



S.Y.B.A.
SEMESTER - III (CBCS)

EDUCATION-II
EDUCATIONAL PSYCHOLOGY

SUBJECT CODE : DSC-EDU-IIA

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CONTENTS

Unit No.	Title	Page No
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MODULE I FUNDAMENTALS OF EDUCATIONAL PSYCHOLOGY

1.	Basics of Educational Psychology	1
2.	Method of Educational Psychology	16

MODULE II UNDERSTANDING DEVELOPMENT

3.	Growth And Development	30
4.	Factors Affecting Growth And Development	48
5.	Practical Work	66

UNIVERSITY OF MUMBAI
Syllabus for S.Y.B.A. (Education)
Revised 2020-2021 Title: Educational Psychology – SEM III

Objectives

- i) To develop an understanding of the nature, scope and methods of educational psychology.
- ii) To apply the knowledge of the methods and approaches of child development
- iii) To acquire knowledge of the characteristics of growth and development during childhood and adolescence.
- iv) To develop an understanding of Learning approaches
- v) To acquire knowledge of Learning theories and its relevance.
- vi) To develop an understanding of the process of learning and higher mental processes.
- vii) To get acquainted with mental process and techniques to facilitate learning.

SEM - III

Module 1: Fundamentals of Educational Psychology

Unit 1: Basics of Educational Psychology

- a. Psychology - Meaning, Nature and Functions
- b. Educational Psychology - Nature and scope
- c. Relevance of educational psychology to teachers, learners, teaching and learning

Unit 2: Methods of Educational Psychology (Meaning, Types, Merits and Demerits)

- a. Observation and Introspection method
- b. Experimental Method
- c. Clinical method - meaning and merits and demerits

Module 2: Understanding Development

Unit 3: Growth and Development

- a. Growth and development- Meaning and difference
- b. Principles of development and Factors influencing development
- c. Stages of growth and development- Childhood and Adolescence (Physical, Mental, Emotional, Social)

Unit 4: Factors Affecting Growth and Development

- a. Individual differences- concept and types, Significance of study of individual differences
- b. Heredity and Environment- meaning and difference, Relevance in Education
- c. Maturation-meaning and importance, Relevance in Education

Practical

- To perform experiments on Transfer of Learning, Distraction of Attention and Extrinsic Motivation; and record it in an experimental psychology journal.
- To Prepare a Case Study of a Learning Disabled student OR a Gifted student OR a Slow Learner, and to submit a complete report on it.

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MODULE I

1

BASICS OF EDUCATIONAL PSYCHOLOGY

CONTENT

- 1.1 Objectives
- 1.2 Introduction
- 1.3 Psychology
 - 1.3.1 Meaning
 - 1.3.2 Nature
 - 1.3.3 Functions
- 1.4 Educational Psychology
 - 1.4.1 Nature
 - 1.4.2 Scope & Functions
- 1.5 Relevance of educational psychology
- 1.6 Summary
- 1.7 Questions
- 1.8 References

1.1 OBJECTIVES

After going through this unit carefully you should be able to:

- Define Psychology
- Define Educational Psychology
- Explain the nature of Educational Psychology
- List out the functions of Educational Psychology
- Analyse the scope of Educational Psychology
- State the relevance of Educational Psychology in the learning context

1.2 INTRODUCTION

This is the first unit of the second paper on Psychology of Learning. This course deals with the importance and contribution of educational psychology on the theory and practice of education. Every teacher is confronted with the problem of individual differences in the classroom. The purpose of this unit is to define the concept of educational Psychology. It describes the meaning and nature of Educational

Psychology. An attempt has also been made to describe the characteristics and importance of learning.

1.3 PSYCHOLOGY

Definition: Psychology is the study of the mind and behaviour. The discipline embraces all aspects of the human experience — from the functions of the brain to the actions of nations, from child development to care for the aged. In every conceivable setting from scientific research centres to mental health care services, “the understanding of behaviour” is the enterprise of psychologists.

What is Psychology?

The word, ‘Psychology’ is derived from two Greek words, ‘Psyche’ and ‘Logos’. Psyche means ‘soul’ and ‘Logos’ means ‘science’. Thus, psychology was first defined as the ‘science of soul’.

Psychology as the Science of Soul. In ancient days, the Greek philosophers like Plato and Aristotle interpreted Psychology as the science of the soul and studied it as a branch of Philosophy. But soul is something metaphysical. It cannot be seen, observed and touched and we cannot make scientific experiments on soul.

Psychology as the Science of the Mind: It was the German philosopher Emmanuel Kant who defined Psychology as the science of the mind. William James (1892) defined psychology as the science of mental processes. But the word ‘mind’ is also quite ambiguous as there was confusion regarding the nature and functions of mind.

Psychology as the Science of Consciousness: Modern psychologists defined psychology as the “Science of Consciousness”. James Sully (1884) defined psychology as the “Science of the Inner World”. Wilhelm Wundt (1892) defined psychology as the science which studies the “internal experiences”. But there are three levels of consciousness – conscious, subconscious and the unconscious and so this definition also was not accepted by some.

Psychology as the Science of Behaviour: At the beginning of the 20th century, when psychologists attempted to develop psychology into a pure science, it came to be defined as the science of behaviour. The term behaviour was popularized by J.B. Watson. Other exponents are William McDugall and W.B. Pillsbury. According to R.S. Woodworth, “First Psychology lost its soul, then it lost its mind, then lost its consciousness. It still has behaviour of a sort.”

1.3.1 Meaning of Psychology:

People often mean to say personality, thoughts, behaviour, thinking, issues, motives, needs, etc. when they talk about psychology. And

sometimes, *vice-versa*. As you you've seen the scope of psychology is huge and it is now related to many allied fields.

Key aspects of psychology: It is a scientific investigation. That means, there are experiments, there are numbers, there is data, there is sampling, there is a rigorous use of psychological tools, description, prediction, logical criticism, systematic observation, and beyond all, it is evidence-based.

Psychology looks at all kinds of people and social groups, animals included. It is the study of the mind and behaviour – everything included.

Some common meaning associated with psychology are:

The science of mind and behaviour

The mental or behavioural characteristics of an individual or group

The study of mind and behaviour in relation to a particular field of knowledge or activity

Psychology is the scientific investigation of how people behave, think, and feel. It includes underlying mechanisms that involve the environment, biology, and the mind.

Psychological investigations try to describe, predict, analyse, and create actionable outcomes that help people. Actionable outcomes include therapy, learning design, altering protocols at a workplace, etc.

Today, psychology is closely related to fields such as cognitive science, neuroscience, economics, law, public health

1.3.2 Nature And Functions of Psychology:

The following broad branches of psychology will elucidate the overall nature and scope of psychology:

1. ***Clinical psychology***: the study, assessment, prevention, coping, and treatment of mental health issues and disorders such as depression & schizophrenia
2. ***Organizational & industrial psychology***: the study of how professional environments function with respect to employment, assessment & recruiting, workplace wellbeing, conflict resolution, team building, etc.
3. ***Social psychology***: the study of how people interact in social contexts and what variable affect social behaviour, identity, and cognition
4. ***Cognitive psychology***: the study of mental processes that enable thinking, feeling, language, art, etc.

5. ***Behavioural psychology***: the study of human and animal behaviour
6. ***Developmental psychology***: the study of specific factors relevant to a certain age group or developmental stage across a lifespan and trends across the lifespan
7. ***Evolutionary psychology***: the study of human and animal behaviour in an evolutionary context and the study of adaptability and deeply rooted tendencies
8. ***Forensic psychology***: the study of how criminals behave and think
9. ***Neuropsychology***: the assessment of brain functioning in a clinical setting
10. ***Positive psychology***: the study of wellbeing and living a good life
11. ***Neuroscience***: the study of the brain as a biological unit and its specifics that may or may not directly
12. Relate to behaviour, thoughts, or feelings. It includes an understanding of how neurons communicate and function.
13. ***Sports psychology***: the study, training, and coping of sportsmen
14. ***School psychology***: the study of a variety of psychological variables in a school context
15. ***Cyber-psychology***: the study of human behaviour with a focus on internet-based behaviour

1.4 EDUCATIONAL PSYCHOLOGY

Educational psychology, theoretical and research branch of modern psychology, concerned with the learning processes and psychological problems associated with the teaching and training of students. The educational psychologist studies the cognitive development of students and the various factors involved in learning, including aptitude and learning measurement, the creative process, and the motivational forces that influence dynamics between students and teachers. Educational psychology is a partly experimental and partly applied branch of psychology, concerned with the optimization of learning. It differs from school psychology, which is an applied field that deals largely with problems in elementary and secondary school systems.

Educational psychology is a relatively young subfield that has experienced a tremendous amount of growth in recent years. Psychology did not emerge as a separate science until the late 1800s, so earlier interest in educational psychology was largely fueled by educational philosophers.

Many regard philosopher **Johann Herbart** as the "father" of educational psychology. Herbart believed that a student's interest in a topic had a tremendous influence on the learning outcome and believed that teachers should consider this interest along with prior knowledge when deciding which type of instruction is most appropriate.

Educational Psychology is also concerned with problems like: How do children acquire skills? When is learning more effective? What are the factors that help the learning process? How do we measure the amount of learning? Are there any economic methods of memorizing? Why do we forget? Can memory be improved? Does the study of Sanskrit help the study of Hindi?

Psychology helps the teacher to get answers to these questions. It tells us that learning becomes more effective if factors like motivation and interest are taken into consideration by every teacher. The knowledge of psychology has helped the teacher in modifying her approach to the teaching learning process.

The study of Educational Psychology has brought about changes in the approaches to education and therefore we have child centred education. Psychological principles are used in formulation curriculum for different stages. Attempts are made to provide subjects and activities in the curriculum, which are in conformity with the needs of the students, their developmental characteristics, learning patterns, and also needs of the society.

1.4.1 Meaning of Educational Psychology:

Educational Psychology consists of two words Psychology and Education. While General Psychology is a pure science, Educational Psychology is its application in the field of education with the aim of socializing man and modifying his behaviour.

Some definitions of Educational Psychology are given below:

Educational Psychology describes and explains the learning experiences of an individual from birth through old age. - **Crow and Crow**

Branch of Psychology which deals with teaching and learning. – **Skinner**

Educational Psychology is the systematic study of the educational growth and development of a child. – **Stephen**

Educational Psychology is the Science which explains the changes that take place in individuals as they pass through the various stages of development. – **Judd**

Educational Psychology is the science of Education. - **Peel**

Educational psychology is one of the branches of applied psychology concerned with the application of the principles, techniques and other resource of psychology to the solution of the problems confronting the teacher attempting to direct the growth of children toward defined objectives.

More specifically, we can say educational psychology is concerned with an understanding of:

The child - his development, his need and his potentialities

The learning situation including group dynamics and its effect on learning

The learning process-its nature and the ways to make it effective.

Stated differently, the Central theme of Educational Psychology is Psychology of learning.

1.4.2 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:

- 1. Educational Psychology is a science:** (Science is a branch of study concerned with observation of facts and establishment of verifiable general laws. Science employs certain objective methods for the collection of data. It has its objectives of understanding, explaining, predicting and control of facts.) Like any other science, educational psychology has also developed objective methods of collection of data. It also aims at understanding, predicting and controlling human behaviour.
- 2. Educational Psychology is a natural science:** An educational psychologist conducts his investigations, gathers his data and reaches his conclusions in exactly the same manner as physicist or the biologist.
- 3. Educational psychology is a social science:** Like the sociologist, anthropologist, economist or political scientist, the educational psychologist studies human beings and their sociability.
- 4. Educational psychology is a positive science:** Normative science like Logic or Ethics deals with facts as they ought to be. A positive science deals with facts as they are or as they operate. Educational psychology studies the child's behaviour as it is, not, as it ought to be. So it is a positive science.
- 5. Educational psychology is an applied science:** It is the application of psychological principles in the field of education. By applying the principles and techniques of psychology, it tries to study the

behaviour and experiences of the pupils. As a branch of psychology it is parallel to any other applied psychology. For example, educational psychology draws heavily facts from such areas as developmental psychology, clinical psychology, abnormal psychology and social psychology.

- 6. Educational psychology is a developing or growing science:** It is concerned with new and ever new researches. As research findings accumulate, educational psychologists get better insight into the child's nature and behaviour.

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.

1.4.2 Scope of Educational Psychology:

Five major areas covered by Educational Psychology are:

- a. The Learner
- b. The Learning Process
- c. The Learning Situation
- d. The Teaching Situation Evaluation of Learning Performance
- e. The Teacher

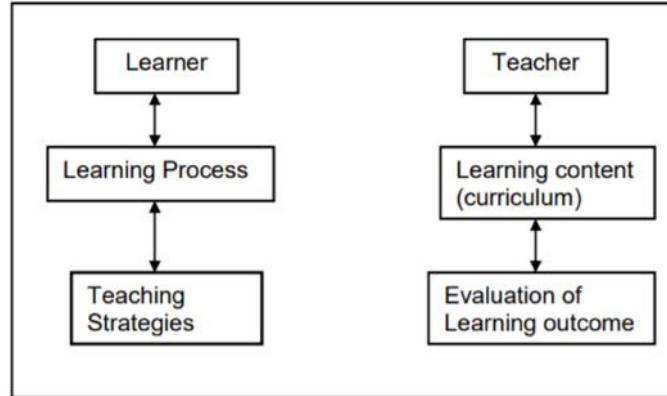


Figure 1.1: the five stake holders of educational psychology

The Learner Educational Psychology acquaints us with need of knowing the learner and deals with the techniques of knowing him well. Following are the topics studies included in it: the innate abilities and capabilities of the individual and their measurements, the overt, covert, conscious as well as unconscious behaviour of the learner, the characteristics of his growth and development at each stage beginning from childhood to adulthood.

The Learning Process:

After knowing the learner and deciding what learning experiences are to be provided, the emerging problem is to help the learner in acquiring these learning experiences with ease and confidence. Hence, it deals with the nature of learning and how it takes place and contains the topics such as laws, principles and theories of learning; remembering and forgetting, perceiving, concept formation, thinking, reasoning process, problem solving, transfer of training, ways and means of effective learning etc.

Learning Situation:

It also deals with the environment factors and learning situation which come midway between the learner and the teacher. Topics like classroom climate and group dynamics techniques and aids which facilitate learning, evaluation techniques, and practices, guidance and counseling etc. which help in the smooth functioning of the teaching learning process.

Teaching Situation:

It suggests the techniques of teaching. It also helps in deciding what learning situation should be provided by the teacher to the learner according to his mental and physical age, his previous knowledge and interest levels. By describing the learner's characteristics, what teaching aids are appropriate for the particular subject can be decided.

