's behavior. Through such traits one can define the personality of the individual concerned. These central traits reveal the structure and organization of personality.

2. **Central Traits :** These are central to the individual and these traits manifest themselves in almost all situations and in the individual's very personality. For instance, if we take compassion as a cardinal trait in one person, you will see that this compassion is manifested in almost all aspects of the individual's behavior. If he sees a child begging, he will offer her some eatable or money. Such a person may also join many NGOs that are dealing with orphans and destitutes so as to help these needy persons. He would also write in newspapers and magazines about the conditions of such people and call for help and assistance to be given to them. So his behaviour will be reflecting this unique disposition of compassion in almost all aspects of his behavior. Thus, Central traits have an overwhelming influence on the behavior of the individual in that they guide and direct almost all types of behavior of the person. These traits are at the very core of the personality. These are considered as building blocks of Allport's Trait Theory of Personality. When you describe someone, you are likely to use words that refer to these central traits: aristocratic, street smart, timid, aggressive, arrogant etc. According to Allport each individual has about 5 to 10 such central traits in them. One of these is indeed dominant while others do dominate but do not have the overriding influence on the person's behavior. Through such traits one can define the personality of the individual concerned. These central traits reveal the structure and organization of personality.

3. **Secondary Traits :** These are not overwhelming like the cardinal traits, but it can be reflected or seen in the various preferences and attitudes of the individual concerned. These, to an extent, are specific to the situation,

which is, for instance showing a disdainful attitude towards a particular community person. These are rather too general and are not as consistent as the cardinal traits. They can also change in certain special situations. For example, the negative disdainful attitude may not be obvious when the person is with others who are in favor of that community person and his contributions.

II. Development of Personality :

According to Allport, personality develops through following seven stages—

i. **Sense of Body (First 2 years of life) :** As pointed out earlier, the child in the beginning stages has no idea about which is his/ her body and what is that of another. Even he/she thinks a pillow is part of himself/ herself. As he/she experiences over a period of time, when the pillow is taken away by the mother, he/she realizes that it is not a part of his body. This idea of the sense of one's own body develops as a result of experiences that the child goes through in his/her interactions with the environment. Allport went ahead and said that the aspects the child experiences as the most essential and which is warm and central and which gives him comfort are the most central aspects of his/her experience. The sense of body has boundaries, that is, we all feel the pain, touch and many other sensations including movement, etc. which all contribute to our becoming.

ii. **Self-identity :** Another aspect that develops during the first two years is what Allport called as 'Self-identity'. In course of his experience, the child is able to become aware that pillow is not himself and mother is not himself. This kind of realisation through experience continues on and the person is able to develop a sense of his own self called as self-identity. This self-awareness leads to the recognition of oneself as having a past, present and a future. The person is able to see himself as a separate entity who is separated from the pillow, from the mother and various others in his environment. This differentiation of the self from the whole is an important aspect of the development of self-identity. Every individual has a name and a family and this identity is entirely the individual's own.

iii. **Self-esteem (2 to 4 years of age) :** This aspect develops in the individual around the age of two to four years. The child is able to move around now and is able to accomplish many things that he never used to in the past due to the non-maturation of many of the organ systems. As the child is growing and many of his organs are maturing he is able to make many movements both refined and non-refined and is able to reach his goals, as for instance

to fetch a toy from another corner of the room etc. As the child experiences many achievements and accomplishments he feels good about himself, becomes more confident and tries to do things like climbing the stairs and reaching the rooms on the first floor etc. He is able to control also many of his reflexes in terms of controlling his bowel and bladder. All these are appreciated by the caregivers and the child feels good about himself/ herself and thus develops a good concept about himself that he/she is capable. Thus, he develops self-esteem which is positive. On the other hand, if the experiences were in the negative direction the self-esteem would also have been negative.

iv. **Self- extension (4 to 6 years) :** The extension to one self-develops between four to six years of age. There are many things in the environment which are supplementary and complementary to the growth and development of the individual. The individual is able to understand that Mr. X and Ms. Y are his parents. They are his own. He lives in a place which again is his own, he has a room in which he studies and does a lot of things including listening to music etc. and these are all his own. Thus, there is an extension of self here into many things in the environment which all are identified with the self. Some people as they grow up may even identify themselves with being a sportsman, an athlete or a swimmer etc. Some belong to a group or a clan or a gang and identify themselves with the same. Some identify themselves with an occupation such as being a psychologist or a doctor or a lawyer. Thus, there is self extension into many aspects of the environment.

v. **Self-Image (4 to 6 years) :** Self-image means, the self of the person as others see it. It is a mirroring of one's image by others. The impression that the individual makes on others by looks, clothes, behavior etc. In addition other aspects of self that are important include the social esteem or status one enjoys in the society and in the social circle. It also includes the person's sexual identity. Many times the ideal self and self-image may not be the same. While one may have an ideal image in mind as for example, one wants to be like Amitabha Bachhan in look and behavior, the actual image may not be anywhere near it. In some cases, others may consider the individual as resembling someone in looks and behavior, but the person concerned may consider his self-image as different. Thus, there could be a discrepancy in the self-image and what others think about the person.

vi. ***Rational coping* (6-12 years):** As the individual grows up and his personality develops he is able to have higher cognitive functioning with increase in

his thinking abilities, decision making and memory capacities. These in turn help the individual to make decisions on many matters related to that age level. The person is able to now think rationally on many issues and is able to understand the pros and cons and takes relatively more appropriate decisions as compared to the earlier age levels. He puts in efforts to understand things and is able to accomplish far more tasks than before. This ability to cope with life related situations rationally is an important development that takes place during these years.

vii. Proprium : Every individual has to finally take charge of his life. The individual has to be responsible for his thinking, actions and behaviors. After the varied experience in life the individual is able to look back on his goals, achievements and accomplishments, and then say now is the time he would try to spend on activities that gives him internal satisfaction and a sense of fulfillment. This is almost akin to that of self-actualisation as put forward by Maslow, though in a number of ways it is different. The propriate striving starts only after the age of 12 years and the individual is able to clearly identify his goals, what his future plans are and in which direction think he like to move and what is the purpose of his life etc. He is able to now say that he is the man in charge of his life and would like to do things as he wishes and desires. In all this, of course, the person acts rationally and logically.

III. Dynamics of Personality

a. What are the various factors underlying the functioning of an individual's personality is a question that needs to be answered, if one is to understand the personality of an individual.

b. A personal disposition produces equivalences in function and meaning between various perceptions, beliefs, feelings, and actions that are not necessarily equivalent in the natural world, or in anyone else's mind. Personal dispositions have also been termed as 'Morphological Traits'.

c. Personal dispositions guide and motivate a person's specific acts of adjustment.

d. Personal dispositions are important as they reflect the structure and organization of personality.

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example fear of speaking in public, may consider all persons who hesitate to speak in public as similar to himself and respond to them in the same way. But according to Allport it must be kept in mind that one person may be basically an introvert and may not want to talk in public, another may have no idea about the language and so may not want to talk in public and yet the third person may find the topic uninteresting and so may not want to talk in public. Hence the individual concerned will have to interact with them differently and not in the same manner as he would respond to a person like him who is afraid of talking in public. Thus, the personal dispositions are concrete, can easily be recognized and they are invariably consistent.

Allport also believes that traits are essentially unique to each individual, as for example, one person's "fear of speaking in public for instance may not be the same for two different individuals, as mentioned above. If one has to understand the person and his behavior, it is important to study the individual in detail and in depth. This can be done by interviewing the person, or observing the person or analyzing his speeches and writings to get a clear view of what is making the person afraid to speak in public. This method was termed as the *idiographic* method by Allport.

In his theory, Allport's has put forward three basic concepts as underlying dynamics of personality and these are - (i) Functional Autonomy, (ii) Conscious and Unconscious Motivation, and (iii) Psychological Maturity. Allport described personality dynamics in terms of functional autonomy, conscious and unconscious motivation and psychological maturity. These dynamics are being explained below:

(i) Functional Autonomy :

Allport did not believe in looking too much into a person's past in order to understand his present. This belief is most strongly evident in the concept of functional autonomy: Your motives today are independent (autonomous) of their origins. In other words the means employed for the attainment of a goal are now themselves a Personality goal. For example, a person develops and inculcates discipline and hard work in his/her life to become rich and famous. But even after becoming rich and famous he/she continues to live with discipline and hard work. Actually, discipline and hard work are no longer the means for being rich and famous but they have replaced the goal of being rich and famous in that discipline and hard work by themselves are goals. What is now is more important than what was in the past or what is going to be in the future. A person may have been persuaded by parents to become a lawyer, but as the individual practiced law, it was so interesting and so satisfying, that there was no need for the parents' persuasion any more, being a lawyer and practicing law by itself has become a goal for this individual.

(ii) Types of functional autonomy :

There are two types of functional autonomy. Let us see, what these are:

(a) Perseverative functional autonomy refers to various behaviors in which a person continues to indulge. These behaviors really have no purpose at the present moment yet; we continue to indulge in these behaviors.

(b) Propriate functional autonomy, on the other hand, refers to the values that the person holds. This comes about as a result of socialization and child rearing practices in which parents incorporate values of honesty, hard work, diligence, generosity, compassion etc. in children through both rewards and punishment. The children internalize the values as they want to be appreciated and rewarded and also want to avoid punishment.

(iii) **Proporiate functional autonomy is controlled by three principles:**

(a) Principle of organizing: Here the organizing refers to the organization of one's energy into different activities. The energy is organized into many novel and creative activities which are productive and not in activities which are non productive.

(b) Principle of Mastery: Competence refers to the person's efforts to satisfy his/her needs at a higher cognitive levels and higher levels of satisfaction. He/She, therefore, not only masters and competently deals with various situations, he/she also continues to refine and enrich whatever he/she is doing. This gives satisfaction to the individual at the highest level. This is another important principle of propriate functional autonomy.

(c) Principle of propriate patterning: Self is most important in the proprium of an individual. This self consists of all perceptual and cognitive processes of the individual's higher level cognitive functions. In other words the various cognitive functions are organized around this self. Since every behavior cannot be explained by functional autonomy principles many of these patterning if understood can explain a person's behavior.

(iv) Value Content of Personality :

Allport and his colleagues also categorized as per the contents of the values:

(a) A business person may value usefulness or utility aspects and he called these values as the economic value.

(b) The theoretical – a scientist, for example, values truth;

(c) The economic – a business person may value usefulness.

(d) The aesthetic – an artist naturally values beauty.

(e) The social – a nurse may have a strong love of people.

(f) The political – a politician may value power.

(g) The religious – a monk or nun probably values unity.

(iii) Conscious and Unconscious Motivation of Values:

Allport in his theory laid emphasis on conscious motivation stating that an adult individual is fully aware of what he/she is doing. But, he also gave due recognition to the concept of unconscious motivation. In fact, all the conscious motivations are somehow influenced by desires hidden in the unconscious. He refuted Freud's claim that ego does not have energy of its own and personality is controlled by the unconscious state. Allport claimed that a mature normal adult's personality is fully in control of the conscious state.

(v) Psychological Maturity : If you have a well-developed proprium and a rich, adaptive set of dispositions, you have attained psychological maturity, or by Allport's term it is mental health. He lists seven characteristics:

(a) Specific, enduring extensions of self, i.e. Involvement;

(b) Dependable techniques for warm relating to others (e.g. trust, empathy, genuineness, tolerance etc,)

(c) Emotional security and self-acceptance;

(d) Habits of realistic perception (as opposed to defensiveness);

(e) Problem-centeredness, and the development of problem-solving skills;

(f) Self-objectification - insight into one's own behavior, the ability to laugh at oneself, etc.

(g) A unifying philosophy of life, including a particular value orientation, differentiated religious sentiment, and a personalized conscience.

IV. Evaluation of Allport's Theory :

A careful analysis of the Allport's Theory of Personality reveals certain merits and demerits:

a.   Merits :

Allport developed his personality theory in academic settings instead of psychoanalytic settings. For this reason, this theory gained much importance and recognition among educational psychologists. According to Allport, present and future are more important in understating personality than past of an individual. Motivations

and behavior of an individual can be better understood by present and future. This characteristic of Alllport's theory helps to understand the structure of personality more scientifically. His idiographic approach to personality research is quite praiseworthy as it aids understanding and detailed analysis of personality. He made an important contribution to the field of psychology through his explanation of personality in terms of traits.

b.   **Demerits:**

Feist criticized Allport's theory saying that it is grounded more in philosophical speculations and common sense than in scientific research. Psychoanalysts objected to Allport's concept of proprium which puts more emphasis of present and future and ignores his past. They say that such ignore of past hinders complete understanding of personality. Past events and experiences that went into the shaping of present personality can't be totally delinked from the present personality. Allport's theory describes the functionally autonomous motives of a psychologically healthy person but motive of children, psychotics and neurotics do not find any mention in his theory. Allport in his theory failed to explain their behavior. Allport in his theory does not mention how an original motive develops into a functionally autonomous motive. For example, discipline and hard work which originally acted as means to get rich and famous become functionally autonomous once the person is rich and famous. Thus, it is difficult to predict which motive of childhood develops into autonomous motive during adulthood. Critics also point to the idiographic approach taken to the personality taken by Allport. According to them nomothetic approach which requires study of several persons at the same time and subjecting the data so gathered to statistical analysis is the only right method for studying personality. Allport's theory is based only on the study of normal and psychologically healthy persons and does not take account of neurotics and others. This fact limits its applicability. Some of the concepts in Allport's theory do not lend themselves to empirical testing. For example, functional autonomy is a concept that can't be manipulated in experimental conditions. Psychologists also refute Allport's claim of discontinuity in the personality of children and adults and normal and abnormal. Furthermore, Allport did not make any sense about the impact of social factor on personality.

