PGED S1-02 (DSC)

TWO YEAR MASTER'S DEGREE COURSE

(CBCS in Accordance with NEP 2020)

SEMESTER - I

PSYCHOLOGICAL FOUNDATION OF EDUCATION

EDUCATION

Indira Miri School of Education

KRISHNA KANTA HANDIQUI STATE OPEN UNIVERSITY

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COURSE INTRODUCTION (COURSE 2)

COURSE INTRODUCTION

The MA in Education Programme is of two years. The programme is divided into a total of four semesters. In the Second Course of this Semester, we shall have to go through Psychological Foundation of Education in detail. There are a total of 15 units in this course.

BLOCK INTRODUCTION

In this course, the *First Unit* deal with the meaning, importance of Psychology in education and the methods of Educational Psychology. The *Second Unit* deals with the meaning and concept of growth and development, its relationship as well as various principles of development in the learning processes. The *Third and Fourth Units* shall help you to discuss the meaning and nature of learning, theories of learning, transfer of learning and its theories. The *Fifth Unit* explains the meaning, techniques, factors and theories of motivation. The *Sixth Unit* discusses the concept and theories of intelligence. The *Seventh Unit* deals with the meaning and nature of creativity and relationship between creativity and intelligence. The *Eight Unit* deals with the meaning of memory and forgetting, and the types of memory and forgetting. The *Ninth Unit* explains the meaning and nature of reasoning and throws light on some strategies for effective problem solving. The *Tenth Unit* discusses the concept of personality, theories of personality and defence mechanism. The *Eleventh Unit* explains how to educate the exceptional children in detail. The *Twelfth Unit* shall discuss the concept of mental health and hygiene and the role of school, home and the society for promoting mental health and hygiene. The *Thirteenth Unit* deals with the meaning and nature of creativity and relationship between creativity and intelligence. The *Fourteenth Unit* deals with the meaning and nature of aptitude and utility of aptitude test. The *Fifteenth Unit* which is also the last unit of this course, shall discuss the causes and prevention of juvenile delinquency.

While going through this block, you will come across some along-side boxes, which are put on the left side or right side of the text. These boxes will explain you meaning of some words and concepts within the text. Apart from this, there will be some broad and short questions which have been included under ‘ACTIVITY’ and ‘CHECK YOUR PROGRESS’ in every unit. Activities will increase your thinking capacity because qestions put in Activity are not directly derived from text. Hints on the answers to the short questions have been put under section ‘ANSWERS TO CHECK YOUR PROGRESS’. Besides, a few text-related questions have been put in ‘POSSIBLE QUESTIONS’. These questions will help to draw your attention on the probable topics for the examination so that you can prepare for the examination with confidence.

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UNIT 1: EDUCATIONAL PSYCHOLOGY

UNIT STRUCTURE

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1.1 LEARNING OBJECTIVES

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

- define the meaning and nature of educational psychology;
- identify the relationship between education and psychology;
- explain the scope of educational psychology; and
- discuss the various methods of educational psychology.

1.2 INTRODUCTION

Psychology has been a branch of study for centuries. However, until the beginning of the twentieth century, it remained a part of philosophy. Now, Psychology is an independent discipline and it is one of the latest of all mental disciplines whose meaning is continuously changing. It took nearly 200 years for psychology to transform from the speculative psychology of

the past to modern-day psychology as science of behaviour. In the modern times, psychology is considered the scientific study of mental processes, experiences and behaviour. We are students of education. The main aim of education is to modify the human behaviour on the basis of the processes of education. As such, education requires the study of developmental characteristics of human growth to suggest proper education for different abilities. This requirement has led to the development of a new branch of knowledge Educational psychology. This unit will introduce you to the meaning and nature of educational Psychology, the relationship between psychology and education, and the scope and methods of educational psychology.