Evaluation of Learning Performance:

The main objective of education is all-round development of the learner. It includes cognitive, affective and psychomotor aspects of personality. Educational Psychology suggests various tool and techniques for assessment and evaluation such as performance test, oral test and written test. It does not stop at measurement only. After the testing, results of the test are analysed, causes for poor performance, backwardness in any aspect of development is corrected by guidance and counselling in study habits, examination techniques and learning styles. These are analysed and the learner is helped so that he can overcome the difficulties.

The Teacher:

Educational Psychology emphasizes the need of knowing the self for a teacher to play his role properly in the process of education. It throws light on the essential personality traits, interests, aptitudes, the characteristics of effective teaching etc., so as to inspire, help teacher handle the stress, conflict and anxiety by giving insight into their own personality.

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

1. **Human Behaviour:** It studies human behaviour in the educational context. Psychology is the study of behaviour and education aims at modification of behaviour. Hence the influence of Educational Psychology has to be reflected in all aspects of education.

2. **Growth and development:** It studies the principles governing growth and development. The insight provided by the study will help in scientifically planning and executing learner oriented programmes of education.
3. **The Learner:** The subject-matter of educational psychology is knitted around the learner. Therefore, the need of knowing the learner and the techniques of knowing him 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.
4. **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.
5. **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.
6. **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.
7. **Individual differences:** It is universally accepted that every individual differs from every other individual. This idea has been brought to light by Educational Psychology.
8. **Personality and adjustment:** Education has been defined as the all-round development of the personality of an individual. If educational has to fulfil this function all instructional programmes have to be based on the principles governing the nature and development of personality.
9. **The Teacher:** The teacher is a potent force in 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 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 him for becoming a successful teacher.

10. Guidance and Counselling: Education is nothing by providing guidance and counselling required for the proper development of the child. This is very true, especially in the light of the extremely complex and problematic situation one has to face in the fast-growing world. Educational psychology has come to the rescue by developing principles and practical measures helpful for providing effective guidance and counselling.

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 is concerned with the behaviour of the learner in an educational setting.

Functions of Educational Psychology:

to provide a thorough knowledge of the nature of the child to provide an understanding of the nature, aims and purposes of education;

to acquire familiarity with the technical vocabulary and to further an understanding and an appreciation of the scientific procedures by which the data of educational psychology are obtained;

to provide a significant knowledge of developmental process with particular emphasis upon the promotion, guidance and control of mental and moral aspects;

to provide an understanding of the principles governing learning, together with knowledge of the techniques for guiding improvement in learning and their application to the practical problems in the classroom;

to present the theories underlying the measurement and evaluation of mental abilities, aptitudes, achievements, interest and personality organization;

to present the principles and conclusions regarding the prevention of all types of maladjustments together with the approved practices for achieving satisfactory adjustments;

“Culminating Function” to inculcate in the prospective teacher the realization that the most essential purpose of teaching is that the student learn;

1.5 RELEVANCE OF EDUCATIONAL PSYCHOLOGY TO TEACHERS, LEARNERS, TEACHING AND LEARNING

Educational psychology has contributed considerably to the creation of the modern system of education. The knowledge of educational psychology helps the teacher in the following ways:

1. To understand the Stages of Development: Psychology has clearly shown that human life passes through different stages of development before it reaches adulthood. They are infancy, childhood, adolescence and adulthood. Psychologists have also thoroughly studied the characteristic behaviour patterns in these different periods of life. Identification of these periods with different sets of characteristics and attributes as regards physical, mental and emotional development greatly help educationists to design curriculum and determine appropriate methods of teaching for students at different stages.

2. To Know the Learner: The child or the learner is the key factor in the teaching-learning process. Educational psychology helps the teacher to know his interests, attitudes, aptitudes and the other acquired or innate capacities and abilities; to know the stage of development linked with his social, emotional, intellectual, physical and aesthetic needs; to know his level of aspiration, his conscious and unconscious behaviour; his motivational and group behaviour; his conflicts, desires and other aspects of his mental health. So that perfect guidance and help can be provided and positive attitude towards the learner can be formed.

3. To Understand the Nature of Classroom Learning: Educational Psychology helps the teacher to adapt and adjust his teaching according to the level of the learners. A teacher is teaching in a class but a large number of students do not understand the subject-matter which is being taught. To deal with the students effectively in the class the teacher must have the knowledge of the various approaches to the learning process, principles, laws and factors affecting it then only he/she can apply remedial measures in the learning situation.

4. To Understand the Individual Differences: No two persons are exactly alike. Pupils differ in their level of intelligence, aptitudes, likes and dislikes and in other propensities and potentialities. There are gifted, backward, physically and mentally challenged children. Thus, psychology tells the teacher about the individual differences among the students in the class and the procedure, methodology and techniques to be adopted for them.

5. To Solve Classroom Problems: There are innumerable problems like truancy, bullying, peer pressure, ethnic tensions, cheating in tests etc. Educational Psychology helps to equip the teacher by studying the characteristics of the problem children, the dynamics of the group, behavioural characteristics and adjustments.

6. To develop Necessary Skills and Interest in Teaching: Educational psychology helps the teacher to acquire and develop necessary qualities and skills to deal with the problems created by the pupils, maintain a healthy atmosphere in the classroom and show concern regarding the progress of the child.

7. To Understand Effective Methods of Teaching: Educational Psychology has discovered several new approaches, principles, methods and techniques of teaching which are very helpful in today's teaching-learning process. Educational psychology tells us how significant play and recreation are for the children and how play-way methods turn learning into an interesting task.

8. To Understand the Influence of Heredity and Environment on the Child: Educational psychology helps the teacher to know that the child is the product of heredity and environment. They are the two sides of a coin. Both play a prominent part in the all-round development of the child. While the child is born with a number of hereditary qualities, environment helps them to be modified according to the requirements of the society.

9. To Understand the Mental Health of the Child: Educational Psychology helps the teacher to know what are the factors responsible for the mental ill-health and maladjustment of a student and to suggest improvement thereof. Besides this, it also provides the teacher with necessary insight to improve his own mental status to cope up with the situation.

10. To Understand the Procedure of Curriculum Construction: Curriculum is an integral part of the teaching-learning process. Curriculum should be child-centred and fulfil the motives and psychological needs of the individual because child capacities differ from stage to stage. Educational psychology helps the teacher to suggest ways and means to curriculum framers to prepare sound and balanced curriculum for the children.

11. To Provide Guidance and Counselling: Today guidance to a child at every stage of life is needed because psychological abilities, interests and learning styles differ from person to person. Similarly, what courses of study the child should undertake in future is also a vital question. All these can be answered well if the teacher knows the psychology of children.

12. To Understand Principles of Evaluation and Assessment: Evaluation is an integral part of the teaching-learning process. How to test the potentialities of the child depends upon the evaluation techniques. The development of the different types of psychological tests for the evaluation of the individual is a distinct contribution of educational psychology.

13. To inculcate Positive and Creative Discipline: The slogan of the traditional teachers was "spare the rod and spoil the child." Flogging the child was the chief instrument. Educational Psychology has replaced the repressive system with the preventive system. Now teachers adopt a cooperative and scientific approach to modify the behaviour of the students. Emphasis is laid on self-discipline through creative and constructive activities.

14. Educational Psychology and Research: Educational psychologists conduct research to improve the behaviour of human beings in the educational situation. For this purpose it helps in developing tools and devices to measure the performance and suggest remedial measures thereof.

15. To Know Himself/Herself: Educational Psychology helps the teacher to know about himself/herself. His/her own behaviour pattern, personality characteristics, likes and dislikes, motivation, anxiety, conflicts, adjustment etc. All this knowledge helps him in growing as a successful teacher.

16. Educational Psychology Helps in Professional Growth, Changing Attitude and Innovative Thinking: Inside the classroom, educational psychology has enabled the teacher to achieve proper conditioning of pupils by achieving and directing classroom programmes on human lives. Not only this, educational psychologists are busy in finding out innovations in the field of education. These innovations will bring about professional growth of the teacher.

In Conclusion, we can say that educational psychology has contributed considerably to the creation of the modern system of education. In teaching, we are dealing with three elements – the teacher, the student, and the subject. It has helped teachers, headmasters, administrators, inspectors, guidance and counselling workers, social workers to significantly develop an impartial and sympathetic attitude towards children and form them into integrated personalities.

Check your Progress:

1. Explain the meaning and definition of Educational Psychology

2. Explain the meaning and nature of Educational Psychology

1.6 SUMMARY

- In this first Unit of Educational Psychology, we understood what is meant by Psychology and formally defined it. We understood of

psychology and its need and importance by understanding that psychology is a science of souls and mind.

- We later saw the formal definition of psychology which was:
Psychology is the study of the mind and behaviour. The discipline embraces all aspects of the human experience — from the functions of the brain to the actions of nations, from child development to care for the aged. In every conceivable setting from scientific research centres to mental health care services, “the understanding of behaviour” is the enterprise of psychologists.
- We understood its meaning and nature.
- We later proceeded towards understanding what is meant by Educational Psychology and its relevance in our life. We saw some formal definitions of Educational Psychology which included:
- *Educational Psychology is the systematic study of the educational growth and development of a child. – Stephen*
- We later saw the nature of Educational Psychology as a science, natural science etc. Later we analysed the scope of Educational Psychology and understood the five major areas it covers viz Learner, Learning Process, Learning Situation, Teaching Situation Evaluation of Learning Performance and the Teacher.

1.7 QUESTIONS

1. What is psychology?
2. Explain the meaning and definition of Educational Psychology
3. Explain the meaning and nature of Educational Psychology
4. Explain the meaning and nature of educational psychology.
5. Define educational psychology.
6. Discuss the scope of educational psychology.
7. Explain the nature and functions of educational psychology

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METHOD OF EDUCATIONAL PSYCHOLOGY

Content

- 2.1 Objectives
- 2.2 Introduction
- 2.3 Introspection Method
- 2.4 Observation Method
- 2.5 Experimental Method
- 2.6 Clinical Method
- 2.7 Summary
- 2.8 Questions
- 2.9 References

2.1 OBJECTIVES

After reading this unit, you will be able to: Describe the Introspection method

- State the merits and demerits of Introspection method
- Describe the observation method State the merits and demerits of observation method
- Explain the steps of experimental method State the merits and demerits of experimental method

2.2 INTRODUCTION

In the preceding section, we have analysed the nature, definition, scope and function of psychology of learning. We have also discussed the psychological concept of learning. In this unit, we will describe the important methods of studying psychology of learning. All the methods to study psychology of learning are basically methods of general psychology.

A brief review of the development of these methods will be helpful for you to understand the importance of the subject in greater perspective.

The first effort of conducting systematic experimental studies in psychology was started in 1879 in Germany with the establishment of first laboratory of psychology by William Wundt. The next important method of collecting data was evolved with the development of psychoanalysis as

an independent system of psychology by Sigmund Freud who emphasized importance of the 'unconscious' in understanding behaviour.

In the second decade of 20th century, psychology developed as an objective science of behaviour by the efforts of Pavlov Watson and Guthrie. Experimental and observation methods were developed to collect data to study behaviour. Simultaneously testing movement started with the introduction of statistics in psychology.

Here we will study only the following methods of studying psychology of learning. They are:

- A] Introspection method
- B] Observation method
- C] Experimental method
- D] Clinical method

2.2 INTROSPECTION METHOD

At times, when you experience an emotion like anger or fear, you begin to think of reasons for that state of mind of yours. You say, why have I been annoyed over this or that? Why have I been afraid of such things? The analysis of your emotional state may take place simultaneously with the emotion or it may be done after the emotional state is over. In whatever manner it is done, it gives you an understanding, though rudimentary of your mind. This method of probing into your mental processes is a method of introspection used by psychologists in a much-refined manner. Let us see in detail what do we mean by Introduction along with its merits and demerits.

What we mean by introspection: Introspection is a method of self-observation. The word Introspection is made up of two Latin words. 'Intro' meaning *within* and 'Spection' meaning *looking*. Hence it is a method where an individual is looking within one self.

Angle considered it as 'looking inward'. In introspection, the individual peeps into his own mental state and observes his/her own mental processes. Stout considers that 'to introspect' is to attend to the working of one's own mind in a systematic way.

Introspection method is one of the oldest methods to collect data about the conscious experiences of the subject. It is a process of self – examination where one perceives, analyses and reports one's own feelings.

Let us learn this process with the help of an example, suppose you are happy and in the state of happiness you look within yourself. It is said you are introspecting your own mental feelings and examining what is going on in your mental process in the state of happiness. Similarly, you may introspect in a state of anger or fear; etc Introspection is also defined as the

notice, which the mind takes of itself. Let us see the stages of introspection.

There are three clear stages in introspection.

1. During the observation of external object, the person begins to ponder over his/her own mental state. *For example:* while listening to music, which is to him pleasant or unpleasant, he starts thinking about his/her own mental state.
2. The person begins to question the working of his/her own mind. He/She thinks and analyses: Why has he/she said such and such thing? Why has he/she talked in a particular manner? And so on.
3. He/She tries to frame the laws and conditions of mental processes: He/She thinks in terms of improvement of his/her reasoning or the control of his/her emotional stages. This stage helps in the advancement of our scientific knowledge.

Characteristics of Introspection:

Introspection, being self- observation, has the following characteristics:

1. The subject gets direct, immediate and intuitive knowledge about the mind.
2. The subject has actually to observe his/her own mental processes. He cannot speculate about them.

Introspection Method was widely used in the past. Its use in modern time is being questioned. It is considered unscientific and not in keeping with psychology which has recently emerged out as a positive science. However, it is still being used by psychologists and though its importance is being questioned it is not totally discarded.

Merits of Introspection Method:

It is the cheapest and most economical method of studying behaviour. We do not need any apparatus or laboratory for its use. This method can be used anytime and anywhere. You can introspect while walking, traveling, sitting on a bed & so on. It is the easiest method and is readily available to the individual.

The introspection data is first-hand as the person himself examines his/her own activities. Introspection has generated research which gradually led to the development of more objective methods.

It is still used in all experimental investigation. It is the only method with the help of which an individual can know his/her emotions and feelings. William James has pointed out the importance of this method in these words.

Introspective observation is what we have to rely on first and foremost and always. The word introspection can hardly be defined-it means, of course, looking into our own minds and reporting what we there discover. Everyone agrees that there are states of consciousness.

So far as it is known, the existence of such states has never been doubted by my critics, however sceptical in other respects they may have been.

Limitations of Introspection Methods:

In introspection, one needs to observe or examine one's mental processes carefully in the form of thoughts, feeling and sensation. The state of one's mental processes is continuously changing. Therefore, when one concentrates on introspecting a particular phase of one's mental activity that phase passes off.