4.4.2 Eysenck's Trait-Type Theory of Personality

Eysenck, Hans Jurgen (1916-97), was a British psychologist. He was known for his theory of human personality. He suggested that personality is basically determined biologically and is arranged in a hierarchy consisting of types, traits,

habitual responses and specific responses. Eysenck did not believe in Freudian Psychoanalysis as he considered it rather unscientific.

i. Hierarchical Taxonomy of Personality:

According to Eysenck, Personality can be studied from either temperamental or cognitive point of view, or both. He focused on the temperament aspect of personality in his PEN (Psychoticism, Extraversion and Neuroticism) model. For better understanding of the model, therefore, the concept should begin with its description or 'taxonomy of personality or temperament'. As Eysenck (1991) stated, "In any science, taxonomy precedes the causal analysis." In the course of taxonomy (classification), any organisms can be organized into groups based on characters and their relationships. Eysenck describes in plain terms how taxonomy in the study of personality can be achieved using the correlation technique called factor analysis. In case of personality study, the organisms concerned are human beings; their characters are traits, measured by experiment, by rating, by self-rating, or in some other way. Traits can be related with subjects, or subjects with traits, giving us groups of people showing similarity over traits, or groups of traits, cohering as factors over people. We can then look at the traits (or people) having the highest factor loadings in order to better identify the trait clusters. (Eysenck, 1991) Individual differences in personality or temperament are analyzed in terms of traits, which can be defined as theoretical constructs based on "co-variation of a number of behavioral acts" (Eysenck & Eysenck, 1985). However, Eysenck (1991) further supposes that traits themselves inter-correlate and make up higher-order factors or super-factors, which Eysenck calls as 'Types.'

As a result, the PEN model proposes a hierarchical classification of personality containing four levels. At the very bottom level of the hierarchy are behaviors such as *talking* with a friend on a single occasion. At the second level are *habits* such as talking with friends on multiple occasions, which are comprised of recurring behaviors. The third level of the hierarchy is that of traits or factors such as *sociability*, which are comprised of inter-correlated sets of habits. At the top of the hierarchy are super-factors or dimensions of personality such as extraversion, which are inter-correlated sets of traits or factors. Eysenck suggests three such super-factors: Extraversion (E), Neuroticism (N), and Psychoticism (P). These three superfactors or dimensions of personality are orthogonal to each other, which mean that they do not correlate with each other (Eysenck & Eysenck, 1985).

ii. Theories of Personality:

The PEN model is based on the principle of 'aggregation', in which measures will have higher reliability if they are comprised of many items (Eysenck, 1990).

That is, each super-factor in the PEN model is comprised of many different factors, habits, and behaviors, and thus reliability of measurement is increased. The super-factors of extraversion, neuroticism, and psychoticism at the top level of the hierarchy are stable, whereas behaviors, such as, talking with a friend on a single occasion at the bottom of the hierarchy are changeable across time and situation. In this respect, the distinction between levels is very important for the analysis of personality in the PEN model.

iii. Three Dimensions of Personality:

Eysenck strongly advocates that there are only three major dimensions or super-factors in the description of personality: (i) Extraversion-Introversion; (ii) Emotional stability versus Instability, or Neuroticism; and (iii) Psychoticism versus Impulse control (Eysenck & Eysenck, 1985). In the PEN model, these dimensions or super-factors are based on "constitutional, genetic, or inborn factors, which are to be discovered in the physiological, neurological, and biochemical structures of the individual" (Eysenck & Eysenck, 1985). Each person does not necessarily have either 100 percent or zero percent of Extraversion, Neuroticism, or Psychoticism. An individual may show some degree of these super-factors on the continuum. A person may have high Extraversion, moderate Neuroticism, and low Psychoticism.

Eysenck suggests after studying on psychosis - (i) Psychotic symptoms and illnesses do not form completely separate diagnostic entities, (ii) Psychosis is not a separate diagnostic entity which is categorically separated from normality, (iii) This continuum is co-linear with the concept of Psychoticism embodied in the P scale of the EPQ. On this continuum, a person with high Extraversion is sociable, popular, optimistic, and rather unreliable, whereas a person with low Extraversion is quiet, introspective, reserved, and reliable. A person with high Neuroticism is anxious, worried, moody, and unstable, whereas a person with low Neuroticism is calm, even-tempered, carefree, and emotionally stable. A person with high Psychoticism is troublesome, uncooperative, hostile, and socially withdrawn, whereas a person with low Psychoticism is altruistic, socialized, empathic, and conventional (Eysenck & Eysenck, 1985).

iv. Causal Aspects based on a three-dimensional description of personality:

The PEN model further attempts to provide causal explanation of personality. The PEN model looks for Psycho-physiological, hormonal, and other biological mechanisms responsible for the personality dimensions, so that the theory can be tested by scientific experiments. Eysenck and Eysenck (1985) clearly contend that "no theory would be considered valid that did not make testable and verified

predictions." Consequently, Eysenck (1990) proposes the arousal theory, by modifying his inhibition theory to explain the causal roots of the three dimensions of personality.

Eysenck also made an attempt to specify a Neuro-physiological basis for each of his three personality super traits or types. According to him, the super trait Introversion-extraversion is closely related to levels of cortical arousal as indicated by electroencephalographic recordings. Eysenck(1982) used the term arousal to denote a continuum of excitation, ranging from a lower extreme (e.g., sleep) to an upper extreme (e.g., state of panic). He was of the view that introverts are over aroused and thus are highly sensitive to incoming stimulation. For this reason, they avoid situations that are apt to overwhelm them. Extraverts are under aroused and thus are highly insensitive to incoming stimulation and thus they constantly seek out situations that are apt to excite them.

Eysenck hypothesized those individual differences in stability vs neuroticism reflected the degree to which the autonomic nervous system reacts to stimuli. He linked this dimension with the limbic system, the brain's visceral or feeling system, which influences motivation and emotional behaviour. He pointed out that persons high on neuroticism tend to react more quickly to painful, novel, disturbing, or other stimuli than do more stable persons. Such persons also exhibit a more persistent reaction (even after the stimulus has disappeared) than do highly stable persons. Eysenck's neuro physiological interpretation of the dimensions of personality is closely related to his theory of psychopathology. He was of the view that the symptoms or disorders that befall a person are related to the combined impact of personality traits and nervous system functioning. For instance, the person who is high on the dimensions of introversion and neuroticism is more prone to develop anxiety disorders such as phobias, obsessions, and, compulsions. On the other hand, the person who is high on the extraversion and neuroticism dimensions is at a risk for psychopathic (antisocial) disorders. Eysenck stated that psychological disorders do not automatically occur as a result of genetic predisposition. These genetic predispositions when interact with the environment or a certain situation produce psychological disorders.

v. Extraversion and Cortical Arousal According to the Arousal Principle:

Eysenck (1990) provides a biological explanation of extraversion in terms of cortical arousal via the *ascending reticular activating system* (ARAS). Activity in the ARAS stimulates the cerebral cortex, which, in turn, leads to higher cortical arousal. Cortical arousal can be measured by skin conductance, brain waves, or sweating (Eysenck, 1990). Because of the different levels of ARAS activity, "Introverts are characterized by higher levels of activity than extraverts and so are

chronically more cortically aroused than extraverts" (Eysenck & Eysenck, 1985) emphasis added). Based on the Yerkes-Dodson law, which suggests that arousal and performance have an inverted-U relationship, the arousal theory of the PEN model assumes that "some intermediate level of arousal is optimal for performance" (Eysenck & Eysenck, 1985).

vi. Neuroticism and Visceral Brain Activation:

Eysenck (1990) also explains neuroticism in terms of activation thresholds in the sympathetic nervous system or visceral brain. The visceral brain is also referred to as the limbic system, which consists of the hippocampus, amygdale, septum, and hypothalamus, and regulates such emotional states as sex, fear, and aggression. It is responsible for the fight-or-flight response in the face of danger. Heart rate, blood pressure, skin conductance, sweating, breathing rate, and muscular tension in the forehead can measure activation levels of the visceral brain. Neurotic individuals have greater activation levels and lower thresholds within the visceral brain. They become easily upset in the face of very minor stresses. However, emotionally stable people are calm under such stresses because they have lesser activation levels and higher thresholds.

vii. Psychoticism and Gonadal Hormones:

Eysenck (1990) also provides a biological explanation of Psychoticism in terms of gonadal hormones such as testosterone and enzymes, *monoamine oxidase* (MAO). Eysenck (1992) reports that "low platelet monoamine oxydase (MAO) has been found in psychotic patients, and also in their relatives and inpatients who have recovered, suggesting that low MAO activity may be an indicator of 'vulnerability'. Considering all, the PEN model has contributed to the study of personality in the following ways –

i. It combines both descriptive and causal aspects of personality in one theory (Eysenck, 1997 & Stelmack, 1997). This characteristic clearly distinguishes the PEN model from most of the other trait theories such as the five-factor model (Costa & McCrae, 1992a, 1992b; Eysenck, 1991, 1992b, 1992c).

ii. It provides causal explanations in addition to the description of personality.

iii. The PEN model is supported by more credible evidence than purely descriptive models.

iv. The PEN model is comprehensive in description by proposing a hierarchy of four levels and by making a clear distinction among those levels.

v. Finally, the PEN model becomes most compelling because of its experimental approach to the study of personality, which makes the model

more testable. Consequently, the PEN model is likely to generate more specific predictions about personality.

Thus, the essence of Eysenck's Trait-Type theory is that – (i) Elements of personality can be arranged hierarchically; (ii) Certain super-traits or types, such as, Extraversion exert a powerful influence over behavior; (iii) These super-traits comprised of several component traits, and these component traits either have more superficial reflections of the underlying type dimension, or are specific qualities that contribute to that dimension.

According to Eysenck, traits are composed of numerous habitual responses, which, in turn, are derived from a multitude of specific responses. The trait of sociability correlates with such response dispositions as activity, liveliness, assertiveness etc. Taken together, these traits define a super trait or type Eysenck calls extraversion. In considering Eysenck's hierarchical model of personality structure, it should be noted that the word 'type' refers to dimensions of personality that he regards as normally distributed along a continuum. This is almost equivalent to traits. Thus, for example, the type concept of extraversion is a dimension with a low end and a high end along which people may fall at various points between the two extremes. It is not a dimension on which people can be classified as either low or high. Eysenck does not imply discontinuity when he uses the word 'type'.

Personality Types

Eysenck used a variety of methods for gathering information about people in order to delineate their personality. These methods included self-report, observer ratings, biographical information, assessments of physique and physiology, and objective physiological tests. These data are factor analyzed to determine the structure of personality. Initially Eysenck found two basic types of dimensions that he labeled as introversion-extraversion and neurotocism-stability (a factor sometimes called instability-stability). Eysenck (1976) added a third type dimension of personality, which he called psychoticism-superego strength. People high on this super-trait dimension tend to be egocentric, impulsive, sensitive to others, and opposed to social customs. They are often seen as – (i) troublesome, (ii) not fitting in well with others, and (iii) intentionally upsetting other people.

Eysenck suggested that psychoticism is a genetic predisposition toward becoming either psychotic or psychopathic. He regarded psychoticism as a personality continuum along which all people can be located. He also added that this trait is found more commonly in men than in women.

4.5   Measurement of Personality

Personality tests are the techniques designed to measure one's personality. They are used to diagnose psychological problems as well as to screen candidates for academic and employment purposes. There are two major types of personality tests – (i) Self-report Inventories and (ii) Projective tests.

I. Self-report Inventories

Self-report Inventories are a kind of objective test used to assess personality. They typically use multiple-choice items or numbered scales, which represent a range from 1 (strongly disagree) to 5 (strongly agree). They often are called *Likert scales* after its developer, Rensis Likert (1932). Self-report inventories are generally easy to administer and cost-effective. There is also an increased likelihood of test takers being inclined to answer in ways that are intentionally or unintentionally more socially desirable, exaggerated, biased, or misleading. For example, someone applying for a job will likely try to present oneselve in a positive light, perhaps as an even better candidate than they actually are.

One of the most widely used personality inventories is the ***Minnesota Multiphasic Personality Inventory (MMPI)***, first published in 1943, with 504 true/ false items, and updated to the MMPI-2 in 1989, with 567 questions. The original MMPI was based on a small, limited sample, composed mostly of Minnesota farmers and psychiatric patients; the revised inventory was based on a more representative, national sample to allow for better standardization.

The ***MMPI-2*** takes 1–2 hours to complete. Responses are scored to produce a clinical profile composed of 10 scales: *Hypochondriasis, Depression, Hysteria, Psychopathic Deviance* (social deviance), *Masculinity versus Femininity, Paranoia, Psychasthenia* (obsessive/compulsive qualities), *Schizophrenia, Hypomania, and Social Introversion*.

There is also a scale to ascertain risk factors for alcohol abuse. In 2008, the test was again revised, using more advanced methods, to the ***MMPI-2-RF***. This version takes about one-half the time to complete and has only 338 questions. Despite the new test's advantages, the *MMPI-2* is more established and is still more widely used. Although the MMPI was originally developed to assist in the clinical diagnosis of psychological disorders, it is now also used for occupational screening, such as in law enforcement, and in college, career, and marital counseling (Ben-Porath & Tellegen, 2008). In addition to clinical scales, the tests also have validity and reliability scales.

II. Projective Tests :

Another method for assessment of personality is **projective testing**. This kind of test relies on one of the defense mechanisms proposed by Freud—*Projection*—as a way to assess unconscious processes. During this type of testing, a series of ambiguous cards is shown to the person being tested, who then is encouraged to project his feelings, impulses, and desires onto the cards—by telling a story, interpreting an image, or completing a sentence. Many projective tests have undergone standardization procedures and can be used to access whether someone has unusual thoughts or a high level of anxiety, or is likely to become volatile. Some major examples of projective tests are discussed below:

Rorschach Inkblot Test :

It was developed in 1921 by a Swiss psychologist named Hermann Rorschach. It is a series of symmetrical inkblot cards that are presented to a client by a psychologist. Upon presentation of each card, the psychologist asks the client, "What might this be?" What the test-taker sees reveals unconscious feelings and struggles (Piotrowski, 1987; Weiner, 2003). The Rorschach has been standardized using the Expert system and is effective in measuring depression, psychosis, and anxiety.