1.3 MEANING OF EDUCATIONAL PSYCHOLOGY

Let us first discuss the meaning of Psychology. Etymologically, the word 'Psychology' has been derived from the Greek words 'Psyche' and 'Logos'. 'Psyche' means 'soul' or 'atma', and 'Logos' means 'talk of' or 'study of' or 'science of'. Therefore, the derivative meaning of Psychology is the 'study of soul' or 'science of soul.' However, the soul cannot form the basis of science, because soul is invisible, the nature of soul is not known and cannot be put into any scientific study. Therefore, this view was opposed by contemporary philosophers, and the definition of Psychology as the science of soul was rejected. Then, another definition of Psychology was evolved as the 'science of mind'. However, controversy arose again regarding the nature of the mind, and finally this definition was also rejected. Psychology was then defined as the 'science of consciousness.' Consciousness means immediate awareness of the mind in a situation. That consciousness is a very negligible portion of total mind. A more comprehensive definition of Psychology has emerged later as the 'science of behaviour.' Behaviour is the external expression of experience of the total mind of an individual. It includes all types of behaviour– physical as well as mental, normal as well as abnormal, child behaviour as well as adult behaviour. This definition of Psychology as science of behaviour is the most accepted definition. McDougall has described it as 'The positive science of conduct and behaviour.'

Educational Psychology is a branch of general psychology, which studies the behaviour of the individual in the learning situation and its problems. Education is concerned with teaching, training and instruction whereas Psychology deals with behaviour of man and animals. Educational Psychology is the result of interdisciplinary approach to education. Psychology has influenced the educational process in several ways. Keeping its importance into consideration, the teaching of Educational Psychology has been made compulsory in teachers training programmes, to equip the prospective teachers with the necessary skills and competencies to enable them to deal effectively with the teaching learning problems in a classroom. Skinner states, "Educational Psychology describes and explains the learning experience of an individual from birth through old age." Judd mentioned Educational Psychology as "a scientific study of the life stages in the development of an individual from the time he is born until he becomes an adult."

An analysis of these definitions reveals that Educational Psychology is an applied discipline, which integrates the two disciplines—Education and Psychology. Educational Psychology is concerned with the development, evaluation, and application of the theories and principles of human learning and instructions. It is the scientific study of human behaviour, which helps in understanding, predicting and guiding to realize the goals of life. Educational Psychology is the application of educational findings in the field of education. Both in the past as well as in the present, educational psychologist have studied learning and teaching, and at the same time, strived to improve educational practices. (Pintrich, 2000)

1.3.1 Relationship Between Education and Psychology

Education and Psychology are the two distinct branches of knowledge, but they have a deep relationship. They are intensely connected with one another, and they are inseparable. It is one of the most important branches of Psychology that deals with the problems that the educationists face. In general, Educational Psychology is an applied branch of general Psychology that studies the behaviour

of an individual in the learning situation and its problems. The principles, laws, and the new findings of general Psychology are utilized by Educational Psychology in the learning situation of the classroom. It mainly deals with the problems with the students and the teachers in their respective situations of teaching as well as learning. It is the science concerned with behaviour pertaining to education.

Educational Psychology is not concerned with the aims and objectives of education, but it helps to explain the simple method of teaching and learning. It is the study of educational problems with reference to psychological facts. It covers the development of the child from early childhood to maturity as well as the general facts of Psychology having a relationship with the modification of behaviour of the child. It takes into consideration the creation of interest and motivation in learning. It involves the question of individual differences in ability, potentiality, prospects and limitations in learning. On this aspect, Peter Sandi Ford defined Educational Psychology, as “Its subject matter is the behaviour of the human beings undergoing the process of education.”

The following are the salient features emphasizing the relationship between Psychology and Education:

- Psychology is the science of behaviour and education is modification of behaviour. Human behaviour can be modified through teaching and learning.
- With the help of the psychological approach, education becomes child centered.
- Psychological foundation has helped education to give importance on individual differences of the child.
- Having psychological base, education stresses character building.
- Educational thoughts are translated into action by psychology.
- Importance is given on social development.
- Psychology helps education in developing different methods of teaching according to the stages of development.