For example, when you get angry at something and afterwards sit down to introspect calmly, the state of anger is sure to have passed off and so what you try to observe is not what is happening at that time with yourself but what had happened sometime before.

The data collected by introspection cannot be verified. An individual may not pass through the same mental state again. There is no independent way of checking the data. The data collected by introspection lacks validity and reliability. It is impossible to acquire validity and exactness in self-observation of one's own mental processes.

The data collected by introspection is highly subjective. It has danger of being biased and influenced by preconceptions of the individual. The observer and the observed are the same. Hence there is ample scope for the individual to lie deliberately and hide the facts to mislead others. Introspection cannot be applied to children, animal and abnormal people. Introspection is logically defective because one and the same person is the experimenter and observer. It is not possible for the same individual to act as an experimenter as well as an observer.

Thus, introspection is logically defective.

Conclusion: The limitations of introspection can be overcome by practice and training, by remaining alert during introspection and by comparing results obtained by experts.

2.4 OBSERVATION METHOD

We observe so many things in nature. We also observe the action and behaviour of others and form our own notions about these persons. We look at other persons, listen to their talks and try to infer what they mean.

We try to infer the characteristics, motivations, feelings and intentions of others on the basis of these observations.

So, let us study about Observation method employed by psychologists in detail. With the development of psychology as an objective science of learning behaviour, the method of introspection was replaced by careful observation of human and animal behaviour to collect data by research workers.

In introspection we can observe the mental process of ourselves only, but in observation, we observe the mental processes of others. Hence Observation is the most commonly used method for the study of human behaviour.

Meaning of Observation:

Observation literally means looking outside oneself. Facts are collected by observing overt behaviour of the individual in order to locate underlying problem and to study developmental trends of different types. The overt behaviour is the manifestation of covert conditions within the individual. The study of overt behaviour gives indirect clues to the mental conditions of the individual. Observation means 'perceiving the behaviour as it is'. In the words of Good, 'Observation deals with the overt behaviour of persons in appropriate situations.'

Observation has been defined as: *Measurement without instruments.*

For example, students in a classroom have been labelled as good, fair or poor in achievement and lazy or diligent in study etc. on the basis of observation. Observation is indirect approach to study the mental processes of others through observing their external behaviour.

For example, if someone frowns, howls, grinds his/her teeth, closes his/her fists, you would say that the person is angry by only observing these external signs of his/her behaviour. In the process of observation, following four steps are generally required:

1. Observation of behaviour:

The first step involved in the method of observation is directly perceiving or observing the behaviour of individuals under study. For example, if we want to observe the social behaviour of children, we can observe it when they assemble and play.

2. Recording the behaviour observed:

The observation should be carefully and immediately noted and recorded. Minimum time should be allowed to pass between happening and recording. It will make the observation more objective.

3. Analysis and Interpretation of behaviour:

When the notes of behaviour observed are completed, they are analysed objectively and scientifically in order to interpret the behaviour patterns.

4. Generalisation:

On the basis of analysis and interpretation of the data collected with the help of observation method, it is possible to make certain generalization. Social development and behaviour of children have been described by Child Psychologists on the basis of generalization based on analysis and interpretation of the data gathered through the observation method.

Types of Observation:

1. Natural Observation:

In natural observation we observe the specific behavioural characteristics of children in natural setting. Subject do not become conscious of the fact that their behaviour is being observed by someone.

2. Participant – Observation:

Here the observer becomes the part of the group, which he wants to observe. It discloses the minute and hidden facts.

3. Non-Participant Observation:

Here the observer observes in such a position, which is least disturbing to the subject under study, the specific behaviour is observed in natural setting without subjects getting conscious that they are observed by someone. Non-participant observation permits the use of recording instruments.

4. Structure Observation:

Here the observer sets up a form and categories in terms of which he wishes to analyse the problem. The observer always keeps in view a] A frame of reference b] Time units. c] Limits of an act 5. Unstructured Observation: This is also called as uncontrolled or free observation. It is mainly associated with participant observation in which the observer assumes the role of a member of the group to be observed. Here the individual is observed when he is in his/her class, playground or when he/she is moving about with his friends and class follows without knowing that he is being observed.

Observation is very useful method to study child and his/her behaviour. Observation method, being a commonly used method in psychology, has following merits:

Merits of Observation Method:

1. Being a record of actual behaviour of the child, it is more reliable and objective than introspection.
2. It is an excellent source of information about what actually happens in classroom.
3. It is a study of an individual in a natural situation and is therefore more useful than the restricted study in a test situation.

4. The method can be used with children of all ages. Younger the child, the easiest it is to observe him. This method has been found very useful with shy children.
5. It can be used in every situation-physical activities, workshop and classroom situations.
6. It is adaptable to both the individual and the groups.

Although observation is regarded as an efficient method for psychological studies, it suffers from the following drawbacks limitations:

Limitations:

1. There is great scope for personal prejudices and bias of the observer. The observers' interest, values can distort observation.
2. Records may not be written with hundred percent accuracy as the observations are recorded after the actions are observed. There is some time lag.
3. The observer may get only a small sample to study behaviour. It is very difficult to observe everything that the student does or says. As far as possible observation should be made from several events.
4. It reveals the overt behaviour only- behaviour that is expressed and not that is within.
5. It lacks replicability as each natural situation may occur only once. Considering the drawbacks an observation method, psychologists have suggested various guidelines to be followed for making good observation. Some of these are essential guidelines for making good observation.

Essential guidelines for making good observation:

1. Observe one individual at a time. It is desirable to focus attention on just one individual at a time in order to collect comprehensive data.
2. Have a specific criterion for making observations. The purpose of making observation should be clear to the observer before he or she begins to observe so that the essential characteristics or the behaviour of the person fulfilling the purpose can be noted.
3. Observations should be made over a period of time. To have a real estimate of the true behaviour of a person it should be observed as frequently as possible. A single observation will not be sufficient to tell us that this is the characteristic of the individual.
4. The observations should be made in differing and natural situations in natural settings to increase its validity. For example, a pupil's behaviour in the classroom may not be typical of him; therefore, he should be observed in a variety of settings to know the behaviour most typical of the person.
5. Observe the pupil in the context of the total situation.

6. The observed facts must be recorded instantly, that is just at the time of their occurrence. Otherwise the observer may forget some of the facts and the recording may not be accurate.
7. It is better to have two or more observers.
8. Observations should be made under favourable conditions. The observer should be in position to clearly observe what he or she is observing. There should not be any undue distraction or disturbances. One should also have an attitude free from any biases or prejudices against the individual being observed.
9. Data from observations should be integrated with other data. While arriving at the final conclusion about the individual, one should put together all that we know about the individual from the other sources then we can give an integrated and comprehensive picture of the individual. These precautions must be borne in mind in order to have reliable observations.

2.5 EXPERIMENTAL METHOD

We studied introspection method and observation method used in psychology of learning. But these methods lack scientific objectivity and validity. Experimental method is the most scientific and objective method of studying behaviour. It is the method, which is responsible for assigning the status of Science to Psychology. Let us learn more about this Experimental method.

In 1879, William Wundt established the first psychological laboratory at Leipzig in Germany. Since then, experimental method in psychology has become popular, Experimental method consists of actions performed under pre-arranged or rigidly controlled conditions. Here the emphasis is on experimentation.

Experimentation is where the investigator controls the educative factors to which a group of children are subjected during the period of inquiry and the investigation observes the resulting achievement. J. W. Best describes, Experimental research is the description and analysis of what will be, or what will occur under carefully controlled conditions.

Basic concepts /essentials of experimental method:

- a. Experiments are always conducted in laboratory. Hence the laboratory is essential.
- b. Psychological experiments performed in this method essentially require two people; the experimenter or group of experimenters who perform the experiments and the other is the subject or subjects on whom the experiment is performed.
- c. The key factor in this method is the controlling of conditions or variables. The term 'Variable' means that which can be varied or

changed. By controlling the variables, we can eliminate the irrelevant conditions and isolate the relevant ones. We are thus able to observe the causal relationship between the phenomena keeping all other conditions almost constant.

Let us understand this by an example. If we try to study the effect of intelligence on academic achievement by the experimental method, we will need to determine the causative relation between the two phenomena (variables)- i.e. intelligence and academic achievement. One of these variables, the effect of which we want to study will be called the independent variable and the other the dependent variable.

Thus, the independent variable stands for cause and the dependent variable is the effect of the cause. Other conditions like study-habits, sex, socio-economic conditions, parental education, home environment, health, past learning, memory etc. which exercise a good impact upon one's achievement, besides one's intelligence, are termed interviewing variables.

In Experimentation, all such interviewing variables are to be controlled, i.e. they are to be made constant or equalized and the effect of only one independent variable e.g. intelligence (in the present case), on one or more dependent variable is studied. The interviewing variables made constant, are hence called as controlled variables.

Steps in the experimental method:

The different steps, which are to be followed in conducting a typical experiment.

1. Rising of a problem: In any experiment the first steps is to identify a problem. For example, it has been observed that the students cheat in the examinations. To stop this, it many recommend strict supervision. But it has also been seen that even when there is strict supervision there is cheating, hence problem like cheating under strict supervision or relaxed supervision arises. This problem may lead to experimentation.

2. Formulation of a hypothesis: The next step in experimental method is the formulation of a hypothesis that Strict supervision may lead to less copying in the examination as compared to the relaxed supervision. This hypothesis is now to be tested by experiment.

3. Making a distinction between Independent and Dependent variables: In the example given above, the cheating behaviour of the students will be dependent variable while the nature of supervision will be the independent variable. It is because by changing the supervision the cheating behaviour is expected change. In the present experiment we manipulate the conditions of supervision in order to discover the ways in which they determine the dependent variable that is the cheating behaviour. We may observe the effect of supervision in the experimental

situation and also the effect of relaxed supervision under similar conditions and with the same group of students.

4. Controlling the situational variables: The experiment will not give valid results unless the situational variables are controlled. If the experiment is conducted with different set of students who have been trained in a different manner or have a different value system then the results will be different in comparison to those who have been subjected to experiment earlier. Similarly, the other conditions like the person who is supervising the place of supervision etc. have to be controlled. This means that all those conditions, which might affect the dependent variable, are to be controlled. Since, in any experiment there are numerous conditions which are needed to be controlled, it is many a time difficult to do so. Hence, we take recourse to various types of experimental designs, which we have described earlier.

5. Analysis of the Results: Once the experiment is concluded the results are analysed. In our example we may apply simple percentages to find out in which type of supervision a higher percentage of students have copied. Many a times we apply more sophisticated statistics to analyse the results.

6. Verification of Hypothesis: The last step in the experimental method is the verification of the hypothesis, which we have earlier framed. The result of the experiment exhibits whether the hypothesis is accepted or refuted. We may find that strict supervision leads to less copying. In that case we may conclude that our hypothesis is accepted. If the results are otherwise then our conclusion will be that the hypothesis is refuted.

Experimental Designs:

Experimental method is the most precise, planned, systematic and controlled method of studying behaviour. It uses a systematic procedure called as experimental design. The term experimental design has two different meanings-one is the experimental design which represents the six basic steps we have referred above which are followed in an experiment.

The second meaning of experimental design is selecting an appropriate statistical procedure. Experimental design provides important guidelines to the researcher to carry out his/her research study. Experimental design ensures adequate controls by avoiding irrelevant causes of variability. The layout of a design depends on the type of the problem the investigator wants to investigate. No one design solves all the problems of a research study.

A variety of experimental designs have been developed by researchers in recent years. These designs differ as these are dependent upon:

- i. The nature of problem
- ii. The situation
- iii. The subjects and their availability.

Merits of experimental method:

Experimental method being most precise and scientific has following merits:

1. Experimental method is the most systematic method of getting reliable data.
2. Experimental method enables accurate observations due to controlled conditions.
3. It allows us to establish cause effect relationship between different phenomena.
4. The results obtained are valid and reliable.
5. The findings of the experimental method are verifiable by other experiments under identical conditions.
6. It helps to protect from the subjective opinions. Hence it provides objective information about the problem.
7. It provides adequate information about the problem.
8. In experimental method, experiments are conducted under vigorously controlled conditions. The experimenter can control the application and withdrawal of independent variables.
9. Experimental method increases one's knowledge of psychological facts in child psychology, social and abnormal psychology. It is rightly said the experimental method has made psychology a science.

Demerits of the method Experimental method:

suffers from various following demerits:

1. Experimental method is a costly and time-consuming method as it requires a laboratory and apparatus to conduct it properly.
2. Experiments are conducted in artificially determined pattern of behaviour. In real life situation it is quite different.
3. It needs specialized knowledge and therefore every teacher cannot be expected to conduct the experiment. The scope is limited. All problems of psychology cannot be studied by this method as we cannot perform experiments for all the problems that may come up in the diverse subject matter of psychology.
4. Accurate measurements, in case of human beings, are never possible.
5. It is difficult to always control the independent variable. Therefore, it is not possible to create desired conditions in laboratory.
6. It is not possible to reach certainty in matters of social science including educational psychology.

2.6 CLINICAL METHOD

Meaning:

The clinical method is also called case study method. It is used by clinical psychologists, psychiatrists, psychiatric social workers and teachers in child guidance clinics or mental hygiene centers or in ordinary school situations. Generally, we use this method when we want to understand the causes and sources of people's fears, anxieties, worries, obsessions, their personal, social, educational and vocational maladjustments.

A couple of students in your class are showing poor scholastic achievements or some behaviour problems. You want to understand the causes so that you may plan some treatment procedures. This method will be useful in such conditions. It may be noted that the clinical methods or "procedures are not designed to discover general behavioural trends, laws or relationships. Rather they are concerned with a unique individual who is trouble in and interest is focussed on the immediate, practical question of how to best help him. The starting point of a clinical investigation is an individual who needs or seeks help and the procedure ideally terminates with the better adjustment of the individual." (Sawney and Telford).

The clinical investigator may start with some hypothesis about the probable causes of the difficulty or troublesome behaviour. The tentative hypothesis is supported or disproved by the data collected through the use of case-history, interviews, visits to the home or school and psychological testing. From the data collected, certain deductions are made as to probable treatment. The employment of this method includes the use of case histories, interviews and psychological testing.

A case history traces the family and health, history, hereditary factors, classifies the developmental data, the educational progress, interpersonal and inter- parental or intra-parental relationships, and thus makes us understand the major forces and influences, which have developed and shaped the individual's personality.

The clinical method, in itself, cannot claim to the objectivity attained by the experimental method, but it may afford fruitful new hypothesis which can be tested by the better controlled experimental procedures.