Thematic Apperception Test (TAT) :

A second projective test is the Thematic Apperception Test (TAT), developed by Henry Murray (1930), an American psychologist, with a psychoanalyst named Christiana Morgan. A person taking the TAT is shown 8–12 ambiguous pictures and is asked to tell a story about each picture. The stories give insight into their social world, revealing hopes, fears, interests, and goals. The storytelling format helps to lower a person's resistance divulging unconscious personal details (Cramer, 2004). The TAT has been used in clinical settings to evaluate psychological disorders; more recently, it has been used in counseling settings to help clients gain a better understanding of them and achieve personal growth. Standardization of test administration is virtually non-existent among clinicians, and the test tends to be modest to low on validity and reliability. Despite these shortcomings, the TAT has been one of the most widely used projective tests.

Rotter Incomplete Sentence Blank (RISB) :

It was developed by Julian Rotter in 1950. There are three forms of this test for use with different age groups: the School form, the College form, and the Adult form. The tests include 40 incomplete sentences that people are asked to complete as quickly as possible. The average time for completing the test is approximately 20

minutes, as responses are only 1–2 words in length. This test is similar to a word association test, and like other types of projective tests, it is presumed that responses will reveal desires, fears, and struggles. The RISB is used in screening college students for adjustment problems and in career counseling. For many decades, these traditional projective tests have been used in cross-cultural personality assessments. However, it was found that test bias limited their usefulness.

TEMAS Multicultural Thematic Apperception Test

It is another projective tool designed to be culturally relevant to minority groups, especially Hispanic youths. TEMAS—standing for "Tell Me a Story" but also a play on the Spanish word *temas* (themes)—uses images and storytelling cues that relate to minority culture (Constantino, 1982).

Though the Projective tests are more time consuming for the evaluator than self-report inventories, still it is widely used by evaluators as it is considered more valid.

4.6 Summary

Allport is one of those theorists who was so right about so many things that his ideas have simply passed on into the spirit of the times. His theory is one of the first humanistic theories, and would influence many others, including Kelly, Maslow, and Rogers. One unfortunate aspect of his theory is his original use of the word trait, which brought down the wrath of a number of situationally oriented behaviorists who would have been much more open to his theory if they had bothered to understand it. But that has always been a weakness of psychology in general and personality in particular: Ignorance of the past and the theories and research of others. In the present unit we studied Allport's theory of personality. We studied about his definition regarded traits as the building blocks of personality and mentioned two types of them, namely – common traits and personal dispositions or traits. Personal traits were further sub-divided into cardinal, central and secondary traits. We studied dynamics of personality and within it we introduced ourselves to the concepts of functional autonomy, the principles upon which it operates, conscious and unconscious motivation and psychological maturity. In the end we made an evaluation of Allport's theory in the light of criticism done by various psychologists.

The trait-type theory of Eysenck is based on factor analysis. His hierarchical model of personality structure includes the dimensions of types, traits, habitual responses, and specific responses. Types represent super-trait dimensions along which

people may be located at various points between two extremes. Eysenck suggests that personality types are dimensional and that most people do not fall into separate categories. Eysenck sees only two major types or traits as underlying personality structure: introversion-extraversion and stability-neuroticism. At a later stage he also added one more dimension that is psychoticism and super ego strength. The differences in these two super-traits, as well as a third factor called psychoticism-superego strength, are closely related to differences in neuro-physiological functioning. Eysenck places far more emphasis on the genetic foundations of traits than does Cattell. However, according to Eysenck, the genetic predisposition when interacts with the environmental factors produce the requisite behaviors which may be normal or abnormal. Eysenck has developed several questionnaires to assess the three major super-traits underlying his hierarchical model of personality. EPQ is the most important tool to assess the differences between introverts and extraverts.

4.7 Self Assessment Question

1) Discuss the Type theory of personality highlighting its characteristic features.

2) How does type theory differ from trait theory of personality?

3) Discuss and compare the Sheldon somatotype personality with that of Ayurvidc body type.

4) Discuss Jungian Personality types and indicate how the EPQ was devised.

5) Elucidate Eysenck's trait type theory of personality.

6) Give neuro-physiological explanations for neuroticism, extraversion and psychoticism.

7) How do you measure personality according to Eysenck?

8) What are the basic personality types?

9) Differentiate between extraversion and introversion personality types.

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Unit 5 □ Psychology of Human Abilities: Concept, Characteristics and Basic Types

Structure

5.1 Objectives

After the completion of the Unit, learners will be able to —

- Know the Concept, Characteristics and Basic Types of Human Abilities;

- Understand Intelligence as human ability with its concept basic theories, measurement and uses in Education;

- Understand Creativity as human ability with its Concept, Characteristics and Significance in Education.

5.2   Introduction

Our knowledge of human abilities has been accelerating rapidly in recent decades and it is now substantial. It is established that abilities develop quite slowly across the years, but once developed, enable the individual to deal with one's social and physical world more effectively. Teachers may use the knowledge of abilities to organize teaching-learning process effectively for every individual learner. This sub-unit deals with the concept, characteristics and types of human abilities.

Intelligence as a concept is used very commonly in our day to day life. We often make comments that this person seems to be very intelligent or seems to be dull. Because of this intelligence we human beings are considered superior to the animals. But what this intelligence is? Different people would give different meaning of Intelligence. Similarly, psychologists have attributed a variety of factors to the concept of intelligence.

5.3   Psychology of Human Abilities: Concept, Characteristics and basic Types

Meaning of Human Ability:

Human ability is the existing competence or skill to perform a specific physical or mental act. Although ability may be either innate or acquired through experience, it is distinct from capacity to competence. It is a union of a native process (or processes) in humans and a content (or contents) inferred from relatively permanent changes in behavior. Abilities are of two kinds: Cognitive and Psychomotor. Both abilities are the products of maturation and learning.

When a child understands the meaning of a statement in acquiring language or comprehending a word, his understanding means a process or operation and also certain content i.e., words or their meaning is an example of Cognitive Ability.

A psychomotor ability, on the other hand, helps a human being to acquire specific skill for a specific work, e.g., manual dexterity needs acquisition of skill as well as well-coordinated arm-hand-mind movement while manipulating an object. Persons high in this ability are able to perform any specific task involving manual dexterity.

Skills and abilities are the tasks that you naturally do well, talents and strengths that you bring to the table as a student and/or an employee. These include

natural capabilities you've always had, in addition to specific knowledge and skills you've acquired through experience and training.

5.3.1 Concept Human Ability :

Human ability is a union of a native process (or processes) in humans and a content (or contents) inferred from relatively permanent changes in behavior. Abilities are of two kinds: Cognitive and Psycho-motor. When a child understands the meaning of a statement in acquiring language or comprehending a word, his understanding means a process or operation and also certain content, i.e., words or their meaning.

Through intelligence, humans possess the cognitive abilities to learn, form concepts, understand, apply logic, and reason, including the capacities to recognize patterns, plan, innovate, solve problems, make decisions, retain information, and use language to communicate.

Human intelligence is also interpreted as the intellectual capability of humans, which is marked by complex cognitive feats and high levels of motivation and self-awareness. Through intelligence, humans possess the cognitive abilities to learn, form concepts, understand, apply logic, and reason, including the capacities to recognize patterns, plan, innovate, solve problems, make decisions, retain information, and use language to communicate.

Nature of Human Ability :

The identification of abilities by scientific methods is a complex process. Ability is, in fact, a configuration of abilities, identified through co-relational and Experimental researches. Any single ability needs consistency among separate performances involving that ability. In that sense, ability is a mediator which helps the individual to interpret the ideas and actions of others as well as to take all actions by self.

It has been established that abilities develop quite slowly across the years, but once developed they enable the individual to deal with his physical and social world more effectively.

The present knowledge can enable us to hypothesize the abilities, using various theoretical frameworks need to be explored.

5.3.2 Characteristics of Human Abilities:

An ability, or configuration of abilities, such as speaking English fluently, is a mediator, identified through correlation and experimental research, which accounts

for consistencies among separate performances. Thus, the ability to speak English well underlies the many separate encounters and experiences one has with others who speak English. In this sense it mediates, or helps the individual to interpret, the ideas and actions of others and also helps him to take action based on what they say.

Fleishman and Bartlet (1969) in a comprehensive review of research on human abilities identified five basic characteristics of abilities as given below:

   i. *Abilities are a product of maturation and learning.* Much practice and learning are required to comprehend the concepts and principles of any subject. The maturational level of an individual child limits what he or she can learn. Thus, abilities develop at different rates from birth through adolescence. For example, verbal comprehension develops more rapidly than arithmetic in early childhood.

  ii. *Abilities developed during the formative years persist into adulthood.* For example, manual dexterity is quite stable from year to year. It is resistant both to improvement and deterioration in adulthood.

 iii. *The ability and task performance are complementary to each other.* The present abilities of the individual affect the rate at which he/she learns new tasks. Thus, the student high in spatial ability and arithmetic reasoning achieves higher in physics than the one low in both, motivation and other factors being equal. Equally important is that the study of physics will probably contribute to further development of both abilities.

  iv. *Ability maybe transferred to the learning of a greater variety of specific tasks than another.* Abilities may vary from specific to general, and thus, the more general the ability the greater is its transfer. Arithmetic computation, an ability, facilitates only the learning of new tasks involving computation, whereas spatial ability facilitates the learning of broad classes of tasks in mathematics, science, engineering and other technical areas.

  v. *Abilities are more fundamental than skills.* The term 'skill' refers to the level of proficiency on a unitary task or a configuration of tasks. Driving, swimming, typing are skills acquired at varying levels of proficiency. In acquiring each of these skills, the individual learns a sequence of activities and executes them rapidly and perfectly. Involved in performing each skill, however, are more basic abilities, finger dexterity and finger speed are two of the more basic psychomotor abilities that underlie typing and handwriting; cognitive abilities are also involved in performing these skills.

5.3.3 Basic Types of Human Abilities

We shall now examine five different basic types of human abilities regarding the nature of cognitive ability. They proceed in an order – (i) a single unitary ability, (ii) a set of primary abilities, (iii) a larger number of specific abilities, (iv) an indefinite number of specific abilities related to learning hierarchies, and (v) a hierarchical structure involving both general and specific abilities.

a. ***General Intellectual Ability*** or 'G' as the single unitary ability or intelligence is an unchanging rate of intellectual growth. It has been widely accepted as universal capacity of an individual to act purposefully, to think rationally, and to deal effectively with the environment.

b. ***Primary Mental Ability*** was identified on the basis of Thurstone's study (1938) on administration of a large number of separate tests that tapped various mental functions. Through factor analysis he identified a few primary mental abilities. These may be separate in kind but parallel in structure. The five most prominent abilities are - (a) Verbal Meaning, (b) Number Facility, (c) Reasoning, (d) Perceptual Speed, and (e) Spatial Relations.

c. ***Specific Ability*** was developed by Guilford (1967) from his model of 'Structure of Intellect'. He defines an ability is a union of an operation, a content, and a product. There are five Operations, four types of Content, and six products; therefore, there are 5X4X6 or 120 Specific Abilities.

d. ***Divergent-Product Ability (Creativity)*** is the most important contribution of the 'Structure of Intellect Model' as a new of thinking about the ability of the individual. Human beings can be placed from high to low on a single continuum of general intellectual ability and should be treated accordingly in educational and vocational settings. Some students may be stronger in divergent than in convergent-production abilities, and vice-versa. In this connection, the identification of the divergent-production (or creative) abilities has already made some impact on educational practices.

e. ***Hierarchical Structure of Abilities*** was formulated by Vernon (1950), Smith (1964) and others. They indicated that the general and group factors are widely accepted by the psychologists. It is not to imply that the abilities as stated at any level in the hierarchy are themselves fully understood. There may be unresolved differences of opinion about how the abilities are manifested in the performance of individuals, which may be considered hypothetical.

I.   Determinants of Intellectual Abilities :

The basic determinants of intellectual abilities were classified by Bayley (1970) as follows:

a. ***Role of Heredity*** operates to influence both nature and the level of mental abilities of individuals to an un specifiable extent.

b. ***Socio-economic Background*** status of the family in which the child is reared may be an important determinant of intelligence. It includes the combined effect of family income, father's education, mother's education, father's occupation etc.

c. ***Environmental Impoverishment,*** apparently contribute to low intelligence and greater the impoverishment, the greater is the deleterious effect.

d. ***Interventions*** may improve motivational conditions; create better opportunities for children to learn, reduce anxiety, or eliminate debilitating diseases and malnutrition also raise IQ scores.

e. ***Emotional Climate*** in which the child is reared affects mental development. IQ fluctuations are found parallel to fluctuations in the emotional climate in the home.

II. Significance of Human Abilities in Education

Human abilities develop over a period of many years through study and practice. Abilities underlie more specific achievements and skills of all kinds in the cognitive and psychomotor domains. Abilities are identified scientifically through controlled experimentation and factor analyses. Abilities are also identified through careful observation and analysis of the performance of many students.

Many psychologists have formulated ideas about the organization of intellectual abilities. Two important contributions of this model to education, more important than the identification of the many separate abilities, are a different way of looking at the nature of intelligence, and an emphasis is given on the nurturing of divergent production, or creative abilities.

Cognitive abilities underlie educational achievements and that may be nurtured through education is illustrated by the work of project talent. Thus, consistent progress is being made in identifying and cataloging human abilities. The results of this work, in turn, provide a better foundation for organizing educational programs.

5.4 Intelligence : Concept, Basic Theories (Spearman, Thorndike and Guilford), Types and Uses of Intelligence Tests

5.4.1 Concept of Intelligence

The study of human intelligence dates back to the late 1800s when Sir Francis Galton (the cousin of Charles Darwin) became one of the first people to study intelligence. He was interested in the concept of a gifted individual, so he created a lab to measure reaction times and other physical characteristics to test his hypothesis that intelligence was a general mental ability, a product of biological evolution as the concept was given by Darwin.