- It is psychology that makes educational norms, aims or goals a reality.

1.3.2 Nature of Educational Psychology

- Educational psychology is the application of psychological principles to the field of education. Therefore, it is an applied psychology.
- Educational psychology is concerned with the things as it is, and not as it should be. It therefore, describes an object or an event objectively and without any pre-determined ideals.
- Educational psychology is a part of social sciences. Because, the results obtained from educational psychology are applicable to the individual as well as the groups of individuals.
- Educational psychology is an educational science as it helps the teacher to know the problems of education of the learner.
- Educational psychology selects only those facts and principles from general psychology that are of specific significance and utility for the teaching-learning process.
- Educational psychology is utilitarian and practical in nature. It deals with the world of reality. Both the teacher and the learner make use of the knowledge of educational psychology at every step.
- Educational psychology is an ever-growing and developing science following continuous research in this field. It opens new avenues in the field of education.
- G. Lester Anderson is of the opinion that educational psychology is an academic discipline. All the results and findings of educational psychology are the basis of various educational theories and practices.

1.3.3 Scope of Educational Psychology

Educational psychology is a major branch of psychology and its scope is also broad. But, it was only after 1920 that educational

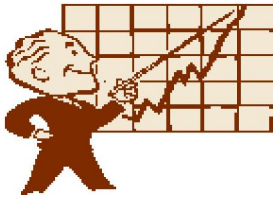
psychology attained a definite form. The scope of educational psychology is vast and comprehensive. The following are its distinct and promising areas or scope of study.

- **Growth and Development of the Human Child:** Educational psychology studies all the aspects of the human development. From birth to maturity, the human being passes through several stages of development. How a child passes through the various stages of growth? What are the characteristics of each stage? What are the needs and desires of each stage? etc. are highlighted by educational psychology. Educational psychology helps in making an analytical study of the nature of the psycho-physical development of an individual.
- **Study of the Human Behaviour:** Educational psychology deals with the behaviour of human beings in the educational situations. An individual's interests, attitudes, aptitudes, his motivational behaviour, level of aspiration, social, emotional, intellectual, physical, aesthetic needs etc. are the main subject areas of educational psychology.
- **Study of Individual Difference:** No two individual are alike. Individuals differ from each other physically as well as mentally. So different individuals require different types of teaching and learning suitable to their individualism. Similarly, not all pupils are benefitted to the same extent by similar type of classroom activities. The individual's prospects and limitations, interests etc. need greater attention of the teacher. Therefore, the study of a child's individuality with a view to individualisation of his teaching and learning, form a major area of educational psychology.
- **Measurement and Evaluation:** In educational psychology, mental measurement provides a promising field of study. Educational psychology includes the basic principles of measurement, measurement of learning, and measurement of adjustment. It is necessary for the psychologists to identify

human talents and evaluate the findings relating to development, learning, and adjustment. Various measurements on individuals like intelligence test, personality test, aptitude test, interest inventories etc. help the teacher in judging the effects of his teaching as well as the learning capacity of his students.

- **Personality and Adjustment:** To assess, develop and study human personality and their adjustments, educational psychologists take into consideration the emotions and interest, mental life of the child as well as the teachers. Since adjustment requires a healthy social and emotional development, educational psychologists study the factors that help the individual to explore the possibilities, enhancing his emotional maturity and thus helping him to adjust to his environment. Educational psychology studies the nature of personality, factors responsible for the personality development, adjustment of the individual to his environment etc.
- **Study of Mental Hygiene and Abnormalities:** Mental hygiene and abnormalities are the two important subjects of study under educational psychology. Increasing social complexities around us has created different problems to adjust effectively with the changing situations. How to get rid of mental-ill health, frustrations, tensions and chaotic situations is the major concern of educational psychology.
- **Guidance and Counseling:** Though guidance and counseling constitute a distinct area of study in itself, it is an important field of study included in educational psychology. To meet the individual differences among the learners, guidance have assumed much recognition in the present day society. An individual always needs guidance services to secure the utmost utilization of their potentialities for better success in life. Necessary guidance helps the pupils to overcome their complexities and problematic situations arising in the social and educational field. It also helps the pupils to realize their power and potentiality in making

necessary adjustments with the surrounding world. Thus, educational guidance and counseling form an important aspect of educational psychology.