Merits of Clinical Method:

1. Variety of cases
2. Cause and effect relationship
3. Guidance and counselling
4. Individualized method
5. Diagnostic use
6. Special learning disabilities
7. Personality adjustment
8. Wider application

Demerits of Clinical Method:

1. Lack of applications
2. Lengthy method
3. Costly method
4. Lack of trained persons
5. Element of subjectivity
6. Lack of verification
7. Lack of validity and reliability

2.7 SUMMARY

We have learnt, in the above unit, the three methods of studying psychology of learning. But which of the above discussed methods is the best among other four is a difficult questions to be answered.

All the methods have their strengths and weakness and possess some unique characteristics, which make them highly specific for use in a particular situation. A wise psychologist should have a keen insight into the nature of his/her subjects as well as the conditions affecting his/her work and accordingly select a proper method or methods for the objectives.

Study of the behaviour of his/her subjects much depends upon the sincerity, honesty, ability and experience of the investigator, who should always try to keep himself/herself as scientific and objective as possible and leave no stone unturned for the overall analysis of the behaviour of the subject or nature of the phenomena under study.

2.8 QUESTIONS

1. What is Introspection method? State its merits and demerits.
2. What is Observation method? State its merits and demerits.
3. What is Experimental method? State its merits and demerits.
4. What is Clinical method? State its merits and demerits.
5. Compare between Experimental and Observation methods with examples.

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MODULE II

3

GROWTH AND DEVELOPMENT

Content

- 3.0 Learning Objectives
- 3.1 Introduction
- 3.2 Growth and Development
- 3.3 Human Development
 - 3.3.1 Principles of Development
 - 3.3.2 Factors affecting Development
- 3.4 Stages of Development
- 3.5 Developmental Characteristics of Children and Adolescents
 - 3.5.1 Physical aspect
 - 3.5.2 Cognitive aspect
 - 3.5.3 Emotional aspect
 - 3.5.4 Social aspect
- 3.6 Role of the Teacher in Facilitating Growth and Development
- 3.7 Let's Sum up
- 3.8 Unit End Exercises
- 3.9 References

3.0 LEARNING OBJECTIVES

This unit will help you learn the concept and major differences between growth and development, the broad principles and factors that affect growth and development and various stages of growth and development from childhood to adulthood.

After going through this unit, you should be able to:

- elaborate on concept of growth and development
- differentiate between growth and development
- highlight the major principles of growth and development
- explain the factors that influence growth and development
- describe the stages and characteristic of human growth and development from childhood to adulthood
- elaborate on educational implications of the principles of growth and development

- explain the role of the teacher in the facilitation of growth and development during childhood and adolescence

3.1 INTRODUCTION

Psychology is usually considered as “the scientific study of the mind and behavior.” Humans are a mystery; they are not static but constantly changing. This does not just include their physical changes like increase in height, weight, physical structures that change with time and age but also the emotional changes, the psychological changes, the social changes and hormonal changes. The way humans change and at what rate they change differs from individual to individual. There are a number of factors that are responsible for these changes. When a human is born they have specific genetic traits inherited from their parents, such as eye color, height, and certain personality traits, beyond these basic genotypes, there is an interaction that takes place between the genes and the environment that influence how the traits are expressed and altered within the individual at various stages of development right from childhood till death.

In this unit we shall learn the two major concepts of developmental psychology i.e. growth and development and how they differ from each other. We would also learn about the principles of development and various factors that affect the development of an individual. This unit will also highlight various phases of growth and development that an individual goes through in this life time. Knowledge about this will help the teacher to understand her students better and help in catering to different types of learners in her classroom.

3.2 CONCEPT OF GROWTH AND DEVELOPMENT

When we talk about “Growth” and “development” both of them come in pairs. They are often used interchangeably but in the strictest sense of the word, ‘growth’ is different from ‘development’ conceptually. But what is exactly the difference between growth and development in the field of psychology?

In psychology “growth” is a quantitative aspect which may be defined as “the physical change that a particular individual undergoes in his life span.” Growth refers to any physical increase in some quantity as time passes by such as increase in height, increase or decrease in weight or body proportions or general any physical appearance. Hurlock has defined Growth as “change in size, in proportion, disappearance of old features and acquisition of new ones”. Growth refers to structural and physiological changes (Crow and Crow, 1962). Thus, the term growth indicates an increase in any physical dimension.

On the other hand, psychology defines development as “the overall growth of humans throughout their lifespan.” Development is more of a qualitative aspect which includes the understanding of why and how

people change in various terms which may include physical growth or intellectual or emotional or social aspects of human growth.

Some prominent psychologists have defined Development in the following way:

According to Hurlock (1959), “Development is a progressive series of changes that occur in an orderly predictable pattern as a result of maturation and experience.” According to J.E. Anderson (1950), “Development is concerned with growth as well as those changes in behavior which results from environmental situations.”

Therefore, the quantitative measures such as height, length and weight contribute to ‘growth’ whereas development implies change in shape, form or structure resulting in improved working or functioning which are qualitative by nature.

3.3 HUMAN DEVELOPMENT

Humans have a typical life course like animals that consists of various successive phases of growth and development wherein each phase is characterized by a different set of physical, physiological and behavioral characteristics. These phases generally include infancy, followed by childhood, adolescence and finally adulthood including old age. Human development also termed as developmental psychology, is a field of study in psychology that attempts to explain and describe how the changes in human behaviour, cognition and emotional capabilities affect the functioning of the individual throughout their life span, right from zygote till old age.

Human development is a continuous and a life-long process where physical, behavioral, cognitive and emotional growth and development takes place continuously. There are a number of changes taking place in individual’s life in every stages of life, from infancy to childhood, childhood to adolescence and from adolescence to adulthood. Throughout all these processes, each person develops different attitudes and sets of values that guide their choices, relationships, belief systems and understanding. Human development is a scientific study of qualitative and quantitative ways by which people change over time. Physical changes include the change in height, weight, length of hair, etc. Behavioral changes may include change in temper, habits, etc. Emotional development may include stress management, developing empathy and sympathy, etc.

3.3.1 Principles of Development:

The process of development has been studied experimentally. Various studies and researches by psychologists have highlighted certain core principles underlying this process, few of them are stated below:

a. Development follows a uniform and an orderly pattern:

The process of development follows the principle of proximodistal development. This principle describes the direction of development from nearer to far apart. As per this principle development takes place from centre of the body towards outwards. For example, a child develops interest within himself first and then gets interested in others, this is the pattern that is followed. Development also follows the cephalocaudal principle i.e. development tends to proceed from the head downward. For example, the child first gains control of the head, then the arms, then the legs. Then they start gaining control of head and face movements within the first two months. In the next few months, they are able to use their arms to lift themselves up. By the end of year of age, infants start to gain control over their legs and start crawling or walking or standing.

b. Development is not a static process but is a continuous process:

Development does not occur in spurts but is rather a continuous process. The process of development takes place in interaction with the environment in which a person lives. One stage of development serves as a basic framework for the next stage. Growth continues from the moments of conception till the individual becomes mature. It takes place at slow regular pace rather than by 'leaps and bounds'. Although development is considered to be a continuous process, yet the tempo of growth is not even, during infancy and early years growth moves swiftly and later it slacken. For example, the knowledge a child acquires is limited but as he interacts with his environment and the society, he implies the acquired knowledge and learns various skills which will foster his development.

c. Change is constant in Development:

Humans undergo various different changes from their birth till old age. There are numerous changes that occur such as, changes in proportions and sizes, acquisition of new features or disappearance of old features, etc. Self-realization is the main aim of these developmental changes which is labelled as self- actualization in Abraham Maslow's theory. Children's attitude towards change is determined by their knowledge about change and their social attitudes towards it and also how the society treats children in return.

d. Individual differences affect the rate of development process:

All children follow same stages of development that is they all go through the same process of development but at different rate. The time taken by each child to develop may vary depending upon their ability, their social context, the environment in which they grow. Hence, both biological factors and environmental factors affect the rate at which a child may develop. Understanding of individual differences will help us to understand the developmental process in a better way before labelling a child.

e. Maturation and Learning affect development:

Sequence of biological changes that occur within individuals is termed as maturation. Maturation is one of the factors that affect development. For

instance, a four-year-old child is not mature enough to tackle major societal problems. Thus, a certain amount of maturity is required to attain a certain set of skills. Similarly learning is also an important factor affecting development. Right skills should be learnt by the child at the right time. Rich learning environment will help the child to mature and develop in a progressive manner.

f. Development follows general to specific criteria:

The process of development proceeds from general to localized behavior. For example, the foetus moves its whole body initially but is not able to make specific responses. Considering emotional behaviour, the approach of infants to strange and unusual objects is with some sort of general fear response. Later, this fear becomes more specific and leads to different kinds of behaviour, such as, crying, turning away and hiding etc.

g. Development can be predicted:

As talked earlier we are aware that development follows a specific process which is uniform in nature. Development of a child is influenced by genetic as well as environmental factors, but it can be predicted. Specific areas of development, say for example, different aspects of motor development, emotional behavior, speech development, social behavior, concept development, goals, etc. follow predictable patterns. At an early age it is possible for us to predict where the child will lie in the process of development over a certain time span. Mental development of the child cannot be predicted accurately.

h. Social expectations are involved in development:

Every society is driven by certain set of norms, standards and traditions which is expected to be followed by everyone. Development is therefore determined by these social norms and expectations of behavior from the individuals. Children ideally learn values, tradition and customs from the society in which they live and are expected to behave in the manner that is acceptable to their society. Social expectations are also known as “developmental tasks”. Physical maturation, cultural pressures from the society, personal values of individuals are some of the factors that give rise to developmental tasks. The developmental tasks are same as they get transmitted from one generation to in a particular culture. As the society evolves the changing traditions and cultural patterns of a society are learned automatically by children and accepted during their development process. These developmental tasks will help in motivating children to learn as well as will help parents to guide their children as required by them.

i. There are potential hazards to development:

The process of development may be hampered by various potential hazards. These hazards may be physical, environmental or psychological. The hazards may be originated either from the environment in which the child grows or may be due to hereditary factors. These hazards are proved to have a negative impact not just only on physical development of the child but also on the socio-psychological development. Some of the

consequences may be that the growth of the child may be retarded, he may turn out to be a person with aggression or he may encounter adjustment problems.

j. Various traits are correlated with development:

Various traits are found to have either a positive or negative effect on the development of child. We may have observed that the child whose mental development is above average, is found to be superior in many other aspects like health or sociability or special aptitudes. Similarly, a child with sound body and mind is found to be more socially involved compared to those who are unhealthy physically or mentally.

3.3.2 Factors affecting Development:

Growth and development are natural process, but it has been observed that the rate at which individuals grow and develop vary from child to child. Some children develop understanding faster than the others, whereas some acquire skills at a faster rate than others, this is because there are certain factors that influence their development. Few of the factors that affect development are as follows:

Heredity
Environment
Gender
Hormones
Health, Nutrition and Exercise
Socio-Economic Status
Home and Family Influence
Cultural and Societal Influence
Geographical Influence
Learning and Reinforcement

a. Heredity:

Heredity is the transmission of certain traits and characteristics from parents to offspring. Heredity is one of the factors that influence human development. Various characteristics that are transmitted due to heredity may be either physical or psychological. The physical characteristics include height, weight, eye colour, texture of hair etc. and psychological characteristics may include intelligence, personality, creativity and so on. The base on which brain and body grow and manifest in observable appearance and behavior is provided by the genetic code. Diseases and conditions which are genetic by nature such as heart disease, diabetes, obesity, etc., affect development of the child adversely. However, suitable

environmental factors and proper nurturing can bring the best out of the already present qualities in the genes.

b. Environment:

Environment where an individual resides is an important factor that influence human development. It encompasses a total of physical and psychological stimulation that a child needs. The child lives and grows in his environment. Physical surrounding and geographical conditions, the social environment and relationships with family and peers influence early childhood development. Environment provides the necessary input and experiential base for development of the child and it consists of a wide range of stimuli. For example, a child may have inherited music talent from his parents through heredity, but he may not excel in this field if proper environmental conditions are not provided to him.

c. Gender:

The gender of the child is one more important and major factor affecting the physical growth and development of a child. Boys and girls grow in different ways, especially when they are nearing puberty. Boys tend to be taller and physically stronger than girls. On the contrary, girls tend to mature at a faster rate during adolescence, while boys take a longer time. The physical structure of their bodies also differ because of which boys are more athletic and suited for activities that require physical rigour. Their temperaments also vary, because of which they show interest in different things

d. Hormones and Medications:

Hormones influence a vast number of functions in our bodies and belong to the endocrine system. Hormones are produced by glands that are situated in specific parts of the body so that they can control body functions. Their timely functioning is crucial for normal growth and development in children. Imbalances in the functioning of hormone-secreting glands and the quantity of hormones secreted can result in growth abnormalities, obesity, behavioural problems and other related diseases. During puberty, the sex hormones are produced by gonads which control the development of the sex organs and the appearance of secondary sexual characteristics in males and females.

e. Health, Nutrition and Exercise:

The word exercise here does not mean physical exercise as a but refers to the normal play time and sports activities which is required by the body to gain an increase in muscular strength and put on bone mass. Proper exercise helps child grow well and reach milestones on time or sooner. Exercise also keeps them stay fit, healthy and fights off diseases by strengthening their immune system, especially if they play outside because when they play outside, they are more prone to be exposed to microbes.