Galton theorized that because of quickness and other physical attributes were evolutionarily advantageous, they would also provide a good indication of general mental ability (Jensen, 1982). Thus, Galton operationalized intelligence as reaction time. Operationalization is an important process in research that involves defining an un measurable phenomenon (such as intelligence) in measurable terms (as reaction time), allowing the concept to be studied empirically (Crowthre-Heyck, 2005). Galton's study of intelligence in the laboratory setting and his theorization of the heritability of intelligence paved the way for decades of future research and debate in this field.

Basically, intelligence is the ability to think, to learn from experience, to solve problems, and to adapt to new situations. Psychologists believe that there is a construct, known as general intelligence (g) that accounts for the overall differences in intelligence among people.

As two concepts are very close, a distinction is to be made between the intelligence and aptitude. Intelligence is the capacity or the potentiality that a person has, whereas the aptitude is the capacity that predicts what one can accomplish with learning and training. An aptitude is a combination of characteristics indicative of an individual's capacity to acquire some specific knowledge, or skill.

i. Definition of Intelligence

Most commonly accepted view is that intelligence is a general capacity for comprehension and reasoning that manifests itself in various ways. The most widely accepted definition is "Intelligence is the global capacity of an individual to act

purposefully, to think rationally and to deal effectively with his or her environment. It includes the power of adaptation of an individual to his milieu and his ability to learn and abstract thinking."

Intelligence has been defined in many ways: (a) higher level abilities (such as abstract reasoning, (b) mental representation, (c) problem solving, (d) decision making), (e) the ability to learn, (f) emotional knowledge, (g) creativity, and (h) adaptation to meet the demands of the environment effectively.

Psychologist Robert Sternberg defined intelligence as "the mental abilities necessary for adaptation to, as well as shaping and selection of any environmental context (1997, p. 1)

ii.   Nature of Intelligence

Nature of intelligence can be understood by the different theories, thoughts or ideas in the following sub-sections.

Have you ever consciously considered following questions?

• Am I an intelligent person?

• How intelligent am I?

• How do we judge if someone is intelligent or not?

• How can we measure the intelligence of a person? And any more of similar type.

Let us think about the following to understand the nature of Intelligence:

a. Intelligence is the capacity to acquire and apply knowledge.

b. Intelligence, According to Feldman, is the capacity to understand the world, think rationally, and use resources effectively when faced with challenges.

c. Intelligence, according to educationists is the capacity for learning, reasoning, understanding, and similar forms of mental activity and also aptitude in grasping truths, relationships, facts, meanings, etc.

d. American Psychologists mostly believe intelligence as a Mental process and they devised mental test to measure intelligence.

e. The concept of Crystallize and Fluid Intelligence (Cattle & Horn). Crystallized intelligence determines accumulation of information, skills, and strategies that are learned through experience and can be applied in problem solving situations. Fluid intelligence indicates intelligence that reflects information processing capabilities, reasoning, and memory, viz., solving puzzle, analogy, or remembering a set of numbers.

f. Cognitive psychologists examine the processes underlying intelligent behaviors rather than focusing on the structure of intelligence. They emphasize more on initial encoding as Information processing approaches.

g. Applying their abilities to the kinds of problems that confront them in everyday life, that is the practical intelligence - the art of common sense or practical intelligence.

h. Capacity of individuals to recognize their own and other people's emotions is known as Emotional Intelligence (EI) - Goleman's Theory of Emotional Intelligence.

i. Eysenek (1973) distinguishes between speed and power components of intelligence. Speed is measured by the time required to complete the task and power is measured through untimed test of reasoning.

j. Jensen splits intelligence into two levels: 'associative ability' being the capacity to learn, remember and recall information. It represents the lower level of continuum. 'Cognitive ability' is concerned with reasoning and is located at the higher level. It depends upon associated ability but not the vice versa.

k. Hebb (1966) has distinguished two meanings of intelligence on neurological basis. Intelligence 'A' is the innate potential based on the development process. This type of intelligence is dependent upon the possession of a good brain and a good neutral metabolism. Intelligence 'B' involves the functioning of the brain, and is observable indirectly from the individual's behavior. Intelligence 'A' is not observable and cannot be measured, whereas intelligence 'B' is measured through tests.

5.4.2 Basic Theories of Intelligence

Some researchers argue that intelligence is a general ability; whereas others make the assertion that intelligence comprises specific skills and talents. Some psychologists contend that intelligence is genetic, or inherited, and others claim that it is largely influenced by the surrounding environment. As a result, psychologists have developed several contrasting theories of intelligence as well as individual tests that attempt to measure this very concept. Three basic theories of Intelligence, namely, (i) Spearman's Two-factor Theory, (ii) Thorndike's Multi-factor Theory and (iii) Guilford's Structure of Intellect are discussed below:

I. Spearman's Two-Factor Theory of Intelligence

Charles Spearman, an English psychologist, established the two-factor theory of intelligence back in 1904. To arrive at this theory, Spearman used a statistical

technique known as factor analysis. It is a procedure through which the correlation of related variables is assessed to find out an underlying factor that explains this correlation index.

In the case of intelligence, Spearman noticed that those who did well in one area of intelligence tests (for example, mathematics), may also did well in other areas such as science or music (Kalat, 2014). In other words, there was a strong correlation between performing well in mathematics and music, and Spearman then attributed this relationship to a central factor, that of general intelligence (g).

Spearman concluded that there is a single g-factor which represents an individual's general intelligence across multiple abilities, and that a second factor 's' refers to an individual's specific ability in one particular area (Spearman, as cited in Thomson, 1947).

He further proposed that individuals possess general intelligence factor (g) in varying (degree) amount. This determines the individual's overall ability. In addition to 'g', individuals also possess specific abilities (s), 'g' is universal inborn ability, known as general mental ability. The amount of 'g' differs from individual to individual. Higher the 'g' in an individual, greater is the success in life. The 's' factor is learned and acquired in the environment, which varies from activity to activity even in the same individual; the individuals themselves differ in the amount of 's' ability. Two individuals in a class may be comparable on their 'g' factor, yet may vary with 's' factors, one may be very good with numbers while the other possesses higher musical ability.

II. Thorndike's Multi-Factor Theory of Intelligence

One of the sharpest critics of Spearman's two-factor theory was E. L. Thorndike (1926), who believed that the inter correlations studied by Spearmen were too small to test the question of a common factor. He objected very strongly to the idea of the existence of a characteristic such as general intelligence. Instead of one kind of factor, he maintained that there are a large number of separate characteristics that make up intelligence. He argued that instead of generality of intelligence, communality in the acts of people to perform intelligently needed to be looked into.

According to Thorndike, the common element does not reside in the individual but in the nature of the tasks themselves. People differ in their ability to perform any specific act in terms of the level of difficulty they can manage. They also differ in the range or number of tasks they can or cannot perform. For Thorndike, intelligence was more like a series of skills or talents and several or many tasks might call for the same kind of ability. According to him, the correlations between

various tests are the result of the fact that the tests have features in common with each other even though they are called as measures of different aspects. Thorndike's contention that there is no general intelligence but very specific acts has, however, does not hold water in view of the fact that some tasks have so many elements in common that it is desirable to classify them into groups such as arithmetical reasoning, visual perception, word meaning, analogy, etc.

Thorndike believed that there was nothing like General (g) Ability. Each mental activity requires an aggregate of different set of abilities. He distinguished the following four attributes of intelligence: (a) *Level*—refers to the level of difficulty of a task that can be solved; (b) *Range*—refers to a number of tasks at any given degree of difficulty; (c) *Area*—means the total number of situations at each level to which the individual is able to respond; and (d) *Speed*—is the rapidity with which we can respond to the items.

Thorndike assumed that intelligence involves three mutually independent abilities: (a) *Abstract intelligence* - the ability to verbal and symbolic thinking; (b) **Mechanical intelligence** - the ability to effectively control your body and manipulate objects; and (c) *Social intelligence* - the ability to communicate with people, understand and perform in social relations.

One can notice that the discrepancy of point of view between Spearman and Thorndike is basically a theoretical one and the types that interested Thorndike are essentially the same as the measures which Spearmen used in his correlation matrix.

In human resources management it is used in job creation and staffing - in job analysis. The individual components are relatively independent of each other. During various work tasks and activities, different forms of intelligence apply in different degrees.

III. Guilford's Structure of Intellect :

Guilford, (1983) in his book, "Frames of Mind", puts forth a new and different view of human intellectual competencies. He argues boldly and cogently that we are all born with potential to develop a multiplicity of Intelligence, most of which have been overlooked earlier. He concluded that every intellectual activity involves three different basic parameters, known as, (a) Content, (b) Operations and (c) Products. Each of the intellectual abilities in the structure of mind is characterized in terms of types of content, operation and product which result.

The fluid aspect of this theory says that intelligence is a basic capacity due to genetic potentiality. While this is affected by the past and new experiences, the

crystallized intelligence is a capacity resultant of experiences, learning and environment.

Three Dimensions of Intellect are discussed below:

(a) Content : The Content may be of following five types —

1. *Figure-visual (Fv)* – It is concrete material to be perceived through visual organs/ senses. Visual material has attributes as size, form, colour etc.

2. *Figural-audio (Fa):* Concrete materials are to be perceived through auditory senses. A person hears and feels, provides figural-audio materials.

3. *Symbolic (S):* The material is composed in the form of signs and symbols, i.e., letters, digits and other conventional signs organized in general pattern.

4. *Semantic (M):* This is in the form of verbal meanings or ideas.

5. *Behavioural (B):* Matters may be the social behavior in the social context.

(b) Operation : It involves following intellectual behaviours:

1. *Cognition (C):* It is the most fundamental operation in a learning process.

2. *Memory (M):* It is a primary mental process, which means retention of what is recognized.

3. *Divergent Production Thinking (Dt):* In this operation, mainly creative potential thinks in different directions, searching and seeking some variety and novelty.

4. *Convergent Production Thinking (Ct):* In this operation, the given operation guides a person to achieve at accepted best outcomes.

5. *Evaluation (E):* In evaluation, a person reaches conclusion and decisions concerning criterion satisfaction of information.

(c) Product : If a particular operation is applied to a definite type of content, six general kinds of products are involved. These are:

1. Units (U),
2. Classes (Cl)
3. Relations (Rl)
4. Systems (Sy)
5. Transformations (Tr)
6. Implications (I)
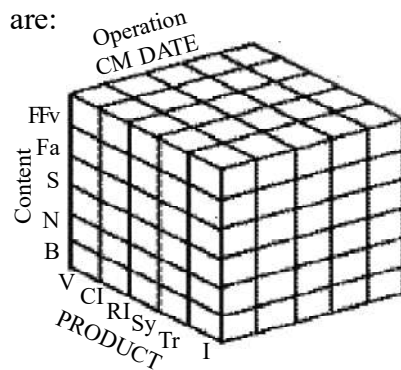
Fig 1 : Structure of Intellect Model

Thus, the SI Model consists of 150 primary factors (5X5X6). Later Guilford showed the possibility of one more category of Contents, namely, 'Kinesthetic' and thus th Model consisting of 180 (5X6X6) primary mental abilities. As for example, each ability is described by the combination of three factors representing three letters like Cognitive Behavioural Transformsation (CBT) or DFT (Divergent Figural Transformation) or NST (Convergent Symbolic Transformation).

5.4.3 Types of Intelligence and their Uses

Eight basic types of intelligence are described below :

i. Logical-mathematical Intelligence

Logical-mathematical learning style refers to our ability to reason, solve problems, and learn using numbers, abstract visual information, and analysis of cause and effect relationships. Logical-mathematical learners are typically methodical and think in logical or linear order.

Applications :

● Solving logical and mathematical puzzles
● Research projects - collecting statistics and analyzing them
● Measurements and surveys
● Complex scientific and mathematical theories
● Experiment to discover cause and effect relationships
● Classify various objects using diagrams - Venn diagrams, trees etc.,
● Using abstract symbols and formula
● Any type of calculation.

ii. Linguistic intelligence

Linguistic intelligence is how we use language, to express one's thoughts and feelings with clarity so others may comprehend, understand, even enjoy them. This can be verbal or in written form. This is an integral part of conventional intelligence and is well understood by parents. For a child, who is strong in linguistic intelligence, here are some ways in which you can provide interesting learning opportunities. Strengths of the Linguistic intelligence are:

Applications :

● Reading books.
● Reading aloud

- Hear stories - Oral or even on tape/CD.
- Debating and discussing various issues.
- Writing poems, short stories
- Reading newspapers and magazines.
- Word **games** like Scrabble.
- Public speaking about issues.

iii. Spatial Intelligence

Spatial intelligence, or visuo-spatial ability, has been defined as "the ability to generate, retain, retrieve, and transform well-structured visual images" (Lohman 1996). It's what we do when we visualize shapes in our "mind's eye." It's the mental feat that architects and engineers perform when they design buildings.

Applications :

- It's what we do when we visualize shapes in our "mind's eye."
- It's the mental feat that architects and engineers perform when they design buildings.
- The capacity that permits a chemist to contemplate the three-dimensional structure of a molecule, or a surgeon to navigate the human body.
- It's what Michelangelo used when he visualized a future sculpture trapped inside a lump of stone.
- It's also the mode of thought we use to imagine different visual perspectives.
- This is a classic mental rotation test – one measure of visuo-spatial ability. Another spatial intelligence test presents a figure made of blocks, and asks the test taker to create an exact copy.
- Such skills are only one aspect of a person's overall intelligence. Research suggests that spatial thinking is an important predictor of achievement in STEM, or science, technology, engineering and mathematics.

iv. Musical Intelligence

Musical intelligence is dedicated to how skillful an individual is performing, composing, and appreciating music and musical patterns. People who excel in this intelligence typically are able to use rhythms and patterns to assist in learning.

Applications :

- Including music in lessons/ education system where appropriate

- Allowing learners to include music for independent projects
- Connecting music to a lesson, such as talking about what music was popular during historical periods
- Using songs to help students study for examinations
- Playing Mozart or Beethoven as students study in class
- Studies show that listening to classical music benefits the brain, sleep patterns, the immune system and stress levels in students
- Music therapy is now a very treatment for the deviated people.

v. Bodily-kinesthetic Intelligence

Bodily kinesthetic learning style or intelligence refers to a person's ability to process information physically through hand and body movement, control, and expression. It is also known as the physical learning style or tactile-kinesthetic learning style.