CHECK YOUR PROGRESS

Q.1: What is the meaning of educational psychology?

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Q.2: Give a comprehensive definition of educational psychology.

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Q.3: Explain briefly the scope of educational psychology.

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1.4 METHODS OF EDUCATIONAL PSYCHOLOGY

Educational psychology employs various methods to improve the teaching-learning process in the classroom. It uses the methods to gather facts about the nature of children, how they learn, and how they develop. It

employs the methods to know how any aspect of a child's personality like learning, social adjustment, or skill grows from the elementary stage to a complex one, how a group of children passes through the several stages of growth and development. As educational psychology is an applied branch of general psychology, it makes use of the methods of general psychology. Some methods of educational Psychology are discussed below:

1.4.1 Observation Method

Observation is one of the oldest techniques that man has made use of. Even today, it is our common experience to notice farmers feeling the breeze, watching the sky, sun, moon and the stars– all to determine what the weather is likely to be and what season is approaching.

In the words of Good, "Observation deals with the overt behaviour of persons in appropriate situations." Observation is also defined as the "measurement without instruments."

In education, observation is the most commonly employed of all measurement techniques. In the present as well as in the past, students have been labelled as good, fair, or poor in terms of achievement and lazy or diligent in terms of studies etc. on the basis of observation. Similarly, the teachers have listened to speeches and ranked students 1, 2, 3 and so on.

Uses and Merits of Observation:

- Being a record of the actual behaviour of the child, it is more reliable and objective.
- It is a study of an individual in a natural situation, and is therefore more useful than the restricted study in a test situation.
- The method can be used with children of all ages; of course, the younger the child the easier it is to observe him. This method has been found very useful with the shy children.
- It can be used with a little training and almost all teachers can use it. It does not require any special tool or equipment.

- It can be used in every situation, physical activities, workshops, classroom situations and so on.
- It is adaptable to both the individuals and groups.

Limitations and Demerits:

- There is a great scope for personal prejudices and bias on the part of the observer.
- Records may not be written with hundred percent accuracy as the observation is recorded after the actions of the observed. There is a time lag.
- The observer may get only a small sample of student's behaviour. It is very difficult to observe everything that a student does or say.
- It reveals the overt behaviour only– behaviour that is expressed and not remain within.

Chief Characteristics of Observation Method: There are certain characteristics of observation methods. They are as follows:

- Observation is a systematic method. It is not haphazard or unplanned. The interval time, the area or situation, techniques used for observation, length of observation periods etc. are carefully planned in this method.
- Observation is specific in nature. It is not just looking around for general aspects of human behaviour.
- Observation is objective and free from bias as far as possible. It should generally be guided by a hypothesis.
- Observation is quantitative, and it can be interpreted in objective manner.
- Observation must have some definite aims and objectives. It should be clearly defined before the actual observation process is begins.
- Observation result can be checked and verified.

Steps for Observation: In order to obtain valid and reliable data through an observation procedure, the observer must follow the following steps–

- **Planning:** At this stage, the observer must define the specific activities to be observed. The nature of the groups of the subjects

to be observed, the scope and length of the observation, the tools to be used during observation, should be determined at this stage.

- **Execution:** At this stage, real work of observation is done. The observer should have proper arrangement of the specific conditions for the observing subjects. He should assume the proper physical position for observing the behaviour. He has also to handle the recording instruments properly.
- **Recording:** Recording of the observation may be done at the time of observation or soon after the observation is over. The observer may record it in writing or he may use some electronic medium like tape recorder, camera, one-way vision screen etc.
- **Interpretation:** When the observer has interpreted his data, it becomes easier for him to draw various generalizations. This step must be done without any biasness or influence of personal attitudes and values of the observer.