Nutrition plays a vital role in the process of growth as everything the body needs in order to build and repair itself comes from the food we eat. Malnutrition is a condition that results from either nutrient deficiency or

overconsumption. It can cause deficiency diseases that adversely affect the growth and development of children. On the other hand, overeating can lead to obesity and health disorders like diabetes and heart disease in the long run of life. A balanced diet that is rich in essential vitamins, minerals, proteins, carbohydrates and fats is not only essential for the development of the body but also for the brain.

f. Socio-Economic Status:

Socio-Economic Status plays a pivotal role in human development. It determines the quality of the opportunity a child gets. The index of socio-economic status is determined by parental education, occupation and income. The children of low socio-economic status may develop as mal-nourished, suffer from lack of knowledge in many aspects and their normal development may get hampered. The parenting in high socio-economic status families would be different from low socio-economic status families. Children of the high socio-economic groups of the society get better social opportunities, are nurtured with better nutrition, good medical treatment and are exposed to more intellectual stimulation than low socioeconomic group.

g. Home and Family influence:

Home environment exerts tremendous influence on child's understanding of how he perceives the external world. It helps in building self-concept and prepares him to face the society. For the child, the first step in acquiring knowledge is when the child begins to interact with his parents and other family members. During his early years of development, the behaviours of the child are modulated and influenced by the home environment. Whether they are raised by their parents, grandparents or foster care, they need basic love, care and courtesy to develop as healthy functional individuals. The environment of the family can either be supportive or stressful. If it is supportive, warm and harmonious then child develops normally. In unsupportive and stressful home environment, broken families or uncaring parents in the family, children may end up as individuals who have poor social skills and difficulty bonding with other people as adults, that is like a maladjusted person.

h. Cultural and Societal Influence:

Culture is an umbrella term which includes a system of beliefs, attitudes and values that are transmitted from one generation to the next. It is a product of past human behavior and is also a shaper of future. The development of the child is influenced not only by the family but also by the society and its culture. The child learns the habits, beliefs, attitude, skills and standards of judgment, value system through the process of socialization. The socialization processes of the child take place according to the culture, customs and traditions of the society. For example, greeting someone is a familiar experience but behavioral experiences are different in different cultures. In Indian culture, people greet others by saying namaskar, folding hands or lying down near the feet but in Western culture, people greet by handshake or kissing or saying hello or by hugging each other.

i. Geographical influence:

Where you live also has a great influence on how your children turn out to be. The schools they attend, the neighbourhood they live in, the opportunities offered by the community and their peer circles are some of the social factors affecting a child's development. Living in an enriching community that has parks, libraries and community centres for group activities and sports all play a role in developing the child's skills, talents, and behaviour. Uninteresting communities can push some children to not go outside often but play video games at home instead. Even the weather of a place influences children in the form of bodily rhythms, allergies and other health conditions.

j. Learning and Reinforcement:

Learning involves much more than schooling. It is also concerned with building the child up mentally, intellectually, emotionally, and socially. Each child is equipped with certain abilities which need to be developed and nurtured through proper education and training. Therefore, the first and the most important step is to identify and recognize the ability of the child and the next step is to provide adequate opportunities to develop the same. Thus, adequate education and training have influence on human development. Reinforcement is a component of learning where an activity or exercise is repeated and refined to solidify the lessons learned. An example is playing a musical instrument; they get better at playing it as they practice playing the instrument. Therefore, any lesson that is taught has to be repeated until the right results are obtained.

Although nature contributes much to the growth and development of children, nurture contributes much more. Some of these factors may not be controllable, but there are certain things that you can definitely ensure for your child. This includes ensuring that your child gets enough rest every day, because his development is heavily dependent on the amount of sleep he gets. Pay close attention to child's nutritional and exercise levels, as these too play an important role in promoting child's timely and healthy growth and development.

3.4 STAGES OF DEVELOPMENT

Children go through distinct periods of development as they grow from infants to young adults. What occurs and approximately when these developments transpire are genetically determined. However, environmental circumstances and exchanges with key individuals within that environment have a significant influence on how each child benefits from each developmental event. Each stage of development has its characteristic. Psychologists have separated human life span into stages or periods and identified specific changes that may be expected during each stage. The transition from one stage to the next is gradual rather than sudden. The age groups assigned to each stage of the development are general as shown in the Table 1.0.

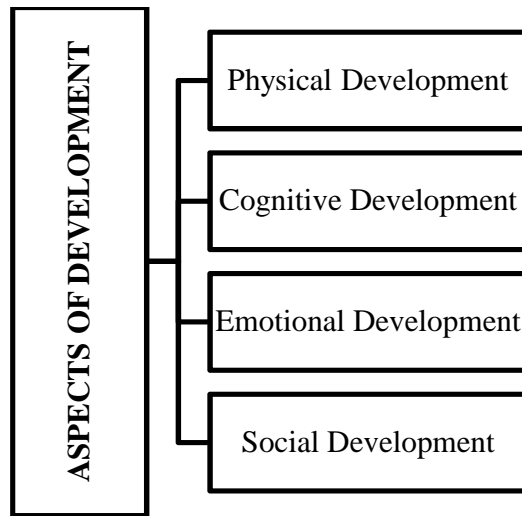
TABLE 1.0
DEVELOPMENTAL STAGES

Age Groups (Years)	Stage of Development	Description of Each Stages
Birth to 2	Infancy	The stage from birth to two weeks is known as neonate. Babyhood is a stage of rapid growth and development. There are changes in body proportions and intellectual growth is observed.
2 to 6	Early Childhood	This is the pre-school period. It is also called the pre-gang age. In this stage, the child gains control over his environment. Social adjustment is observed during this stage.
6 to 12	Late Childhood	This is the primary school age. Here child is expected to acquire the rudiments of knowledge that are considered essential for successful adjustment to adult life. Various essential skills are learnt during this stage of development.
12 to 18	Adolescence	This is the period of physiological change. Sexual maturity is observed in this stage of development. It is also the period of intensified personal interaction with peers of the same and opposite sex.
18 to 40	Young Adulthood	The responsibilities of adulthood include important decisions like choosing a career, a life partner, etc. Young adulthood begins with setting goals and aspirations.
40 to 60	Middle Adulthood	After settling down in thirties and having lived through with rooting phase, the individual starts feeling sense of uprooting and dissatisfaction during the forties. A physical decline in the form of wrinkles, thickening waistlines, greying and thinning hair start appearing. The changes are often termed middle life transition, middle age revolt, mid-career crisis or middle-age slump.
Over 60	Late Adulthood	Aging is a process, which causes loss of vitality. Aged adults are more concerned about their health and death. They frequently visit to doctors. Retirement has the worst impact on aged adults. They gradually lose their sense of meaningfulness in life, whereas some

		develop interests in social service and spend their time in financial planning, reading, travelling, visiting religious places and enjoying nature
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3.5. DEVELOPMENTAL CHARACTERISTICS OF CHILDREN AND ADOLESCENTS

The rate of growth and development among children and adolescents takes place at different rates. Each individual is born unique, with a distinct personality and encounters various life experience. For this reason, age is not the only sign of where a particular child or adolescent is in terms of development. The different aspects of development are as follows:



3.5.1. Physical Development:

Physical growth and development describe not only the physical development but also psychomotor changes in an individual. These include the genetic make-up, ethnicity, race, gender, nutrition and diet, exercise, sleep patterns, use of tobacco, alcohol or other drugs, stress and stressful life events, environmental toxins and socioeconomic status.

a. Infancy:

The physical development is very rapid during infancy. At birth a baby is generally 18 to 20 inches long and 3 kg in weight. He grows about three times after a year. When he reaches two years of age, he attains a length of 33 inches. At birth the brain is almost one fourth of the final developed weight. Legs and trunk gradually lengthen. There is significant increase in the length of arms and use of muscles. The first nine months of a child are a period of rapid growth. During the first two months a baby shows postural changes. He sits at seven months, creeps by ten months, stands alone at thirteen months and walks by thirteen to fifteen months. This development follows a proximodistal sequence. By six months milk teeth appears.

b. Early Childhood Stage:

Early childhood stage covers from 2 or 3 years to 6 or 7 years. Rate of growth during this stage becomes slow in comparison to previous stage. At the age of six years a child becomes 43 to 45 inches tall. Boys are found to be slightly taller than girls. Body proportions change and head grows at a slower rate. Hands and feet also grow bigger. Muscles grow larger and stronger. Hand-skills like brushing the hair, bathing and better toilet habits are established at this stage. The child can draw pictures, learns to hop, skip, jump, run, climb and dance during this stage. A major development task for a child during six years of life is to acquire a gender identification. The environment is the most powerful factor which helps in shaping the gender identify among children.

c. Later Childhood Stage:

During later childhood period (6 years to 12 years of age) physical growth is initially slow and then gets accelerated. Arms and legs grow faster and the child appears tall and thin. He loses his milk teeth and permanent teeth appear. The sense organ, muscles and brain are more or less mature. The overall appearance of the child changes during this stage. Boys are slightly taller than girls. Sex differences begin to appear during this stage. Child continues to grow in the strength, speed and coordination that are needed for motor skills. He climbs trees, walls etc. The child gains full control over the movement of his limbs. Being active and participating in games helps the child to develop a concept of himself. He gets feedback regarding his desirability, worth and status from other people.

d. Adolescence Stage:

The period of transition from childhood to adulthood is called adolescence. It is one of the crucial stage of development. In Indian conditions the period of adolescence may vary from 12-13 years to 18-21 years. A.T. Jersild defines adolescence as “the span of years during which the boys and girls move from childhood to adulthood.” All types of changes like biological, physical, social, intellectual, moral etc. take place during this stage of development. At the early adolescent years, there is a rapid increase in height and weight. By the age of seventeen in girls and eighteen in boys, the majority of them have reached 98 percent of their final height. Sex differences become very prominent during this stage. Primary and secondary sex characteristics appear. Sexual development is the most unique features of adolescence stage. The boys and girls are attracted towards the opposite sex.

3.5.2 Cognitive Development:

Cognitive abilities grow and mature with age or in different stage of development. These include abilities such as attending, perceiving, observing, remembering, imagining, thinking, solving problems and growth of intelligence as well as of language.

a. Infancy:

The child at infancy stage starts to react to light, sound and temperature (external stimuli). In this age the child can imitate, discriminate and

recognize things to some extent. A Swiss psychologist Jean Piaget termed this stage as sensory-motor stage of development which covers first 18 months of life. He gradually acquires the sense of shape, size, form and color. He learns things through play, imitation and manipulation. He develops the skill to recognize known and unknown persons. He fails to understand the difference between fact and fiction. He usually puts forward embarrassing questions to the parents which show reflects his inquisitiveness.

b. Early Childhood:

During this stage child's contact with environment increases gradually and he starts to explore things. The questions posed here are often "why". The child develops general intelligence, perception, memory, learning, problem solving and language. Jean Piaget named this stage as the stage of pre-operational stage which covers 1 ½ years to 6 years of age. In this stage, development of language takes place and the child is able to talk and form simple concepts but it is difficult for him to understand reversibility of operations. For example, if water contained in a tall narrow glass is poured into a small broad glass, the child will judge that there was more water in the narrow glass than when it is poured in the broad glass.

c. Later Childhood:

Later childhood is characterized by mental development. Child becomes more inquisitive which indicates his thinking capacity. Thinking and imagination are the key features. As per the views of Piaget this is the stage of concrete operations which covers the period from 7 to 11 years. During this stage, the child learns how to organize systems of classification for concepts acquired by him. The child becomes capable to understand the cause and effect relationship. The child at this stage develops better concepts of length, distance, time, area and volume. The abilities of understanding, memory, reasoning, attention and discrimination are developed to a great extent. The child is now equipped with a rich store of vocabulary. Child's speech becomes increasingly socialized and communicative. At this stage the child develops interest in performing creative and productive work.

d. Adolescence:

At this stage the child attains intellectual maturity Due to the interaction between maturation, experience, education and training intellectual maturation takes place. Memory and imagination increase to a considerable extent. The adolescent can concentrate on any activity for a longer period. He also develops ability to take decisions. According to Piaget this stage is known as the stage of formal operations which covers the period from 12 to 15 years. In this stage the youngster acquires the ability to think and reason beyond his own immediate world.

He applies formal logic to solve his own problems, and approaches them more systematically. The adolescents take interest in scientific pursuits. Towards the end of the adolescence an individual has a complete mental preparation for a full-fledged adult life.

3.5.3. Emotional Development:

The term emotion is derived from Latin term 'emovere' which means to stir, to agitate to move. Hence, an emotion is referred to as a stirred-up state of agitation. We feel agitated or excited when we are angry, fearful, happy, etc. There are different emotional development occurring at various stages of human life. This includes developing feelings and emotional responses to events; changes in the child/ young person understanding their own feelings and expressing them appropriately.

a. Infancy Stage:

Infants as soon as they are born start to display various distinct emotions. His emotional reactions are diffuse and gross. He cannot show specific reactions like anger, fear and love. However, by the age two differentiations of emotions are marked. Watson states that emotions of fear, anger and love can be identified even in very young infants. After the baby is a few weeks old, he starts smiling and crying to give expression to his feeling of pleasure and contentment.

b. Early Childhood Stage:

Emotional expression of the child are refined as the child grows. He becomes more definite and grows in intensity. His likes, fears and dislikes become more intense. Curiosity and inquisitiveness are characteristic features here. The child feels satisfied when his questions are answered. With growth and maturity in age comes decline in overt expression of emotional reactions. Previous violent emotional reactions are now expressed in subdued form among children fear at first is general rather than specific. As children grow older fear responses become increasingly specific. The child shows his fear by running away to avoid the situation that brightens him. He also shows jealousy towards other when he finds them possessing things which he does not have.

c. Later Childhood Stage:

At this stage, the emotional behaviour of the child is guided by rational expressions. His experiences of intense emotional feelings of love, hate and fear lasts for a long period of time. He is able to have control over his emotions. Emotions of wonder dominate the child at this stage. He shows anger if anything goes against his interest. Anger is expressed in a manner of refusal to speak. At this stage, the children enjoy the company of the persons whom they love. Joy, pleasure, love, curiosity, grief and affection appear in this stage.

d. Adolescence Stage:

Adolescence period is marked by heightened emotionality due to change of roles in home, school and society. It is due to the unfavorable relations in home. Parents and teachers in most cases are responsible for heightened emotionality in adolescents because they do not prepare their children to meet the problems of adolescence. When the child becomes an adolescent, society and parents expect him to think and act like an adult for which he is not physically and intellectually matured. In adolescence there is attraction towards the member of opposite sex but the adolescent is not

able to understand the correct social behaviour, how to make friendship with the members of opposite sex, which create emotional tensions in him. Adolescents come in conflict with their peers and family members who fail to understand them. School failures cause emotional disturbance among the adolescents. Vocational problems also create emotional disturbances.