Applications :

- The bodily kinesthetic learning style student may be drawn to the careers that involve physical interactions.
- In health professions, these can include surgery, nursing, physical therapy, occupational therapy, emergency medical technician, and recreation therapy.
- In the arts, this can include being an actor, dancer, artist (painting, sculpting), craft artist, or designer.
- Physical education and sports professions include athletic coach, personal trainer, aerobics instructor, physical education teacher, and professional athlete.
- Trades include carpentry, woodworking, mechanic, and factory work with moving systems.
- Other professions include a postal carrier, firefighter, police officer, forest ranger, or the military

vi. Intrapersonal Intelligence

Intrapersonal intelligence is the capacity to explore one's inner world and feelings. This type of intelligence can help a person focus on planning and managing their life.Children with high intrapersonal intelligence potential have an idea of what they want to achieve and how they can achieve it.

Applications :

● With the intrapersonal intelligence, you may become aware about your own strengths and weaknesses and thus you can appreciate yourself objectively.

● You can embrace other's feelings, fears and motivations without hesitation. You'll be a better leader. And you'll more easily contribute and communicate your ideas to the team.

● Through intrapersonal intelligence you can –

— Combat Your Negative Self-Talk

— Self-Care and Being Kind to Yourself

— Mindfulness and Effective Multitasking

— Improve Your Interpersonal Communication

vii. Interpersonal Intelligence

Interpersonal intelligence is the ability to understand and interact effectively with others. It involves effective verbal and nonverbal communication, the ability to note distinctions among others, sensitivity to the moods and temperaments of others, and the ability to entertain multiple perspectives.

Applications :

● It refers to the ability of a person to relate well with other people and manage relationships.

● It enables people to understand the needs and motivations of those around them which help in strengthening their overall influence.

● It seems to stand out in a crowd as people with lots of friends and can easily adapt to social situation.

● They communicate effectively and enjoy participating in discussions and debates.

● Individuals with interpersonal intelligence are characterized by their sensitivity to other people's moods, temperaments, motivations, and feelings.

viii. Naturalistic intelligence

According to Gardner, naturalistic intelligence is the ability to identify, classify and manipulate elements of the environment, objects, animals or plants. They care about the environment and like to be in touch with nature. They are good at identifying fauna and flora.

Application :

- Physically/emotionally adverse to pollution
- Intense interest in learning about nature
- Dramatic enthusiasm when in contact with nature
- Powers of observation in nature
- Awareness of changes in weather
- Attending class outside
- Illustrate discoveries in nature
- Read books and articles about nature and the environment
- Write articles about nature (poems, short stories, news articles)
- Giving lessons on weather and nature
- Conduct research on local foliage

5.4.3 Types and Uses of Intelligence Test;

i. Individual Verbal Tests:

In this type of intelligence tests, one person appears the test at a time for whom it is meant. The testee is required to use language while attending the test items. Here the subject's response may be given in oral or written form. The Individual Verbal Tests may act as suitable instrument for literate challenged children of lower age group

Examples:

a. *Standford-Binnret Test of Intelligence*

b. *Wechsler Intelligence Scale for Children (Verbal Scale)*

ii. Individual Non-verbal Tests:

These tests are administered to one person at a time for whom it is meant. It is also designed for that person who is unable to read and write the language of the test and it is meant for young children also. It includes different activities like completing pictures correctly, setting blocks, cubes etc. it is best suited performance test and appropriate to measure intelligence rather language skill.

Examples:

a. *Wechsler Intelligence Scale for Children (Performance Scale)*

b.   *Pintour Peterson's Scale*

iii. Group Verbal Tests:

This type of intelligence tests is administered to a large number of subjects at a time who can read and write the language of the test. The subjects are warned to make their pencils and pens ready before the administration of the test. Here time limit of response to the test is almost equal to every student. Mainly the tests are available for adult and literate group only. But tests are economic as well as time saving.

Examples :

a.   *Jalota's Scale of Intelligence*

b.   *Desai's Verbal Group Test of Intelligence*

c.   *CIE Verbal Group Test of Intelligence*

d.   *Samoohika Buddhi Parikshan*

iv. *Group Non-verbal Tests:*

In this category, tests are administered in a group. A large number of subjects who are illiterate, deficient in language appear the test. This test has the features of both group and non-verbal tests of intelligence.

Examples :

a. *Raven's Progressive Matrices Test*

b. *Cattle's Culture Free Test*

c. *Pinter Patterson Scale of Performance Test*

d. *Bhatia's Battery of Performance Test.*

v. Uses of Intelligence Test:

Intelligence Tests are widely used for different purposes:

a.   Classification of students on the basis of intelligence Test Scores;
b.   Measurement of the learning readiness of students at different age levels;
c.   Selection of subjects, courses and careers;
d.   Diagnosis of reading disability and educational backwardness;
e.   Prediction of future progress of student;

f. Selection of candidates for training in defense services;

g. Ascertaining the magnitude of individual difference;

h. Prediction in vocational success of students in occupational life;

i. For the preparation of case study report;

j. Providing educational, vocational and personal guidance.

5.5 Creativity: Concept, Characteristics and Signific-ance in Education;

Paul Torrance (1995) Quotes:

"You need courage to be creative. Just as soon as you have a new idea, you are a minority of one. And being a minority of one is uncomfortable – it takes courage!"

"One of my first challenges was to find some way of measuring creative talent, because I knew that the key to progress in any field was measurement."

"Creativity defies precise definition. This conclusion does not bother me at all. In fact, I am quite happy with it. Creativity is almost infinite. It involves every sense – sight, smell, hearing, feeling, taste and even perhaps the extrasensory. Much of it is unseen, nonverbal and unconscious. Therefore, even if we had a precise concept of creativity, I am certain we would have difficulty putting it into words."

"Don't waste a lot of expensive energy in trying to do things for which you have little ability or love. Do what you can do well and do what you love, giving freely of the infinity of your greatest strengths and most intense loves."

"Outstanding creative achievement involves being different, testing known limits, attempting difficult jobs, making honest mistakes and responding to challenge."

"People prefer to learn creatively – by exploring, questioning, experimenting, manipulating, re-arranging things, testing and modifying, listening, looking, feeling – and then thinking about it – incubating."

5.5.1 Concept of Creativity

The English word *creativity* comes from the Latin term *'creare', means* "to create or to make. The word "create" appeared in English as early as the 14th century, notably in Chaucer (in The Parson's Tale), to indicate 'divine creation'. However, its modern meaning as an 'act of human creation' did not emerge until the Enlightenment

Teresa Amabile and Pratt (2016) defines creativity as production of novel and useful ideas and innovation as implementation of creative ideas. Innovation is more than a new idea or an invention. An innovation requires implementation, either by being put into active use or by being made available for use by others. There is also an emotional creativity which is described as a pattern of cognitive abilities and personality traits related to originality and appropriateness in emotional experience.

Torrance (1995) chose to define creativity as a process because he thought if we understand the creative process, we could predict what kinds of person could master the process, what kind of climate made it grow and what products would be involved.

Creativity is defined as the tendency to generate or recognize ideas, alternatives, or possibilities that may be useful in solving problems, communicating with others, and entertaining ourselves and others. *It* is the tendency to generate or recognize ideas, alternatives, or possibilities that may be useful in solving problems, communicating with others, and entertaining ourselves and others.

Guilford (1959) stated, "Creativity is the capacity to produce ideas that are both new and useful through divergent thinking".

Drevdahl (1956) defined, "Creativity is the capacity of a person to produce compositions, products or ideas which are essentially new or novel and previously unknown to the producer".

Thus, Creativity is the power of human mind to create new contents by transforming relations and generating new correlates

Creativity happens when -

Creative people tend to possess a variety of traits that contribute to their innovative thinking. Some of these key-traits include:

- *Energy :* Creative people tend to possess a great deal of both physical and mental energy. However, they also tend to spend a great deal of time quietly thinking and reflecting.
- *Intelligence :* Psychologists have long believed that intelligence plays a critical role in creativity. In Terman's famous longitudinal study of gifted children, researchers found that while high IQ was necessary for great creativity, not all people with high IQs are creative. He believes that creative people must be smart, but they must be capable of looking at things in fresh, even naïve, ways.

· ***Discipline :*** Creative people do not just sit around waiting for inspiration to strike. They are playful, yet they are also disciplined in the pursuit of their work and passions.

While some people seem to come by creativity naturally, there are things that you can do to increase your own creativity. Creativity requires both a fresh perspective combined with previous one.

5.5.2 Characteristics of Creativity

Creativity is the ability and disposition to produce novelty. Children's play and high accomplishments in art, science, and technology are traditionally called creative, but any type of activity or product, whether ideational, physical, or social, can be creative.

a. Creative Process:

Paul Torrance (1966, 1993) identified four major characteristics of the creativity process, including originality (having unique ideas), flexibility (alternative thinking about ideas), fluency (abundant idea generation), and elaboration (adding complexity and richness to ideas.)

b. Creativity as Ability:

All individuals with healthy brains have some degree of creative potential, but individuals vary in how much novelty they in fact produce. Psychometric measures of creativity are based on the hypothesis that the ability to create is general across domains of activity (art, business, music, technology, etc.) and stable over time. This view implies that a person whose creativity is above average in one domain can be expected to be above average in other domains also.

c. Creativity and Intelligence:

Correlations between two abilities Creativity and Intelligence vary in magnitude from study to study and depend on which tests are used. Some correlations are no smaller than correlations among creativity tests, so they do not provide strong evidence that IQ and creativity are distinct dimensions. The findings can be understood in terms of a so-called triangular correlation (also known as the threshold hypothesis); Individuals in the lower half of the IQ distribution lack the requisite cognitive capacity to create and hence necessarily exhibit low creativity; individuals in the upper half of the IQ distribution have the requisite capacity but may or may not develop a disposition to create. Consequently, creativity and IQ are highly correlated at low IQ levels but weakly correlated at high IQ levels. Alternative

interpretations of the relation between creativity and intelligence have been proposed, including that they are two aspects of the same ability, that they are unrelated, and that they are mutually exclusive.

d. Creativity as Process:

The fact that the human mind can generate novel concepts and ideas requires explanation. Cognitive psychologists aim to infer the relevant mental processes from observations of how individuals solve problems that require creativity. One hypothesis states that creation is a process of variation and selection, analogous to biological evolution. The mind of a creative person spontaneously generates a large number of random combinations of ideas, and a few chosen combinations become expressed in behavior. An alternative hypothesis is that a creative person is able to override the constraining influence of past experiences and hence consider a wide range of actions and possibilities. The moment at which a previously unheeded but promising option comes to mind is often referred to as insight. A closely related hypothesis is that creative individuals are more able to break free from mental ruts–trains of thought that recur over and over again even though they do not lead to the desired goal or solution. It has also been suggested that people create by making analogies between current and past problems and situations, and by applying abstractions–cognitive schemas–acquired in one domain to another domain.

e. Creativity in Relation to Imagery:

There is widespread belief that highly creative individuals think holistically, in visual images, as opposed to the step-by-step process that supposedly characterizes logical thinking. Although consistent with often quoted autobiographical comments by Einstein, Mozart, and others, systematic support for this belief is lacking. There is strong research support for a function for visual imagery in memory recall, but its relevance for creativity is unclear.

f. Creativity in Relation to Knowledge:

Cognitive and biographical studies have shown that creative problem solutions require thorough knowledge of the relevant domain and domain-specific strategies. For example, scientific discovery depends, in part, on knowing what the current theory predicts, plus the strategy of paying close attention to data that deviate from those predictions; creativity in other domains requires other strategies. It is possible that creativity is not a general ability or process, but that creative behaviors and products emerge when a competent and knowledgeable person is motivated to engage in a cumulative effort over a long period of time. If so, a person who is unusually creative in one domain of activity is not necessarily unusually creative in other domains.

g. Types of Creativity:

Arne Dietrich (2004)   identifies 4 different types of creativity with corresponding different brain activities. Think of it like a matrix:

	Cognitive	Emotional
Deliberate	Thomas Edison	Therapeutic A-ha Moment
Spontaneous	Newton and the Apple	Artists, Musicians

Creativity can be either emotionally or cognitively based, and it can also be spontaneous or deliberate. That gives you the above four quadrants.

5.5.3 Significance in Education

Although it is unclear whether the ability to create can be enhanced, there is consensus that the disposition to create can be suppressed. Creativity and discipline are not antithetical–creative individuals practice much and work hard, but extensive reliance on overtly structured activities can thwart the impulse to create, with negative effects on students' well-being. Students with high ability will perform better than others in activities that require design, imagination, or invention, but participation in such activities encourages the disposition to create in students at any level of ability.

There is a widespread concern among educators that the trend to define the goals of schooling in terms of standardized tests forces teachers to prioritize fact learning and analytical ability over creativity. Participation in creative activities is emphasized in schools that implement particular pedagogical theories, for example, the Montessori and Waldorf schools.

A good classroom environment always has some elements of creativity which makes the lessons more interesting and interactive. The right mix of creativity along with curriculum helps the students.

Critical thinking skills positively reflect on our academic progress. These skills

help learn new material quicker, improve learning skills, understand science, and other important points. The proper development of these skills determines our success.

5.6 Summary

Human abilities develop over a period of many years through study and practice. Abilities underlie more specific achievements and skills of all kinds in the cognitive and psychomotor domains. Abilities are identified scientifically through controlled experimentation and factor analyses. Abilities are also identified through careful observation and analysis of the performance of many students.

The concept of intelligence affects the content and organization of the intelligence tests. Hence, it is necessary to examine some of the definitions of intelligence in order to have a clear idea about the nature of intelligence. Intelligence is the aggregate or global capacity of the individual to act purposefully, to think rationally, and to deal effectively with his environment. There is no difference in intelligence due to differences in sex. Heredity exercises a good deal of influence on intelligence.

Creativity is one of the distinguishing characteristics of human beings. Creativity is the act of turning new and imaginative ideas into reality. It is characterized by the ability to perceive the world in new ways, to find hidden patterns, to make connections between the seemingly unrelated phenomena, and to generate solutions. The degree and quality of creative expression is relative. It varies from individual to individual and from age to age, as one grows in years, experience and maturity. Creativity means original thinking, new types of associations, divergent thinking and behaviour, new solutions of old problems, flexibility and a new approach in different fields of life. Creativity is considered a highly particularized and substantive capacity. It is characterized by universal, novelty, divergence, requires free atmosphere, wide scope, innate as well as acquired, relationship with intelligence, adventurous and open thinking.

5.7 Self Assessment Questions

1) What do you mean by human ability?
2) What is psycho-motor ability?
3) What is intelligence?
4) What are the two factors of Spearman' intelligence?

5) What are the three parameters of Guilford's idea of intelligence?

6) What is meant by creativity?

7) What is kinesthetic intelligence

8) What is group non-verbal test?

9) Mention any one verbal intelligence test.

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Unit 6 □ Psychology of Learning

Structure

6.1   Objectives

After the completion of the Unit, learners will be able to:

- Explain Concept, Characteristics and Factors of Learning;

- Understand Behaviorist Theories of Learning and its Educational Implications: Connectionism, Classical Conditioning and Operant Conditioning;

- Understand Cognitive Theories of Learning and their Educational Implications.

6.2 Introduction

The psychology of learning is a science that covers the various psychological theories that relate learning. Throughout history, there have been many various psychological learning theories. Some take on a more behaviorist approach which focuses on inputs and reinforcements. Other approaches, such as theories related to neuro-science and social cognition, focus more on the brain's organization and structure to define learning. Some psychological approaches, such as social constructivism focus more on one's interaction with the environment and with others. Other theories, such as those related to motivation, like the growth mindset, focus more on the individual.

Psychology of learning is also very applicable today. There has been extensive research in recent years that looks closely at how students are learning both inside and outside the classroom. This information is then used to present new and more cooperative approaches to homework, tests and the student's ability to learn. Theories related to the psychology of learning can also help explain and improve student performance, motivation, and investment in their learning.

6.3.1 Concept

Learning is the fundamental process of life. Every individual learns and through learning develops modes of behavior by which he/she lives. It is the term applied in modification of behavior of the learner which occurs as a result of training or experience. With the modification of behavior the learner can do what he/she could not do earlier.

Some Definitions of Learning:

Encyclopedia of Educational Research has stated, "learning refers to the growth of interests, knowledge and skills and to transfer of these to new situations". According to Wordsworth, "any activity can be called learning so far as it develops the individual and makes his behavior different from what that would otherwise have been".

In the words of Crow and Crow, "learning is a sequence of mental events or conditions leading to changes in the learner". Gates defines; learning is the modification of behavior through experience and training. In the words of Hilgard, "learning is the process by which an activity originates or is changed through reacting to an encountered situation, provided that the characteristics of the change in activity cannot be explained on the basis of native tendencies, maturation or temporary states of organism".

In the views of Gooch, learning as we measure it, is more or less a permanent change in behavior which occurs under motivational conditions of practice. Peal, E.A. states, "learning is a change in the individual following upon changes in the environment". According to Melvin, "learning is relatively enduring change in behavior which is the function of prior behavior".

6.3.2 General Characteristics of Learning

General characteristics of learning are multi-dimensional. Those are mainly –

a.   Purposeful:

Human beings are purposive in nature. Thus, true learning is also based on some specific purpose, which plays a very significant role in learning. According to Ryburn, the purpose is always connected with the use of some instinctive power and energy, with which are endowed with at birth.

b. Intelligent:

Meaningless efforts cannot produce any permanent result. Only efforts made intelligently have lasting effects as it has a basic mental drive to change the permanent behavior.

c. Active:

Learning does not take place without a purposeful self-activity. Children learn quickly when they participate in some learning activity. They do things with their own hands and thus learn more perfectly. There is better coordination of hands, sense organs and the brain during activity.

d. Both Individual and Social:

Learning is more than an individual activity. It is a social activity too. Individual mind is always influenced by the social environment either consciously or unconsciously. Thus, learning is both individual and social.

e. Product of the Environment:

The infant individual starts learning through the interactions with his/her immediate environment. Environmental stimuli are the primary sources of the stimulus-response learning. Hence, learning is the product of environment.

f. Development:

The learning process starts with the new-born child and it continues throughout

the life till death. So, life is synonymous with learning and fullest development of the life is possible through learning only.

g.   Adjustment:

Learning helps the individual to adjust himself/herself adequately to the new situations. Life is full of experiences and each experience leaves behind some effects in the mental structure that effect to modify our behavior to adjust the newer situations in life.

h.   Organization of Experience:

Learning is not mere acquisition of facts, skills or experiences in life. It is not even addition of knowledge. It is the organization and reorganization of previous knowledge and experiences for preparation to face the future life.

i.   Life-long Process:

Learning starts from the birth of a child and it continues till death. At every stage the individual faces problems and tries to solve them. Through this process, the individual modifies and improves his/her behavior pattern. One keeps on learning as long as one breathes.

j.   Universal:

All animals in this world can learn. Human beings are rational animals. They are, thus, try to get the maximum benefit from the learning process. So, the learning is universal.

6.3.3 Factors of Learning

a. Attention:

Attention is the selective process of mind. Without this activity we cannot observe any stimulus as a result we cannot have any experience of the stimulus. Through learning our change in behavioural experience is very essential. So, we can say that without attention learning cannot take place. Attention depends upon motivation, mental environmental factors like distraction or irrelevant stimulus, etc. which affect the efficiency of learning.

b. Maturation:

Learning starts at birth and continues till death. But a small infant cannot learn whatever we want him to learn. Learning depends on the maturation of central nervous system and other physiological system of the body, e.g., 6 months old baby cannot be made to walk or write because his system has not achieved the maturity

level for these tasks. If an individual reaches the required level of maturation, learning will be effective and efficient.

c. Thinking:

Thinking enables us to solve problems and to achieve future plans in life. Critical thinking is an ability which is essential to have successful performance in learning and in solving problems. Through thinking, learners can understand the realities of the world from their respective view points. It is a process within the mind at the same time.

Reading, writing and and *thinking* are the related mental processes so that *learning* skill as a whole is also another *factor.* Critical thinking is an ability which is essential to have successful performance in learning and in solving problems. Critical thinking is not limited to a specific subject but it is the capacity of a student to think in a more rational and clear way. Critical thinking is important for students as it gives the ability to think in the right way and solve problems in a more efficient and methodical way

d. Memorization:

Memory is an active, subjective, intelligent reflection process of our previous experiences. Memory has a fundamental role in life, reflecting the past as the past, and offering the possibility of reusing all past and present experiences, as well as helping to ensure continuity between what was and what was going to be.

Memory is essential to learning, as it depends on past learning experience because the information stored in one's memory creates the basis for linking new knowledge by association. It is a symbiotic relationship which continues to evolve throughout our lives.

Memory is the superior (logical or intellectual) cognitive process that defines the temporal dimension of our mental organization. It is our ability to encode, store, retain, and retrieve to past recall information and experiences.

Five factors that can influence the functioning of the memory: The degree of attention, vigilance, awakening concentration, interest, motivation, need or necessity. The emotional state and emotional value attribute to the learning process.

Memory is related to learning but should not be confused with learning. There are three main processes involved in human memory:

e. Emotion:

Emotion has a substantial influence on the cognitive processes in humans, including attention, perception, reasoning, learning, memorizing, and problem solving. It may also facilitate emotions and helps retrieval of past experience efficiently.

Emotions stimulate learners' attention and trigger the learning process. They affect what is learned and what is retained. Numerous studies across a range of disciplines including neuroscience, education, and psychology have revealed that emotions play an important role in learning.

Positive feelings toward learning can make students more motivated. This in turn can help students engage with learning materials longer. With positive emotions, we can expect less students skipping classes or dropping out altogether. Students always *want to be* engaged with the learning process, which would be beneficial for student learning in the long run.

f. Motivation:

Learning has a goal. We try to modify our behaviour either for our own satisfaction or to please others or with a purpose behind it. This shows that a force that directs us towards a goal controls our learning, e.g. a student wants to perform well, motive behind his hardworking is to gain recognition. It we analyze our own behavioural changes we observe that our own motives helped us in acquiring new behaviour.

6.4 Behaviouristic Theories of Learning and its Educational implications: Connectionism, Classical Conditioning and Operant Conditioning

I. Theories of Learning

Key-Theories in the discipline of Educational Psychology include numerous theories; many experts identify five main schools of thought: Behaviorism, Cognitive, Constructivist, Experiential, and Social-contextual learning theories.

Educational psychologists study learners and learning contexts — both within and beyond traditional classrooms — which can influence programs, curricula, and lesson development, as well as classroom management approaches. They leverage educational theory and practice based on the latest research related to human development to understand the emotional, cognitive, and social aspects of human

learning. Educators can use concepts from educational psychology to understand and address the ways rapidly changing technologies for their students' learning. In addition, educational psychologists play an important role in educating teachers, parents, and administrators about best practices for learners who struggle with conventional education methods.

There are five key theories of learning applied in educational psychology, viz., Behaviourism, Cognitivism, Constructivism, Experientialism and Social-contextualism. In the present Sub-unit of the Course, we would discuss about the Behaviourist Theories of Learning and other selected theories in the present Sub-unit:

II. Behavioristic Theories of Learning and its Types

Behaviorist learning theories first emerged in the late 19th century from the work of Edward Thorndike and Ivan Pavlov. They became popular during the first half of the 20th century through the works of John B. Watson, B.F. Skinner, and others.

Behaviorism defines learning as observable behavioral change that occurs in response to environmental stimuli. Positive stimuli or "rewards" create positive associations between the reward and a given behavior. These associations prompt one to repeat that behavior. Meanwhile, negative stimuli or "punishments" discourage the behaviors associated with those stimuli. Through this process of conditioning, people learn to either repeat or avoid behaviors.

Because early behaviorists tried to legitimize psychology as a science, their theories emphasized external, scientifically measurable behavioral changes in response to similarly measurable stimuli. Although they admit that thought and emotion influence learning, behaviorists either dismiss these factors as phenomena beyond the realm of scientific inquiry (methodological behaviorism) or convert internal factors into behavioral terms (neo-behaviorism/radical behaviorism).

Assuming that changes in behavior signify learning, methodological behaviorists see no fundamental difference between human and animal learning processes, and they often conduct comparative research on animals.

a. Thorndike's Connectionism:

The theory of Connectionism was first announced by Edward L. Thorndike in his book 'Animal Intelligence' (1898). His experiments on animals had a very profound influence upon human learning and further thinking about learning. He applied an experimental approach by measuring achievement outcomes

● **Trial–and-Error Learning:**

In his book of three-volume series 'Educational Psychology' (1914), thorndike postulated that most fundamental type of learning involves the forming of associations (connections) between sensory experience (perceptions of stimuli or events) and neural impulses (response) that manifest themselves behaviorally and studied the learning process with a series of experiments on animals. He concluded that trial-and-error learning occurs gradually (incrementally) as successful responses are established and unsuccessful ones are abandoned. On the basis of his *experiments, Thorndike drew two types of Laws – (i) Primary Laws and (ii) Subordinate Laws.*

Primary Laws:

Thorndike first identified three basic laws as Primary laws. Those are:

(i) The Law of Exercise:

It has two parts – when a response to a stimulus strengthens their connection with the repetitive uses is based on *the Law of Uses,* but when a response is not made to a stimulus, the connection is weakened (forgotten) is known as the *law of Disuse.*

(ii) The Law of Effect:

When a modifiable connection is made between a stimuli (situation) and a response accompanied by a satisfying state of affairs, that connection strength is increased. But when followed by an annoying state of affair, its strength is decreased.

(iii) The Law of Readiness:

It characterizes the circumstances under which a learner tends to be satisfied or annoyed. It gives arousal of strong impulse to a particular sequence as the basic of learning activity.

Subordinate Laws:

Later Thorndike added five *Subordinate Laws*. Those are – (i) *Law of Multiple Response, (ii) Law of Set or Attitude, (iii) Law of Prepotency of Elements, (iv) Law of Response by Analogy,* and *(v) Law of Associative Shifting.*

b. Pavlov's Classical Conditioning:

Ivan Pavlov, a Russian physiologist, who won the Nobel Prize in 1904 for his work on digestive system. His experimental legacy to learning theory was his work

on *Classical Conditioning. Classical Conditioning* is a multistep procedure. Initially it involves presenting an *unconditioned stimulus* (UCS), which elicits an *unconditional response* (UCR). Pavlov placed a hungry dog in an apparatus and presented it with meat powders (UCS), which cause the dog to salivate (UCR). To condition the animal requires repeatedly presenting an initially neutral stimulus for a brief period before presenting the UCS. Pavlov often uses the bell as the neutral stimulus. In the early trials, the bell produced no salivation. Eventually, the salivated response is held to the bell prior to the presentation of meat powder. Gradually, the bell, a *Conditioned Stimulus* (CS) elicited a *Conditioned Response* (CR) similar to the original UCR. Repeated presentations of the CS without the UCS cause the CR to diminish in intensity and disappear, a phenomenon known as *extinction.*

Classical Conditioning Procedure

Phase	Stimulus	Response
1.	UCS (Meat Powder)	UCR (Salivation)
2.	CS (Bell), then UCS (Meat Powder)	UCR (Salivation)
3.	CS (Bell)	CR (Salivation)

(a) Operant Conditioning:

Operant Conditioning, a behavioural theory of learning was formulated by B.F. Skinner (1938) when he published a series of papers reporting results of laboratory studies with animals in which he identified the various components of *operant conditioning.* He was influenced by *conditioned reflex* of Pavlov and Watson's *behaiourism.*

Conditioning refers to the strengthening of behavior which results from reinforcement. There are two types of conditioning – Type 'S' and Type 'R'. Type 'S' is Pavlovian conditioning, characterized by the pairing of the reinforcing US stimulus with another CS stimulus. The 'S' calls attention to the importance of the stimulus in eliciting a response from the organism. The response made to the eliciting stimulus is known as *respondent behavior.*

Although type 'S' conditioning explains conditioned emotional reactions, most human behaviors are emitted in the presence of stimuli rather than automatically elicited by them. Responses are controlled by their consequences, not by antecedent stimuli. This type of behavior, which Skinner termed type 'R' to emphasize the response aspect, is *operant behavior* because it operates on the environment to produce an effect.