3.5.4 Social Development:

Garret regards social development as the process whereby “the biological individual is converted into a human person.” Social development is closely associated with mental, physical and emotional aspects of development. Social development can be defined by Hurlock as social development is the “attaining of maturity in social relationships”. This is process of gaining knowledge and skills needed to successfully interact with others. At birth, the child is neither social nor unsocial. When the child grows up, he develops some social behaviour which makes him an acceptable social being. An individual’s social and emotional behaviour is so closely interlinked that feelings of jealousy, shyness, affection and sympathy which are primarily regarded as emotional responses can also be treated as social forms of behaviour.

a. Infancy Stage:

During the first few months the child begins to make social contacts with the persons in his social environment such as mother, father, grandmother, elders who care for him. He becomes aware of the individuals, who stimulate in him the feeling of satisfaction. The child soon learns to differentiate between his mother and other persons. Social responses that starts early in life are those of smiling and laughing. During the second half of the first year the child shows negative response to strangers. During this period the child displays the tendency towards negativism by responding to almost every request with a ‘no’. The child at this stage is likely to have many phantasies.

b. Early Childhood Stage:

In this period the child usually has one or two friends with whom he identifies and plays for short intervals. The young child selects his playmates of his own age from his immediate neighbourhood. He selects friends who provide him friendly companionship ship. The child at this stage often quarrels and fights. The child shows his sympathy by helping others in difficulty. He needs recognition and praise. He needs approval of adults. Feeling of being ignored makes him naughty in the hope of getting attention that he craves for.

c. Later Childhood Stage:

At this stage the child enters, the school and wants to have many friends. He is interested the play activities that involve the group. He desires to be in the group of friends of his own age and sex. The peer approval at this stage is linked with the strong desire for friendship and leads to cooperative behaviour. The child shows interest in what happens in the outside world. He becomes more extroverts in this stage. Quarrels are also

common among friends during this period. One important development that takes place is the increasing interest and ability in organized activities and in team work. They form clubs or gangs for games, sports and other social activities. These gangs are formed separately for boys and girls. However, these groups are often short lived. Different qualities like taking up responsibility, self-control, self-reliance, obedience, discipline etc. develop in this stage.

d. Adolescence Stage:

The adolescents have a strong loyalty and devotion to their groups. They are deeply influenced by peer groups and their decisions. At this stage, the adolescent acquires many habits, attitudes, ideals and social skills. During early adolescent period the close-friend is usually a member of the same sex. At the later adolescent period, one usually tries to seek friendship with a member of the opposite sex. However, this is not generally permitted in some cultures, and so same sex friendships are more common. Identification with peer groups, hero-worship, growth of patriotic spirit, development of a sense of sacrifice and leadership are some of the important features of the social development of the adolescent.

3.6 ROLE OF THE TEACHER IN FACILITATING GROWTH AND DEVELOPMENT

The teacher and the school have a major role in facilitating the overall development of children once they are enrolled in the school. A teacher should accept and make students accept the reality of physical and biological changes that are taking place so that the transition takes a smooth course without causing any psychological disadvantage. The teacher needs to create challenging conditions where there is effective coordination of physical, mental and other functions in order to ensure adequate adjustment to probable life situations. Teacher should ensure that secure effective and desirable responses are made, and prevent or eliminate ineffective or undesirable ones. One way of doing this is to arrange conditions in a way that make desirable responses satisfying and not annoying. Positive training in self-direction and self-control should be given to students. Some of the following points should be kept in mind while guiding them:

- Control and guidance must come from the student himself under the teacher's supervision.
- Harsh, strict and unsympathetic control and prescription of every detail of conduct leaving no place, for self-control and self-direction are not conducive to student's mental health and adjustment to life's events.
- Proper guidance, rational shifts of treatment, and principles of autonomy should be judiciously applied to ensure smooth passage through the turbulent period of student.

It is around the adolescence stage that students reach the higher levels of their school education. A teacher needs to receive adequate knowledge and skills with due preparedness in order to handle their emotional and social needs. The teacher should appreciate the fact that students at this stage are prone to revolt against established norms, rules, and authority, they should keep themselves prepared to provide explanations and rationale for the beliefs and values, which your students would question. Students at this time need proper guidance to decide on the right course of action.

They need supportive judgments to do things, which provide them self-confidence and self-assurance. The range of individual differences in mental ability among adolescents is wide. Teacher needs to use some plan of classification to secure homogeneous groups in respect of significant abilities and achievements so that curricular and instructional needs can be suitably met. Studies have indicated that in certain tasks a student's performance would improve when others (teachers) are around. This phenomenon is called social facilitation. However, this is not a universal phenomenon. Still other studies have shown that when a student is first trying to learn something new, the presence of others is detrimental. In such a situation, the teacher has to assess the situation (considering the class as a social unit) and the personality traits of his students and accordingly he should facilitate their growth and development.

3.7 LET'S SUM UP

In this unit, we have studied the concept of human growth and development and also how they are related to each other. Various stages of human development were discussed and the characteristics of each stage have also been elaborated. The principles of development, their importance and need to study them scientifically have been discussed. Adolescence is a period of transition between childhood and adulthood which is accompanied by various physical, cognitive, emotional and social changes due to which a number of problems arise. During this period, adolescents are considered neither as children nor as adults. Their status remains ambiguous. This stage is considered one of the crucial stages of development where the role of teacher is of great importance. How a teacher can help her students grow and develop in a positive manner has also been discussed in this unit.

3.8 UNIT END EXERCISE

- Growth and Development occur simultaneously. Elaborate.
- Explain the principles of development.
- Enlist various factors affecting development of the child.
- How will culture and society influence the development of child?
- “Adolescence is the most crucial stage of development” Justify
- How will you as a teacher help your children to develop positively?

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FACTORS AFFECTING GROWTH AND DEVELOPMENT

Content

- 4.0 Learning Objectives
- 4.1 Individual Differences
 - 4.1.1 Concept of Individual Differences
 - 4.1.2 Causes of Individual Differences
 - 4.1.3 Individual differences within and among the learners
 - 4.1.4 Educational Implications
- 4.2 Heredity and Environment
 - 4.2.1 Concept of Environment
 - 4.2.2 Concept of Heredity
 - 4.2.3 Relevance importance of Heredity and Environment
 - 4.2.4 Educational Implication
- 4.3 Maturation
 - 4.3.1 Concept of Maturation
 - 4.3.2 Characteristics of Maturation
 - 4.3.3 Relevance in Education
- 4.4 Let's Sum up
- 4.5 References

4.0 LEARNING OBJECTIVES

This unit will help you learn the concept individual differences, factors that affect individual differences and in-depth detail of environment and heredity as major factors affecting growth and development. The concept of maturation has been elaborated in order to make clear that it is also on of the process that occurs simultaneously along with growth and development. Development. After going through this unit, you should be able to:

- to understand the concept of individual differences
- to determine characteristics of individual differences
- to analyse individual differences that exist within and among learners
- to elaborate on heredity and environmental factors affecting growth and development

- to understand the importance of the role that they play in determining individual differences
- to understand the process of maturation that is associated with growth and development

4.1 INDIVIDUAL DIFFERENCES

No two individuals are alike, whether in weight, height and strength, in acquired skill or knowledge, in intellect, in emotionality, temperament and morals. The development among children occurs at different rates. This, in turn, creates variations among individuals (i.e., individual differences). These differences can be either quantitative or qualitative. Some children grow rapidly as compared to others. For children in any pre-school classroom setting, the differences in personality, intelligence, temperament, achievement and physical factors such as height and weight, are worth noting and reflect a wide range of variations. Apart from this there are also racial and gender developmental variations. Therefore, it is essential to understand the concept of individual differences on which one child is compared to another. An understanding of individual differences not only provides the foundation for recognizing normal variations as well as extreme differences among children but is also useful for identifying those who may have special needs. In general, understanding the concept of individual differences will help in enhancing the familiarity of the various developmental levels within individuals.

4.1.1. Concept of Individual Difference:

Various psychologists and research scholars have defined individual differences. Some of the definitions are stated below:

- According to Osborne, “*Individual differences is the dissimilarity between persons that distinguish them from one another*”. It stands for those differences which in their totality distinguish one individual from another.
- Carter B. Good defines individual differences as *the variation or deviations among individuals in regard to single characteristics or a number of characteristics*. Individual differences stand for the variation or deviations among individuals in regard to a single characteristic or number of characteristics.
- “*Variations or deviations from the average of the group, with respect to the mental or physical characters, occurring in the individual member of the group are individual differences.*” (Drever James)

From the above definitions it is clear that each student is a unique individual, different in cognitive and affective development, ability, social maturity, motivation, learning styles, needs, capabilities, interests and potential. Other than this, there are various other factors that affect student differences, for example innate differences in intelligence, differences in economic and social and background, variations in learning experiences,

etc. In view of these factors affecting individual differences, catering to it should aim for understanding why students are able or unable to learn well, what are their potentials and finding appropriate ways to help them learn better. The broad aim of education is to enable each student to attain all-round development of the child as per their attributes they inherit. To achieve this, it should be taken into consideration that the students should be provided with suitable assistance and guidance in accordance with their learning needs, so that they can develop their potential to the fullest.

Skinner has described “*individual differences as including any measurable aspect of the total personality.*” It is clear from the above definition that individual difference comprehends each and every aspect of human personality which is measurable in some way. Plato had recognised individual differences and divided human beings into types based on the old classification of traits which is threefold – physical, mental and moral. A more comprehensive classification is given by Gates which is enlisted below:

• Physical traits		• Height, weight, built, appearance, facial expression, health
• Volition		• Characteristics relating to voluntary control of all forms of actions, e.g., strength of will, lethargy, etc
• Character		• Reaction tendencies towards situations involving moral, ethical and religious codes and other socially approved standards of conduct, e.g. honest, decent, humane, unselfish, etc.
• Acquired interest:		• Knowledge and technical skill
• Mental traits		• Intelligence, as a measure of general endowment, and more specific forms of mental activity as in memorizing, perceiving, reasoning, imagining.
• Special capacities		• Musical, artistic, mechanical, loco-motor and social aptitudes
• Temperament:		• Emotional tendencies and behaviour like nervous stability.

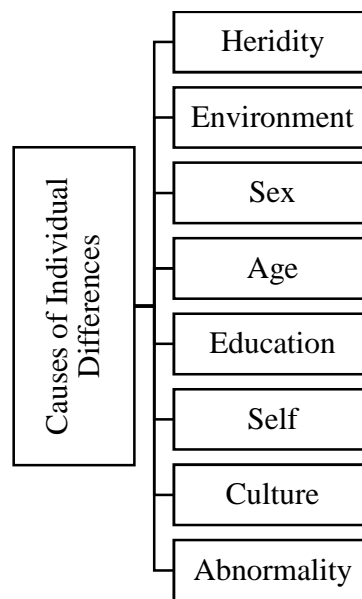
McNemar and Terman discovered the following differences between men and women, on the basis of some studies:

- (i) Women have greater skill in memory while men have greater motor ability.
- (ii) Handwriting of women is superior while men excel in mathematics and logic.
- (iii) Women show greater skill in making sensory distinctions of taste, touch and smell etc., while men show greater reaction and conscious of size- weight illusion.

- (iv) Women are superior to men in languages, while men are superior in physics and chemistry.
- (v) Women are better than men in mirror drawing. Faults of speech etc. in men were found to be three times of such faults in women.
- (vi) Young girls take interest in stories of love, fairy tales, stories of the school and home and day-dreaming and show various levels in their play. On the other hand, boys take interest in stories of bravery, science, war, scouting, stories of games and sports, stories and games of occupation and skill.

4.1.2. Causes of Individual Differences:

There are various causes which are responsible in bringing individual differences, few of them are stated below:



a. Heredity:

Change from one individual to other is due to heretical traits. An individual’s size, height, shape, colour of hair and eyes, shape of face, nose, hands and legs, complexation etc in other words entire structure of the body is determined by his qualities that are inherited from his parents. Intellectual differences to a great extent influenced by hereditary factor.

b. Environment:

Environment brings differences in activities, attitude, behaviour and life-style characteristics, etc. Environment does not refer only physical surroundings but also the different types and varieties of people, the society, their culture and customs, traditions, ideas and belief systems. Social heritage is provided to the child by his social psychological environment. The customs that are followed, the socio-economic status and the family environment interaction amongst members and then friends and school environment are a variety of conditions that help in determining individual differences. No two human beings are same even

though they belong to the same family or have similar schooling, will have same environment. The psychological environment is determined by the interpersonal relationship amongst parent -child and other members of the family and also peers.

c. Sex:

Due to variation in sex one individual differs from other. Men are assumed to be stronger in mental power whereas on the other hand, women on the average show small superiority over men in memory, aesthetic sense and language. Women excel in shouldering social responsibilities and have a better control over their emotions as compared to men.

d. Age:

Age is another factor responsible in bringing about individual differences. Ability to learn and capacity to adjust naturally grow with age. When one grows in age one can acquire better control over our emotions and feelings and also hold better social responsibilities. When a child grows maturity and development goes side by side.

e. Education:

Education is one major factor which is responsible for individual differences. There is a wide gap in the behaviours seen in educated and uneducated persons. All traits of human beings including social, emotional and intellectual are not just controlled but are also modified through proper education. This education then brings a change in attitude, behaviour, appreciations, personality. It is observed that the educated persons are guided by their reasoning power whereas uneducated persons are guided by their instinct and emotions.

f. Self:

All siblings have common heredity and environmental factors, yet no two siblings in a same family are same. Individual differences are due to the particular constitution of self the individual himself. This difference is due to the different genes inherited by the individual as well as differences in environment.

g. Culture:

There has been a tendency in psychology to ignore the experiences of people from different cultures. Cultural differences also cater to individual differences.

h. Abnormality:

A further issue that is often included in the section of individual differences is what psychologists refer to as abnormality. However, the concept of abnormality is also a highly controversial issue. The judgment that somebody is abnormal is relative and is based on factors such as culture, class, religion, sexuality and so on.