Operant conditioning, sometimes referred to as instrumental conditioning, is a method of learning that employs rewards and punishments for behavior. Through operant conditioning, an association is made between a behavior and a consequence (whether negative or positive) for that behavior

Although operant and classical conditioning both involve behaviors controlled by environmental stimuli, they differ in nature. In operant conditioning, stimuli present when a behavior that is rewarded or punished controls that behavior. For example, a child may learn to open a box to get the sweets inside, or learn to avoid touching a hot stove; in operant terms, the box and the stove are "discriminative stimuli". Operant behavior is said to be "voluntary". The responses are under the control of the organism are operants. For example, the child may face a choice between opening the box and petting a puppy.

In contrast, classical conditioning involves involuntary behavior based on the pairing of stimuli with biologically significant events. The responses are under the control of some stimulus because they are reflexes, automatically elicited by the appropriate stimuli. For example, sight of sweets may cause a child to salivate, or the sound of a door slam may signal an angry parent, causing a child to tremble. Salivation and trembling are not operants; they are not reinforced by their consequences, and they are not voluntarily "chosen".

However, both kinds of learning can affect behavior. Classically conditioned stimuli—for example, a picture of sweets on a box—might enhance operant conditioning by encouraging a child to approach and open the box. Research has shown this to be a beneficial phenomenon in cases where operant behavior is error-prone.

The study of animal learning in the 20th century was dominated by the analysis of these two sorts of learning, and they are still at the core of behavior analysis. They have also been applied to the study of social psychology, helping to clarify certain phenomena such as the false consensus.

6.5 Cognitive Theories of Learning (Insightful and Information Processing) and its Educational Implications

The term, Cognitive Learning was by Coined by Piaget in 1936. He developed the Cognitive Learning Theory (CLT) to suggest that knowledge is something that

is actively constructed by learners based on previously-learned knowledge. The cognitive learning process is based on individuals cognitively processing input to result in a behavior. The Cognitive Theories of Learning is about understanding how the human mind works while people learn. The theory focuses on how information is processed by the **brain**, and how learning occurs through that internal processing of information. As the name suggests, it focuses on thought. It's the theory that is all about understanding human thought and how the brain responds as people learn. The CLT is also concerned with how information is processed by the brain, and how learning occurs through that internal processing of information. The theories are briefly discussed in the following sections.:

I. Cognitive Theories of Learning:

Development of the CLT is credited to Educational Psychologist, Jean Piaget, and is useful in the analysis of the relationship between mental processes and factors, both internal and external. Coined in 1936, Piaget developed the CLT to suggest that knowledge is something that is actively constructed by learners based on previously-learned knowledge.

Contrary to behaviorist theory, the CLT pays attention to what the way of the learner's mind and how it dictates behavior, rather than relying strictly on outward behaviors (or responses). The cognitive learning process is based on individuals cognitively processing input to result in a behavior. It has been found that mental processes include a multitude of elements, viz., (i) Organizing, (ii) Interpreting, (iii) Categorizing, (iv) Attention, (v) Observing, and (vi) Forming generalizations. *Cognitive learning theory* explains how internal and external factors influence an individual's mental processes to supplement learning.

Some common examples of cognitive learning strategies are discussed below:

i. Implicit learning

Learning is implicit if it does not involve an active intention to gain knowledge. It is a form of accidental and automatic learning as you are not aware of the process but find out later you've retained the information. Examples of this learning include talking, walking, eating and other things that you learn without conscious thoughts.

ii. Explicit learning

When you deliberately seek knowledge, you are learning explicitly. It involves attempting to become proficient at a new skill or process vital to your work, or going back to school for further studies. Unlike implicit learning that comes to you naturally, explicit learning requires deliberate action and sustained attention to

acquiring new knowledge. Cognitive learning may help to learn more explicitly by giving an exceptional insight into the subject and how it relates to your work now and later. An example is when you enroll in a Computer course to improve your presentation skills.

iii. Meaningful learning

Meaningful learning occurs when a person relates new knowledge with past information and experiences. It encompasses emotional, motivational and cognitive aspects and helps to deepen knowledge and problem-solving skills. An example is when you go for an advanced management course to become a better team leader and have a deeper understanding of past leadership training.

iv. Cooperative and Collaborative learning

When you learn a new process as a group or team at work, you are doing cooperative learning. Learning cooperatively helps to deepen collaboration and bring out the best skills in each participant at the event. This cognitive learning comprises four elements, including:

a. Simultaneous interaction
b. Positive interdependence
c. Individual responsibility
d. Equal participation

Similarly, collaborative learning is a cognitive strategy in which a resource person teaches a group how to develop their ideas on a specific skill or knowledge area. For instance, your company could train a colleague on a new production process so they can pass on the knowledge to team members.

v. Discovery learning

You learn through discovery when you actively seek new knowledge. If you enjoy researching new concepts and processes, think deeply about subjects that are not your primary area of specialization or adapt new information to your work, you are practicing discovery learning. For example, you may learn more information about a new workflow app professional in your institution.

vi. Non-associative learning (Habituation and Sensitization)

Non-associative learning is divided into two styles including - (a) Habituation and (b) Sensitization. Both focus on how you learn based on your reaction to a continuous stimulus. Habituation is the learning by habit. It involves a reduced

reaction to a stimulus after prolonged exposure. For example, habituation prevents you from noticing the noise if you study in a busy road. Over time, the sound does not bother you anymore because you have learned to ignore the stimulus. The opposite of habituation learning is Sensitization because your reaction increases with repeated exposure to the stimulus. For instance, you might be more reactive to the sound of your home telephone ringing. Both types of learning are basic and can be adapted to a wide range of situations in life and work.

vii. Emotional learning

This cognitive strategy helps people learn emotional intelligence and other aspects of controlling their emotions and understanding those of others. Whether you are a leader or junior employee, emotional intelligence plays a crucial role in empathy, interpersonal relationship and effective communication. For example, emotional learning helps you maintain cordial relations with introverts and extrovert colleagues regardless of their position in the organization. Mastering this learning could improve your relationships at work and also in your private life.

viii. Experiential learning

People often learn best through experience. Experiential learning is a cognitive strategy that allows you to take valuable life-lessons from your interactions with other people. However, experiences are subjective and depend on your interpretations. For example, a medical intern can gain insights about patient care, diagnosis, empathy, and compassion by shadowing an experienced doctor. So, two people may have the same experience and draw different lessons from the event. The value of your experience depends on your level of introspection and reflection and how you can relate it to past events.

ix. Receptive learning

If you love learning at lectures where a person stands in front and talks about a subject while the audience listens or takes notes that is a form of receptive learning. This learning strategy is passive for the learner as it involves the active participation of the person who delivers the material. It limits your participation in taking notes and asking questions. An example is when your organization invites experts to train your team in a classroom or workshop setting.

x. Observation learning

This cognitive learning strategy involves imitation. Imitation is an effective learning tool, particularly among children. However, adults can also imitate others to learn the skills and traits they desire. You can learn leadership qualities by imitating

leaders in your field, and you can also become a better team player by practicing the habits of great team players. For example, observing a manager who excels at long-term planning can help to improve your strategic thinking skills.

xi. Mastery learning

Cognitive learning is an excellent way to achieve mastery in your profession. It helps optimize the use of your brain, thoughts, emotions and experiences. Cognitive strategies condense your learning activities into a fully immersive event that builds on past information while applying it to future scenario. If you want to become an effective learner who enjoys seeking knowledge for a lifetime, practice the cognitive learning strategies to achieve excellence at work and in every sphere of life.

II. Theories of CLT

The CLT is divided into two further cognitive theories of learning: (i) the Cognitive Behavioral Theory (CBT) and (ii) the Social Cognitive Theory (SCT).

i. Cognitive Behavioral Theory (CBT) of Learning:

Cognition refers to the mental process of absorbing and retaining knowledge. Further, it encompasses the ability to understand through thought, experience and sense. Cognitive learning refers to active and long-lasting learning. This type of learning is generally very engaging, immersing learners in various processes, maximizing brain productivity, leading to learning new things.

Cognitive Behavioral Theory (CBT) refers to the role of cognition in the behavioral pattern of individuals. By formulating self-concepts of the individual's own accord, their behavior is directly affected. The concepts can be based on extrinsic or intrinsic factors, both positive and negative. The Cognitive Triad is a major component of CBT, impact upon human thoughts and behavior – The Self, the World/ Environment and the Future. There are three main cognitive theories of CBT –

(a) In the *Dual Coding Theory*, it is said that we learn through two cognitive systems: verbal and nonverbal. We receive verbal and non-verbal stimuli through our sensory-motor systems (visual, auditory, taste, smell, emotion) and associate these stimuli with words or memories.

(b) The *Cognitive Load Theory* suggests that there is a set amount of information that can be remembered at a time and suggests ways to maximize the mind's productivity by minimizing distracting information. In the Cognitive Load Theory of Multimedia Learning, the overarching principle is that we learn more effectively from words and pictures than from words alone.

(c) The main *assumption* of CBT is that thoughts are the primary determinants of emotions and behavior. The cognitive approach to learning believes that internal mental processes can be scientifically studied. It is centered on the mental processes by which the learner takes in, interprets, stores, and retrieves information. It compares the functioning of a human mind to that of a computer, in how it processes and reacts to information. Essentially, the CBT believes that in order to understand behavior, it is necessary to first understand what happens in the brain to cause such behavior.

ii. Social Cognitive Theory of Learning:

The Social Cognitive Theory (SCT) is primarily based on three factors, namely (a) **Behavioral factors, (b) Environmental factors (extrinsic) and (c) Personal factors (intrinsic).** The combination of all three factors results in an effective cognitive learning experience. It also includes various basic concepts which manifest in the learner:

a. *Observational Learning:* This type of learning refers to the ability of individuals to gain knowledge through the observation of others' behaviour. EdApp's social learning features, like Discussions, enable users to learn from others.

b. *Reproduction:* Increasing the repetition of a behavior increases the chance of greater knowledge retention. This is achieved by putting the learner in a comfortable environment with relevant and easily accessible materials to learn and practice.

c. *Self-Efficacy*: This occurs when newly absorbed knowledge is put into practice. **Emotional Coping:** Effective coping mechanisms in stressful situations are useful for successful learning.

d. *Self-Regulatory Capability:* This refers to the ability of individuals to control behavior in a potentially unfavorable environment.

iii. Benefits of Cognitive learning

Cognitive learning is an effective way of fostering a life-long love of learning and improvement in employees. Organizations can use cognitive learning strategies to impact the following benefits on their staff:

a. Enhance comprehension

In cognitive learning, students learn by doing. This hands-on approach makes learning immersive and promotes comprehension. Thus, you can develop a deeper understanding of the material and its application to your work and life.

b. Improves problem-solving skills

Problem-solving skills are critical at any level of leadership. The cognitive learning approach enhances your ability to develop this core skill and helps them to apply it to every aspect of their job.

c. Boosts confidence

Cognitive Learning can also improve confidence in your ability to handle challenges at work. This is because it promotes problem-solving skills and makes it easier to learn new things within a short period.

d. Encourages continuous learning

Cognitive skills promote long-term learning as it allows you to connect previous knowledge with new materials. It helps you merge old and new information and apply both effectively. Cognitive strategies promote a love of learning by making new knowledge exciting and fulfilling. This encourages you to develop a long-term appetite for knowledge acquisition in any environment.

e. Information Processing

Cognitive Learning strategies aim to improve a learner's ability to process information in a deeper way. The deeper the understanding, the learner can transfer more and apply information to new situations. Beyond surface learning, in which concepts are often limited to short-term memory only, cognitive learning strategies result in better-retained learning, meaning concepts are embedded into long-term memory.

III. Insightful Learning:

Insight, in learning theory, is immediate and clear learning or understanding that takes place without overt trial-and-error testing. Insight occurs as a cognitive learning when people recognize relationships (or make novel associations between objects or actions) that can help them solve new problems.

It is a cognitive form of **learning** involving the mental rearrangement or restructuring of the elements in a problem to achieve a sudden understanding of the problem and arrive at a solution.

a. Meaning of Insightful learning

  i. Insight leads to change in perception.
 ii. Insight is sudden.
iii. With insight, the organism tends to perceive a pattern or organization.

iv. Understanding plays important role n insight learning.

v. Insight is related with higher order animals and not with inferior animals.

vi. Experience of the learner influences insight learning.

Insight learning is a type of learning or problem solving that happens all-of-a-sudden through understanding the relationships of various parts of a problem rather than through trial and error.

Insightful learning is also known as *Gestalt learning* which means that learning is concerned with the whole individual and arises from the interaction of an individual with his situations or environment. Through this interaction emerge new forms of perception, imagination and ideas which altogether constitute insight.

b.   Meaning of Gestalt Theory

The *Gestalt* theorists were the first group of psychologists to systematically study perceptual organisation around the 1920's, in Germany. They were Wolfgang, Goethe, and particularly Ehrenfels, Wertheimer, Köhler, Koffka, and Lewin. According to the Gestalt psychologists, certain features in visual perception are universal. In semiotic terms, these universal features can be thought of as a perceptual code.

i. *Gestalt* is a sensual theory, what we see is a result of light and dark objects, edges and contours that we form into a whole image. Sensual theories are of a lower order of thinking than perceptual theories, such as semiotics, that are concerned with the meaning we attach to what we see.

ii. Dissatisfied with the behaviorist approach of learning, the *Gestalt* psychologists tried to see learning as a more deliberate and conscious effort of the individual rather than a mere product of habit formation or a machine-like stimulus-response connection. According to them, the learner does not merely respond to a stimulus, but mentally processes what he receives or perceives. Thus, learning is a purposive, explorative and creative activity instead of trial and error. Things cannot be understood by the study of its constituent parts only; actually it is understood only by perceiving it in a totality or whole.

iii. *Gestalt* theory focused on the mind's perceptive. The word 'Gestalt' has no direct translation in English, but refers to *"a way a thing has been gestalt; i.e., placed, or put together"*; common translations include 'form' and 'shape'. Gaetano Kanizca refers to it as '*organized structure'*. Gestalt theorists followed the basic principle that the whole is greater than the sum

of its parts. In other words, the whole (a picture, a car) carried a different and altogether greater meaning than its individual components (paint, canvas, brush; or tire, paint, metal, respectively). In viewing the "whole," a cognitive process takes place – the mind makes a leap from understanding the parts to realizing the whole.

iv. *Gestalt* theory was introduced as a contrast to at the time dominant structuralism, which claimed that complex perceptions could be understood through breaking them into smaller elementary parts of experience, like splitting graphical forms into sets of dots or melody into sequence of sounds. The idea of Wertheimer was that the ability to perceive objects was an ability of the nervous system, which tends to group together objects that are nearby, similar, form smooth lines, form most of the shape we can recognize.

v. According to *Gestalt* psychology, the whole is different than the sum of its parts. Based upon this belief, Gestalt psychologists developed a set of principles to explain perceptual organization, or how smaller objects are grouped to form larger ones. These principles are often referred to as the 'laws of perceptual organization.'

c. Characteristics of Gestalt Learning:

 i. Transition from pre-solution to solution is sudden and complete.

 ii. When problem solution is found, performance is smooth and without errors.

iii. Insightful learning results in longer retention.

 iv. The principle learned by insight can easily be applied to other problems

 v. Flash of understanding which comes to us all of a sudden

 vi. A type of learning that uses reason, especially to form conclusions, inferences, or judgments, to solve a problem.

d. Steps in Insightful Learning:

 i. **Identification of the problem:** The learner identifies the presence of a block as intervening obstacles on his way to the goal.

 ii. **Analysis of the Problem situation:** The learner observes the problematic situation, analyses of different components in the problematic situation and perceives the relation between the goal and the block.

iii. **Establishing mental association in between similar previously acquired ideas**: After analyzing the total situation he selects probable solutions in conclusions by means of hesitation, pause, concentrated attention etc.

iv. **Trail of Mode of Response:** The learner makes initial efforts in the form of a simple trial and error mechanism.

v. **Sustained Attention:** The learner maintains frequently recurrent attention to the goal and motivation.

vi. **Establishing cause-effect relationship**: In a certain moment there is a sudden perception of the relationship in the total situation and the organism directly performs the required acts. This is Insight development.

vii. **Steady Repetition of Adaptive Behavior:** After getting an insightful solution, the individual tries to implement it in another situation.

e. Gestalt laws (law of pragnanz) :

In perception, there are many organizing principles called gestalt laws. The most general version is called the law of pragnanz. Pragnanz is German means pregnant, but in the sense of pregnant with meaning, rather than pregnant with child. This law says that we are innately driven to experience things in as good a gestalt as possible. "Good" can mean many things here, such a regular, orderly, simplicity, symmetry, and so on, which then refer to specific gestalt laws.

i. The Law of Similarity :

As Gestalt principles go, the principle of similarity would seem to be one of the simplest to grasp. It states things that are similar are perceived to be more related than things that are dissimilar. Similarity occurs when objects look similar to one another. People often perceive them as a group or pattern. Similarity means there is a tendency to see groups which have the same characteristics. The principle of similarity states that things which share visual characteristics such as shape, size, color, texture, value or orientation will be seen as belonging together.

ii. The law of contrast:

The Law of Contrast states that when two items are presented one after another, "If the 2nd item is fairly different from the 1st, we tend to see it as more different than it actually is." The principle based on the assumption that individuals base their behavior on comparison of opposites not with sameness. The phenomenon that when two different but related stimuli are presented close together in space and/or time they are perceived as being more different than they really are.

iii. Law of Proximity:

Proximity occurs when elements are placed close together. They tend to be perceived as a group. The principle of proximity or contiguity states that things which are closer together will be seen as belonging together.

Things that are close to one another are perceived to be more related than things that are spaced farther apart. As this principle does not rely on any extraneous structure, it is among the first principles to impact our perception and from which we derive understanding. All of us intuitively understand that the simplest way to indicate relatedness is to manipulate proximity.

IV. Information Processing Theories of Learning:

I. Meaning:

The Information Processing (IP) theory is based on the idea that humans actively process the information they receive through their senses, like a computer does. Learning is what is happening when our brains receive information, record it, mould it and store it.

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The theory is based on the idea that humans process the information they receive, rather than merely responding to stimuli. This perspective equates the mind to a computer, which is responsible for analyzing information from the environment. According to the standard information-processing model of mental development, the mind's machinery includes attention mechanisms for bringing information in, working memory for actively manipulating information, and long-term memory for passively holding information so that it can be used in the future. This theory addresses how as children grow their brains likewise mature, leading to advances in their ability to process and respond to the information they received through their senses. The theory emphasizes a continuous pattern of development, in contrast with cognitive developmental theorists such as Jean Piaget's theory of cognitive development that thought development occurs in stages at a time.

Information processing theory is the approach to the study of cognitive development evolved out of the American experimental tradition. In physical development psychologists who adopt the information processing perspective account for mental development in terms of maturational changes in basic components of a child's mind. The theory is based on the idea that humans process the information they receive, rather than merely responding to stimuli. This perspective equates the mind to a computer, which is responsible for analyzing information from the environment. According to the standard information-processing model for mental development, the mind's machinery includes attention mechanisms for bringing information in, working memory for actively manipulating information, and long term

memory for passively holding information so that it can be used in the future. This theory addresses how as children grow their brains likewise mature, leading to advances in their ability to process and respond to the information they received through their senses. The theory emphasizes a continuous pattern of development, in contrast with cognitive developmental theorists such as Jean Piaget's theory of cognitive development that thought that development occurs in stages at a time.

II. Humans as Information Processing Systems:

The information processing theory simplified is comparing the human brain to a computer or basic processor. It is theorized that the brain works in a set sequence, as does a computer. The sequence goes as follows, "receives input, processes the information, and delivers an output".

This theory suggests that we as humans, will process information in a similar way. Like a computer receives input the mind will receive information through the senses. If the information is focused on, it will move to the short-term memory. While in the short-term memory or working memory, the mind is able to use the information to address its surroundings. The information is then encoded to the long-term memory, where the information is then stored. The information can be retrieved when necessary using the central executive. The central executive can be understood as the conscious mind. The central executive can pull information from the long-term memory back to the working memory for its use. As a computer processes information, it is thought our minds are processing information. The output that a computer would deliver can be likened to the minds output of information through behavior or an action.

III. Components of the Information Processing Theory

Though information processing can be compared to a computer, there is much more that needs to be explained. Information Processing has several components. The major components are information stores, cognitive processes, and executive cognition.

Information can be stored in the sensory memory of the mind. This information is stored just long enough for us to move the information to the short-term memory. The short-term memory can only hold a small amount of information at a time. George Miller, discovered that the short-term memory can only hold 7 (plus or minus two seconds) things at once. The information here is also stored for only 15–20 seconds. The information stored in the short-term memory can be committed to the long-term memory store. There is no limit for the information stored in the long-term memory. The information stored here can stay for many years. The long-

term memory can be divided among the semantic, episodic, and procedural memories. The semantic memory is made up of facts or information learned or obtained throughout the life. The episodic memory is made up of personal experiences or real events that have happened in a person's life. Last the procedural memory is made up of procedures or processes learned such as riding a bike. Each of these is the sub-categories of the long-term memory.

i. *Cognitive process* is the way by which humans transfer information among the different memory stores. Some prominent process used in transferring information is coding, retrieval, and perception. Coding is the process of transferring information from the short to long-term memory by relating the information of the long-term memory to the item in the short-term memory. This can be done through memorization techniques. Retrieval is used to bring information from the long-term memory back to the short-term memory. This can be achieved through many different recall techniques. Perception is the use of the information processed to interpret the environment. Another useful technique advised by George Miller is recoding. Recoding is the process of regrouping or organizing the information the mind is working with. A successful method of recoding is chunking. Chunking is used to group together pieces of information. Each unit of information is considered a chunk; this could be one or several words. This is commonly used when trying to memorize a phone number.

ii. *Executive cognition* is the idea that someone is aware of the way they process information. They know their strengths and weaknesses. This concept is similar to . The conscious mind has the control over the processes of the information processing theory.

iii. Emergence is a model for human thinking, and learning is part of the resurgence of cognitive perspectives which asserts that complex mental states affect human learning and behavior that such mental states can be scientifically investigated. Computers, which process information, include internal states that affect processing. Computers, therefore, provided a model for possible human mental states that provided researchers with clues and direction for understanding human thinking and learning as information processing. Overall, information-processing models helped reestablish mental processes — processes that cannot be directly observed — as a legitimate area of scientific research.

Multi Store Model - Atkinson & Shiffrin

Environmental Input

Sensory Input
(sights, sounds, etc.)

Maintenance

Rehearsal

Retrieval

Sensory
Memory

Attention

Short Term
Memory

Long Term
Memory

Elaborate
Rehearsal
Leads to
Storage

Forgotten

Forgotten
Through
Decay or
Displacement

Forgotten
Through
Interference
or Retrieval
Failure
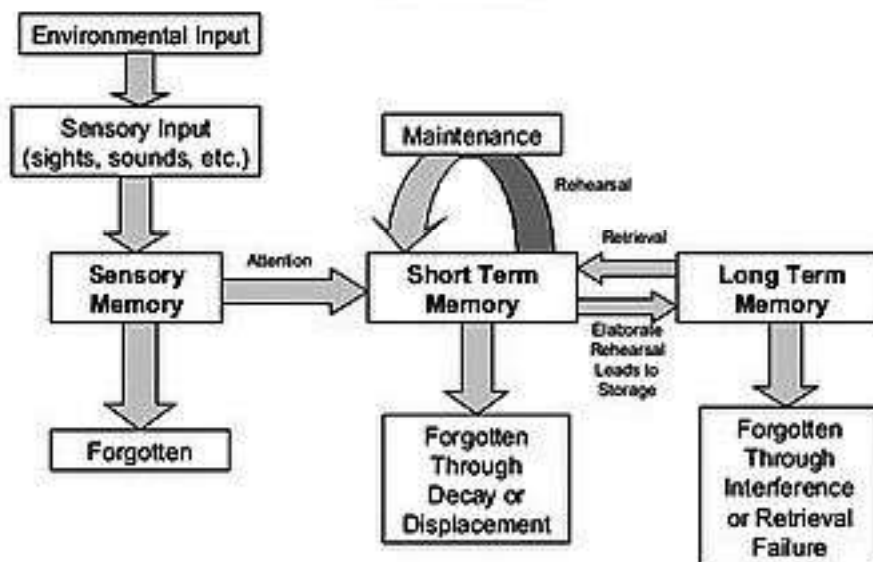
Source : John William Atkinson and Richard Shiffrin (1968)

Where,

Sensory Memory

The sensory memory is responsible for holding onto information that the mind receives through the senses such as auditory and visual information. For example, if someone were to hear a bird chirp, they know that it is a bird because that information is held in the brief sensory memory.

Short-Term Memory

Short-term Memory lasts for about 30 seconds. Short term memory retains information that is needed for only a short period of time such as remembering a phone number that needs to be dialed.

Long-Term Memory

The long-term memory has an unlimited amount of space. In the long term memory, there can be memory stored in there from the beginning of our life time. The long term memory is tapped into when there is a need to recall an event that happened in an individual's previous experiences.

Educational Implications of Cognitive Theories of Learning

Cognitive Theories of Learning outlines a way of learning that can be used by teachers inside the classroom. Some examples of classroom implications of the Information Processing Theory include:

● Use mnemonics to aid students in retaining information for later use, as well as strengthening the students' remembering skills.

● When teaching a specific lesson, use many different teaching styles and tools.

● Pair students together to review the material covered.

● Break down lessons into smaller more manageable parts.

● Assess the extent of the prior knowledge students have about the upcoming material.

● Give students feedback on each assignment as reinforcement.

● Connect new lessons back to old lessons and real-life scenarios.

● Allow for over-learning.

6.6 Summary

Theories of learning represent broad principles and techniques of learning, throwing light on the mechanism of how we learn. Most of these can broadly be classified as Stimulus-Response associationist type theories and Gestalt field of field cognition type theories. In the remaining ones, we can chiefly notice – information processing theories.

Theory of trial and error learning or connectionism put up by Throndike emphasizes that in learning we make some attempts or trials.

Classical conditioning is the best associated with the names of Russian Psychologists Ivan Pavlov. Through a series of experiments with dogs, Pavlov successfully demonstrated that an artificial stimulus (Like bell) in association with a natural stimulus (like food) become strong enough to produce salvation (natural response to food) even when not accompanied by food.

Operant conditioning propagated by Skinner, does not believe in stimulus response trigger like behavior initiating mechanism. Skinner asserted that the presence of a stimulus for evoking a response is not essential. In most of learning situations, our behavior is shaped and maintained by its consequences.

Insightful learning as a theory of learning evolved out of the attempts of Gestalt psychologists. However, the main initiation in this direction was taken by Kohler. All above mentioned theories have been discussed in this unit.

6.7 Self-Assessment Questions

1. What is learning?
2. State any two characteristics of learning.
3. Mention any two factors of learning.
4. What is behaviorism?
5. What is conditioning?
6. What is the law of effect?
7. Mention primary factors of social cognitive theory.
8. What is reinforcement?
9. Write the name of two behaviorist psychologist.

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