4.1.3. Individual Differences within and among the Learners

Individual differences within and among learners is due to various reasons some of them are as follows:

a.Physical Differences	a.Differences in Intelligence	a.Differences in Attitudes
a.Differences in Achievement	a.Differences in Interest	a.Differences in Motor Abilities
Differences in Psycho-Motor abilities	Differences in Values	Differences in Study Habits
Differences in Self-Concept	Differences due to Nationality	Differences due to Economic Status
Emotional Differences	Personality Differences	Differences in Social and Moral development

a. Physical Differences:

Various physical individual differences include shortness or tallness of body height, darkness or fairness of complexion, fatness or thinness of body parts, strength or weakness of individuals. Individuals differ in variety of aspects like height, colour of eyes or skin or hair, weight, size of body parts like hands, feet, mouth, arms, nose, etc. length of waistline, structure and functioning of internal organs, facial expression, mannerisms of walk and speech, and other such heredity or acquired physical characteristics.

b. Differences in Intelligence:

Every individual possesses different level of intelligences. Individuals differ in intellectual abilities and capacities like power of thinking, imagination, reasoning, creativity, etc. On the basis of above differences individuals are usually classified as idiot, border line, normal, very superior or genius.

c. Differences in Attitudes:

Every individual has difference in attitudes, it may be towards different people or objects or situations or institutions and even authority. Some learners may have a positive attitude whereas, some may have a negative attitude towards a specific topic, subject and profession

d. Differences in Achievement:

Achievements are usually measured through achievement tests. Through these tests it has been found that individuals vary in their achievement abilities. These differences are very much visible in reading, writing and in learning mathematics, and also are visible among the children who are at

the same level of intelligence. These differences are due to the differences in the various factors that influence intelligence and the differences in the experiences, interests and educational background.

e. Differences in Interest:

When you observe some students like a particular subject, teacher, hobby or profession than other, then it develops interest. Differences in interest may be due to factors like gender, family background, differences of culture and nationality etc.

f. Differences in Motor Ability:

Motor abilities include reacting time, speed of action, steadiness, rate of muscular moment, resistance to fatigue etc. Every individual has different motor abilities at different stages of growth and development. For example, it is easy for some people to do mathematics related activities whereas some may find it difficult though they are at same level.

g. Difference in Psycho-Motor Skills:

Psycho-Motor skills basically are related with skills and talent development. Some learners differ in this area also. For example, some students may easily learn how to operate a machine and some may not. A wise teacher ideally should diagnose students' psychomotor skills and abilities, after recognition she should strive hard to encourage them in proper desirable direction.

h. Difference in Values:

Every individual holds a particular value system. Values are given much more importance by every learner. Some learners may value materialist life style whereas others may value moral or religious life. So, the role of education is to mould the minds of young generation to maintain a balance between materialism and spiritualism.

i. Difference in Study Habits:

Study habits are behaviours reflected by individuals while preparing for exam or test. Some students markedly differ from others when study habits are taken into consideration. Some students are studious by nature, they study all the subjects with interest but other may not be studious and may study just one day before exams. Some individuals prefer to study in isolation and some prefer to study groups.

j. Difference in Self- Concept:

Self- Concept is an umbrella term that consists of attitudes, judgment and values of an individual relating to his behavior, abilities, and qualities in totality. Some students possess a positive self- concept that helps in boosting their confidence level and performance level when compared to those who have negative self.

k. Differences due to Nationality:

Nationality is defined as the legal right of belongingness to a particular nation. The individuals belonging to different nations differ in respect of not only physical characteristics but also mental characteristics, interests and personality. For examples Russians are tall and stout; Ceylonese are short and slim; Germans are too serious and have no sense of humour; Indians are timid and peace-loving, etc.

l. Differences due to Economic Status:

The economic status or the economic background of the learner is one of the characteristics that is responsible for individual differences. Differences in child's interests, attitude, personality, etc. are caused by economic differences.

m. Emotional Differences:

Every learner possesses a different level of emotional difference that means every individual differ in their emotional reactions to a given situation. Some are irritable and aggressive as they get angry very soon. There are others who are peaceful by nature.

n. Personality Differences:

It is an accepted fact that some people are honest while others are dishonest, some are aggressive, others are humble, some are social, others like to be alone, some are critical and others are sympathetic. These are nothing but differences in personality. On the basis of differences in personality, individuals have been classified into many groups. Teacher should keep in mind that she caters to learners who possess different personality traits while imparting education to them.

o. Differences in Social and Moral Development:

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

4.1.4. Educational Implications:

As teachers working to impart education to learners, you must have observed and noticed that the learner learns concepts and facts differently. Some of the learners learn them easily while others take time. For example, consider the case of drawing of a diagram of a flower or a plant. Some students may do it quickly and neatly whereas few may take time and may not be up to the mark. Why do you think there is some kind of variation in learning? Further, you might have observed that there are certain variations in students handwriting or scholastic achievement in school subjects. It is difficult to find one specific reason for such differences. The causes may be due to two major factors i) Heredity and ii) Environment. Many other factors are also responsible for individual differences as stated above. It is important for the teacher to understand what differences are visible among and within learners and also how to

cater individual differences. Importance of individual differences are enlisted below:

- The study of individual differences helps to understand not only what makes humans similar to one another, but also what makes them different. By considering the variations that can occur from one person to another, one can best understand the full range of human behaviour
- Knowledge of individual differences leads to the effective teaching
- It is important to understand that the concept of individual differences is the basis upon which one child is compared to another. An understanding of individual differences provides the foundation for recognizing normal variations as well as extreme differences among children and, thus, for identifying those who may have special needs
- The aim of education is to enable each student to attain all-round development according to his/her own attributes. To achieve this, students should be provided with suitable assistance and guidance in accordance with their abilities and learning needs, so that they can develop their potential to the full.
- Aims of education, curriculum, method of teaching should be linked with individual differences considering the different abilities and traits individual.
- Curriculum should be designed as per the interest, abilities and needs of different students.
- The teacher has to adopt different types of methods of teaching considering individual difference related to interest, need, etc.
- Some co-curricular activities such as Drama, music, literary activities (Essay & Debate Competition) should be assigned to children according to their interest.
- Teacher uses certain specific teaching aids which will attract the children towards teaching considering their interest and need.
- Various methods such as playing method, project method, Montessori method, story telling methods are to be used considering/discovering how different children respond to a task or a problem.
- The division of pupils into classes should not be based only on the mental age or chronological age of children but the physical, social and emotional maturity should be given due consideration.

4.2 HEREDITY AND ENVIRONMENT

The influence of heredity and environment has a very significant role on the development of an individual which cannot be ignored. The

personality of individual that is developed over time is the product of both heredity and environment. In some cases, heredity may overpower development and in certain other cases environment may overpower heredity and may have a very strongly influence on growth and development. Individuals differ in their character, physique and personality traits because of these differences. A balanced and harmonious interaction and equation has to be maintained for a balanced and harmonious growth and development of the child.

4.2.1. Concept of Environment:

Environment has a significant influence on human beings. Environment is everything excluding heredity, that influences an individual's growth and development. An individual's environment is related to all those stimuli which he goes on facing almost continuously from the moment of fertilization. It includes all environmental factors that affect the individual's development. According to Woodworth, "*Environment covers all outside factors that have acted on the individual since he began life*". It is an umbrella term inclusive of all the extrinsic forces which influences and conditions that affect the growth and development of the individual. Environment influences include Education, training, experience, nourishment, etc. Many definitions of environment are given by various psychologist and research scholars. According to Anastasi, "*The environment includes everything that affects the individual except his genes*". Douglas and Holland define the term environment as "*the aggregate of all the external forces, influences and conditions, which affect the life, nature, behavior, the growth, and development and maturation of living organisms*". Gilbert defines *environment as anything in the immediate surrounding or an object that exerts a direct influence on it*. Environment includes various types of forces like social, physical, moral, economical, political, emotional and cultural forces. A favourable environment is essential to cater to the development of native abilities of a child. Environment includes the totality of the stimuli that impinge on the organism and whatever is found around the individual.

Environment can be divided into two major groups i.e. Natural Environment and Social Environment.

- Natural environment includes all those things and physical phenomena around the individual that influences him/her.
- Social environment refers to the familial and cultural heritage and also the social forces presented by the contemporary human society.

If the library, laboratory, curricular and co-curricular activities are properly organized, the child will be able to achieve the desired intellectual development. Therefore, teachers should try to provide best cultural, social, physical, moral and emotional environment which includes workshop, museum, clubs, associations, debate, symposia etc. for healthy growth and development of the child.

4.2.2. Concept of Heredity:

The sum total of the traits potentially present in the fertilized ovum is known as heredity. In other words, all the qualities that a child has inherited from the parents is called nothing but heredity. After knowing the what it means it is also important to know the mechanism of heredity. We all know that life starts as a single cell. The fertilization of ovum takes place due to the union of male and female germ cells. The fertilized egg is known as zygote. Zygote is made up of 46 chromosomes. 23 chromosomes are inherited from mother and 23 from father. Each chromosome contains about 40 to 100 genes. These genes are responsible for the development of particular traits that individual possesses. According to Peterson heredity is “*what gets from his ancestral stock through his parents*”. Douglas and Holland justify that “*Heredity consists of all the structures, physical characteristics, functions or capacities derived from parents and other ancestors*”. In other words, it refers to the inherited characteristics of an individual, including traits such as height, eye and skin colour, and blood type. It is the sum of all the physiological and psychological traits which a person inherits from his parents. F.L. Ruch considers *heredity as the total make-up of biologically transmitted factors that influence the structure of the body*.

Every child comes into this world with certain set of physical and mental characteristics which he has got from his parents and ancestors. A child resembles any of his family members may be his sisters, brothers, parents or grand-parents, or any people related to him. Heredity is the process of in which biological traits are transmitted from parent to offspring through genes- the basic units of heredity. These traits are transmitted through genes and chromosomes.

Heredity is majorly of two types, biological heredity and social heredity.

- Biological heredity includes all those physiological and psychological characteristics which a person inherits from his parents through genes in the chromosomes.
- All that one generation gets from the proceeding generations in the form of either social customs or traditions or ideals and values, believes and morals, conventions, skills etc are all included in social heredity. When each generation transmits these acquired skills and knowledge to the succeeding generations, it constitutes social inheritance.

4.2.3. Relative Importance of Heredity and Environment:

The question arises whether heredity or environment, which is more important in moulding the personality of an individual. This issue is like asking whether the seed or soil, which one is more important for the proper development of a plant. The seed and the soil do not work in isolation, but are mutually dependent. In the same way both heredity and environment are closely related and are equally important, hence one cannot be considered in isolation from the other. To justify this to Mc Iver

and Page say that, “*Every phenomenon of life is the product of heredity and environment. Each is as necessary to the result as the other. Neither can ever be eliminated nor can ever be isolated*”. Heredity is defined as the totality of all the biologically transmitted factors from parent to child that influence the structure of the body and environment. Heredity is responsible for the conditions that serve to stimulate behavior or act to bring about modification of behavior. Both heredity and environment are the determinants of development and are equally important in the life of an individual.

ROSS has expressed a formula in which the action of the factors in determining the level of an individual’s biological, psychological and social development is sometimes expressed. The formula is as follows:

$$H \times E \times T = DL$$

Where,

H = Heredity, E= Environment, T=Time, DL=Development level of an individual personality.

This formula justifies the fact that it is meaningless to speak of either heredity or environment, acting alone and also signifies that both of them are equally responsible for individual’s growth and development. Heredity works only in some sort of environment. Both of them are two sides of the same coin, without environment heredity is useless and environment without heredity means nothing. Heredity provides us the body, structure, complexion or features etc, and the environment provides the opportunities in which they can be nurtured and developed. Landis and Landis remarked that “*heredity gives us capacities to be developed but opportunities for the development of these capacities must come from the environment*”.

Individual is the product which is developed due to the interaction between heredity and environment. Let us Individual as the area of a rectangle, where the base of the rectangle is heredity and height is the environment. We all know that area of rectangle is $A = b \times h$, where $A =$ Area, $b =$ base and $h =$ height. Area of rectangle does not merely depend upon the base or height; it depends on both. Similarly, individual is a result of heredity and environment. The development of hereditary potentialities is a matter of environment.

Every individual possess heredity, these traits develop on an environment for their nourishment. Maclver and Page state “*every phenomena of life is the product of both heredity and environment, each is as necessary to the result as the other. Neither can ever be eliminated and neither can ever be isolated*”. Further the relative importance can be highlighted through the following examples:

1. Seeds x Soil = Yield
2. Capital x Investment = Revenue

For good yield of products seeds and soil are equally important, likewise for good revenue capital and investment are equally important, similarly for efficient and healthy growth and development heredity and environment are important. All components that are required for effective human development are interwoven and are influenced by environment it may include Home, community, physical and school environments influence the way humans behave, think, engage one another, grow, and process emotions. Nurturing environments contribute to positive health outcomes and fewer developmental challenges. When circumstances like poverty is factored in, it's clear that its impact on environment poses a threat to individuals' growth and development. It's suggested that a nurturing environment can help promote healthy growth and development

4.2.4. Educational Implication:

Now we are aware that the importance of heredity and environment cannot be compared as to which has a significant role, as both are of equal importance for proper growth and development of individuals. It is important on the part of teachers to have knowledge of relative role of heredity and environment in child's developmental process so that she can help her students in recognising and learning concepts in a better way. The knowledge of both the factors will help the teacher in finding out what individual differences exist among his students in learning any subject may be Mathematics or English. It will also help in adjusting and modifying the teaching methods and techniques that the teacher uses in the classroom accordingly as per the individual needs may be project method or communicative teaching techniques. The teacher must plan to provide the best education through best environment to her learners, this can be done for example, by providing equipped computer laboratory and adequate library facilities in each subject. Sorenson has rightly remarked that to the teacher, knowledge, relative effect of the forces of heredity and environment on human development and their inter-relationship is of great significance. That means the teacher should study her child, know his/her abilities as well as his environment, his weaknesses and strengths and he/she must prepare scheme for the development of the child keeping all the factors in mind. The school climate is responsible for the high degree of scholastic achievement. The school should aim at providing enriched programmed which includes curricular and co – curricular activities for the children like quiz and literary competition, annual day, sports day so that the child can excel in all field of life. Facilities should be made to provide them with better educational, vocational, personal guidance and counselling and personality development programs. If their heredity and environment are known, what traits can be perished where, it becomes easy for the teacher to plan and help her students develop and grow. The knowledge of heredity and environment is very much essential for a teacher in dealing with all kinds of exceptional children including gifted, normal, below average, and problem children, and first-generation learners including educationally backward children.

4.3 MATURATION

To many people, terms like development, growth, maturation, and learning all mean the same thing and are often used interchangeably. Along with growth and learning, maturation is one of three processes that play a central role in a person's development. The pattern of behaviour in an individual is determined by his growth of the. Normal growth is necessary for normal behaviour to take place. Individuals with arrested growth or retarded growth or accelerated growth exhibit different patterns of behaviour. Thus, in an individual in whom the brain has not grown adequately, the behaviour is also found to be underdeveloped. Closely related to the process of growth is the process of maturation. In the previous chapters we have learnt about growth and development and also factors affecting them. Here, we shall learn about maturation.

4.3.1. Concept of Maturation:

Think back on when you were a very young child. Can you remember being physically small? How about the way you use to solve problems when you were very young? The method that we used was very simplistic compared to how we figure things out now. These types of questions shed light on the process of maturation. Maturation refers to nothing but the ways in which we grow and develop throughout the lifespan. Maturation is the process of learning in order to cope and react in an emotionally appropriate and desired way. It does not necessarily always happen along with aging or physical growth, but is a part of growth and development. A situation in which a person is today prepares them for the next and so on into adulthood. Maturation does not stop when physical growth comes to an end, it continues through adulthood. An adult who loses a parent, for instance, learns to cope with a new emotional situation that will affect the way he or she deals with situations that follow.

Maturation is the process by which we not only change but also grow and develop throughout our life. Developmental psychologists look at many different types of maturation throughout the lifespan. In psychology, maturation is the process in which an individual matures, in other words an individual reaches to a state of full functionality. Originally, only biological forces were examined while considering maturation, such as the aging process, involved in a child's changes in behavior. As time passed, maturation theories have also evolved to include cognitive development as a result of biological maturation and environmental experiences.

The concept of maturation was first pioneered by Arnold Gesell in the 1940s. He emphasized nature's role in human development. In developmental psychology, the concept of maturation was advanced by Jean Piaget. For him, simply growing up played a crucial role in children's increasing capacity to understand their world, posing that children cannot undertake certain tasks until they are psychologically mature enough. Today, cognitive theories of development do not adopt a strictly biological perspective. Instead, maturation relates to the interplay between genetics

and socio-environmental influences. Also, maturation is no longer seen as being limited to childhood. Various definitions of maturity by various eminent personalities are stated below:

- Krogman defines maturation as aging.
- According to Baldwin, ‘Maturation is an increase in competency and adoptability.’
- Woolf & Woolf define Maturation as the ability of the children to able to do certain task at stages of development that they could not do previously.
- Maturation is growth that proceeds regularly within a wide range of environmental conditions, or that takes place without special conditions of stimulation, such as training and practice. (Gates and Jersild)
- According to Garry and Kingsley, “Maturation is the process whereby behaviour is modified as a result of growth and development of physical structures.”

4.3.2. Characteristics of Maturation:

Various characteristics of maturation are enlisted below.

a. Sum of Gene Effects:

Maturation is the summation of effect of genes operating in a self-limiting life cycle. It is based on heredity. It is the process describing the individuals underlying potential and capacity.

b. Automatic Process:

Maturation is an automatic process of somatic, physiological and mental differentiation and integration.

c. Growth and Development:

Maturation is dependent on both - growth and development that is necessary before any behaviour that is unlearned or initially before learning of any particular behaviour can take place. It involves not only structural changes but also functional changes or performance. It helps an individual with structural change to reach at the stage of functional readiness.

d. Completion of Growth:

Maturation is a stage of consolidating of mental, social and emotional development, thus helps in completion of the growth process.

e. Modification from Within:

Maturation is essentially a process of modification that occurs from within and innate ripening and development of capacities of the organism.

f. Condition of Learning:

Maturation is an essential condition of learning. Learning is the only source through which the human development gets completed. It forms the base of learning.

g. Factors of Maturation:

Maturity has been considered as the process of learning. There are three factors underlying the process of learning. They are acquisition, Retention and Recall.

- **Acquisition:** Acquisition is helpful in modifying the behaviour and makes the learner mentally prepared to learn. It is the acquisition which determines the meaning, nature and scope of learning.
- **Retention:** The learner fails to express the acquired trait without retention.
- **Recall:** Through recall an individual forms opinion about the maturity and learning behaviour of the learner.

h. Essential for Learning Skill:

Maturity is essential for physical as well as mental training. Attainment of physical and mental maturity is very important in order to get proficiency in any work. There is no need of external arousing objects or stimulus as maturation is an automatic process.

i. Maturity and physical fitness:

The development of mature learning behaviour also depends on physical fitness of the learner. Acquisition, retention and recall perform their functions successfully only when body apparatus is capable in making the development of these factors properly. Physical deficiency or illness obstructs the learning process of the child. Till the body apparatus is not stout or muscles are not strong enough, expected modification in behaviour of the child is not possible. In this context, maturity has been named as physical fitness.

j. Training before Maturity is useless:

Physical maturity is equally important as mental maturity. Hence, before imparting any type of training to the child, it is the foremost duty of the parents as well as the teachers to see that the child is fully matured or not, from the point of view of his physical and mental maturity. Training imparted before maturity is useless to learn any activity. Maturation and learning have been considered as two different aspects of the same process.

4.3.3. Educational Implications of Maturation:

S. Alexandra has stated that, “*Maturation is essentially a process of modification from ‘within’, an ‘innate’ or development of the organism and growth in structure and function that occurs by reason of forces inherent in the organism itself.*” Maturation is of the top listed factor that affects learning. It is defined as “growth that proceeds regularly within a

wide range of environmental conditions.” In other words, maturation is growth that takes place regularly and constantly within an individual without requiring special condition of stimulation such as training or practice. Learning is possible only when a certain stage of maturation is has been reached by the child. Exercise and training likewise becomes fruitful only when a certain stage of maturation is attained. Maturation determines the readiness of the child for learning. For a teacher it is important to have knowledge about the learner whether he is ready enough i.e. mature enough to learn a particular task that is planned to teach him. Learning will be ineffective if the child has not attained the required level of maturity.

The rate of maturation varies with individuals, in short there are individual differences in maturation. There are individual differences in the capacity to learn at the same age level. Some may mature early some may take time. Specific skills are learnt by children easily who mature earlier than others. The 3R’s i.e. reading, writing and recognizing can be learnt only after the maturation of muscular and brain capacities. Rate of learning ability is closely related to the maturation of the cerebral cortex. So, it can be said that learning is not independent of maturation, but must be based upon a sufficient stage of growth.

Learning is possible only when a certain stage of maturation is reached. Say for example however much we practice a six-month-old child with walking exercises, the infant cannot walk because his muscles have not matured enough for the infant to learn to walk. This particular learning is possible only when the nerves & the muscles have attained a particular stage of maturity & development. Similarly, it is important for the teacher to plan tasks and methodology as per the maturity level of the child.

The role of maturation and learning helps the parents or the teacher to know what and when to begin training. The knowledge of the role played by maturation suggests that if the child is not old or mature enough to profit by teaching, it has little value for him and mere time and effort on the part of the teacher is wasted. Thus if learning precedes maturation, there is more wastage of time and energy. Learning should begin when the child is ready to learn. If the child is ready to learn and he is not given guidance or training, his interest is likely to wane. Maturation comes with learning not necessarily with age. Riesen has aptly remarked, “Maturation is necessary but not a sufficient condition for life.”

4.4 LET’S SUM UP

In this unit we have learnt that individual differences are the differences among humans that distinguish or separate them from one another and makes one as a single unique individual. In other words, we can say that no two individuals are alike. The study of individual differences helps us to understand what all makes humans similar to one another and also what makes them different. By considering the variations that can occur from

one person to another, one can best understand the full range of human behavior. Education is vitally linked to growth and development of children. The major aim of education is to bring out best of all the potentialities of children. It is said that a child is born with some natural traits and it is power of the education to foster proper growth in the special environment. We also focused on the two major factors – heredity and environment that affect individual's growth and development. Growth is the product of the interaction of the organism and its environment. Heredity it considered as the sum total of Inborn Individual traits. Environment includes all those forces which act upon the individual. It was also concluded that both are equally important and rely on each other. In other word, we can say that Heredity and environment are complementary both are aspects of same phenomenon. We also learnt about maturation as one of the essential factor that accomplishes growth and as teachers it is important for us to know how mature enough our children are before implementing the designed curriculum.

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PRACTICAL WORK

Educational Psychology – Section I

(Note: These Practical Works – Guidelines/Samples are intended for the students of S.Y.B.A. (Education), I.D.O.L. only.)

- **YOU are expected to do the two practical works; Practical Work – 1 and Practical Work – 2, mentioned below in the unit structure, for 20 marks as an integral part of your course.**

❖ Unit Structure

✓ Practical Work - 1

➤ Sample of an Experiment to be recorded in a Psychology Journal

✓ Practical Work – 2

➤ Sample Report of a Case Study (YOU may include some of your own points in the report apart from those mentioned)

Practical Work – 1: To perform experiments on Transfer of Learning, Distraction of Attention and Extrinsic Motivation; and record it in an experimental psychology journal.

Sample of an Experiment to be recorded in a Psychology Journal

Experiment on Motivation

Experiment No. : 01

Time:

9am – 9.45am

Day: Monday

Date:

06th April, 2020

Aim: To study the impact of motivation on the academic performance of standard seventh students.

Nature: It is an individual, verbal, paper and pencil performance test.

Apparatus: Sheets on Cognitive Ability Test, pencil or pen and a stopwatch.

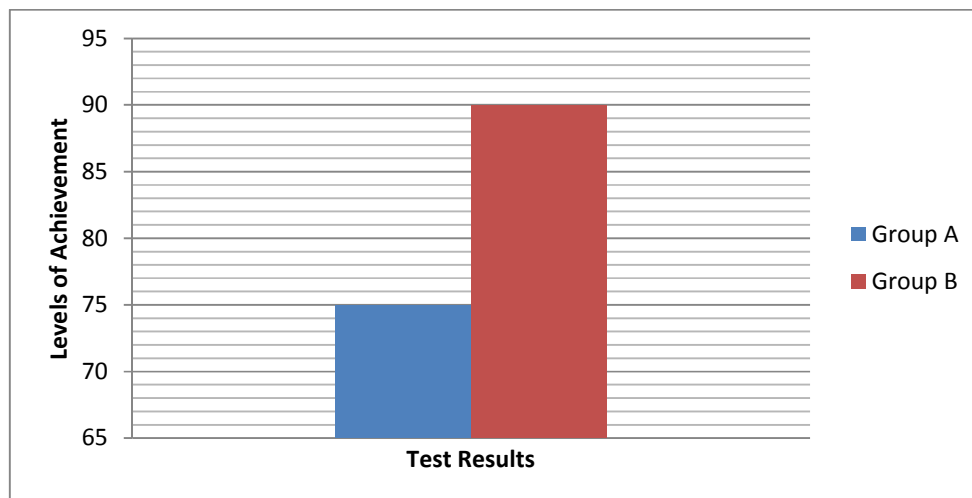
Procedure: The experimenter built rapport with the entire class of standard seventh and stated the aim of the experiment. The experimenter gave the instructions and motivated the students to do their best in the cognitive ability test. By using simple random sampling method the students of the class was divided into two equal groups. Students in Group A were given the Cognitive Ability Test sheets. Students of Group B were also given the same Cognitive Ability Test sheets but with a highly motivating message and assurance of appreciation for those who score more in the test. After the scoring was done, the test results were also tabulated. Based on the tabulated values, bar graphs were prepared. The results of Group A and Group B were represented on the horizontal X-axis and the levels of achievement were represented on the vertical Y-axis.

**OBSERVATION TABLE NO. 1 - COGNITIVE ABILITY TEST
BY MOTIVATION**

Groups	Cognitive Ability Test Sheets	Average Scores
Group A	Without Extrinsic Motivation	225/300 = 75
Group B	With Extrinsic Motivation	270/300 = 90

From the preceding observation table no. 1 - the Cognitive Ability Test score were analysed based on the results of the test, graphs were prepared. The introspection and educational implications was also written. The following figure 1 is drawn on the basis of the observation table no. 1.

**FIGURE 1: THE COGNITIVE ABILITY TEST BY
MOTIVATION**



Introspection: The points to ponder over are your feeling before you started this experiment and your feeling during this experiment. What are your feelings about your performance and the factors; psychological, emotional or physiological, that influenced your performance? What are your opinions about your performance: did it motivate you to perform better? Are you satisfied with your results with respect to this experiment?

Educational Implications:

Practical Work – 2: To Prepare a Case Study of a Learning Disabled student OR a Gifted student OR a Slow Learner, and to submit a complete report on it.

Sample Report of a Case Study (YOU may include some of your own points in the report apart from those mentioned)

Case Study: Report on a Gifted Student

Introduction

A case study is undertaken for demonstrating by developing an understanding of a real-life scenario or case and then making a solution or decision about it. For the present report, case study was conducted for a gifted student of an English medium school in Mumbai. Ijapa is the name of the gifted student who studies in standard tenth.

Background Information:

Ijapa is very bright student as termed by almost all the subject teachers but his behavior in the class is the matter of concern for most of the teachers. Most of the teachers at times, are unable to match the level of intelligence with that of Ijapa's. For this case study, the class teacher Mr. Euriko, assisted me from the beginning till the end. The class teacher was concerned about the over excitement level of Ijapa in the class as compared to the other students of the same class.

Case Investigation:

Firstly, I thoroughly tried to understand about each and every aspect of Ijapa in all the classes and discussed about him with all his subject teachers, ofcourse with formal permission of the respected principal madam. Later, after gathering the first hand information, I segregated all of it, and decided to interview personally and individually all the subject teachers and some of Ijapa's close friends of the class. Then, an informal interview was done with Ijapa's parents at the school park. All these interviews formal and informal as well as the discussions about Ijapa were noted in the record book for the case study.

For the official meets, interviews and discussions, with consent of the concern person, video and audio recording technology was used in order to note each and every point of talk of the entire conversation.

After I was fully satisfied with the data collected related to Ijapa, started to summarize all of the important points in the report. It was comprehended that Ijapa's disturbing behavior was the most in the English language class. The possible reason behind it was due to two factors, Ijapa was good in English language and the teacher mostly used local language to explain English concept for the students who were very weak in English. This was not pleasantly welcomed by Ijapa.

Understandings

The gifted students have the ability to absorb abstract concepts and organize themselves more effectively and appropriately. Ijapa have higher academic capabilities, more creativity and leadership qualities. On the part

of teacher should create such classroom environment that shall challenge Ijapa in studies.

Alternatives:

- Teacher must provide Ijapa with independent projects and activities and allow him to challenge his capabilities as he always has extra time as compared to other students.
- Teacher must encourage creativity and original thinking.
- Must allow Ijapa to explore ways of jotting and connecting unrelated issues in a very creative manner.
- Teacher must include multiple intelligences into his lessons as every students need is different so is the case with Ijapa.
- Challenge Ijapa in one or more areas of intelligence.
- Teacher shall provide study materials but shall expect varied outcomes as per the ability of Ijapa.
- Teacher must include higher order thinking and reasoning questions and assignments especially for students like Ijapa.
- Curriculum shall be flexible enough to incorporate real life experiences in the classroom teaching and learning process.
- Definitely curriculum shall be student-centred so that Ijapa can get engaged proactively into the classroom
- Curriculum should be framed as per the students' interest and their educational needs.
- Teachers must be open for change, generation changes as technology develops.
- Teachers must not consider students as empty slates.
- Teachers must understand that even student enters the classroom with some previous knowledge.

Solution:

The solution that could possible work out to guide and mould Ijapa's behavior is mentioned in the alternatives pointed out in the preceding paragraphs. Those can be used by a combination of few and little mix n match, in the case of Ijapa or any gifted student as per the requirement.

It is true that gifted students are motivated by challenging tasks. Thus, if teacher feels incapable of handling gifted students, then they must seek help of existing researches that are done on gifted students. Teachers can get strategies and ways and means of dealing with gifted students especially like Ijapa.

Thus, especially for Ijapa, here, English teacher can ask for a different ending or a beginning for a particular poem or a story. Also, English

teacher can also ask Ijapa, to write a story based on a character from the textbook. Similarly, English teacher can help Ijapa grow stronger in English subject holistically.

Recommendations:

In order to help teachers to change in the desired way, it is important on the behalf of the school to conduct professional development courses for the teachers. Supportive environment is needed for a well-established teacher also in order to adopt new ways of teaching. Psychologists believed that gifted students like Ijapa are self-critical and always work towards perfection. Teachers' behaviour in the class is of utmost importance while dealing with the gifted students.