Types of Observation: Observation may be classified into different types according to the method used, and the type of control exercised. The following are the chief types of observation.

- **Participant Observation:** The participant observation means watching the events, situations or activities by taking part in the group to be observed. He freely interacts with the other group members, participates in various activities of the group, and studies their behaviour or other activities.
- **Non-Participant Observation:** When the observer observers the group passively from a distance without participating in the group activities, it is known as non-participant observation. Here, the observer does not try to influence them or take part in the group activities. The observer can carefully judge the merits and demerits or each phenomenon under study.
- **Non-Controlled Observation:** In this method, observation is made in natural course without extra influence, control or guidance or instructions from external agencies and factors.

- **Controlled Observation:** With the help of controlled observation, the researcher can arrive at valid generalization and understand the cause-effect relationship between different phenomena. One way screens, mirrors movement recorders, sound recorders, motion picture etc. are used for measuring data. Through this type of observation, one can verify the biasness and the inadequacies of data, and thereby maintain objectivity.

1.4.2 The Experimental Method

The most dependable way of obtaining facts is the experimental method. It is used to investigate behavior, which can be brought into the laboratory and studied under controlled conditions. In 1879, Wundt established the first psychological laboratory at Leipzig. Since then, the experimental method in psychology has become popular.

Thus, experimental method is a procedure in which certain hypotheses on the basis of previous findings are tested by systematically varying certain conditions and controlling some other conditions. In other words, it is observation under pre-arranged conditions. Here, all the conditions and factors are kept constant, and only one factor is verified under the standard conditions of the psychological laboratory. The main requirements of an experimental method include a well-planned laboratory, apparatus and equipments, subject and experimenter, problem, hypotheses and design. In experimental conditions, there are two variables– the independent variable. It operates within a person or within his or her environment to affect behaviours. On the other hand, dependent variables is known as a response or output variable. It is an observed aspect of the behaviours of an organism that has been simulated. As the experimenter changes the independent variable, changes also occur in the dependent variables. These changes are observed and reported by the experimenter.

Steps involved in Experimental Method: While performing an experiment, generally the following steps are followed:

- Statement of the problem i.e. selection of the topic to be experimented.
- Formulating of a hypothesis: If the results of the study support the hypothesis, it is accepted. If not, it is rejected.
- Determining dependent and independent variables in the experiment.
- Creating a controlled situation for the experiment with the help of certain instrument or other devices.
- Analysis of the data.
- Testing the hypotheses on the basis of the results obtained from the experiment.

Methods of Experimentation: In education, experiments are conducted mostly in the classrooms where the experimenter has to work with groups of children. According to Mc.Call, there are three types of group methods:

- **One-Group Method:** Here, out of a number of factors, one factor is eliminated, or one new factor is introduced and the resulting change or changes are measured.
- **The Parallel-Group Method:** In this method, two or more groups are selected. The groups are such that they are equivalent in every respect. Then, in one of the groups, one of the factors is varied, and others are kept constant. At the same time, the parallel groups is also kept under observation, but that variable factor is not introduced there. Thus, after a period, the results of the groups are compared.
- **The Rotation-group Technique:** This method makes use of a number of groups and is used when it is not possible to have parallel groups. Normally, it is very difficult to have a parallel group. So, the rotation group technique is very commonly used. Here, the groups are reversed at intervals according to the procedure followed.

Advantages of the Experimental Methods: The experimental method has certain advantages, which are–

- Experiments can be repeated and the results can be generalised and verified by the same procedure. This is one of the most significant advantages of experimental techniques.
- This method is undoubtedly very systematic, objective, extremely accurate, and most reliable of all the methods.
- It can eliminate irrelevant and confusing factors from the experimental situation by only taking the variables, which are necessary for the study.

Disadvantages of the Experimental Methods: Experimental method has some disadvantages also–

- It is difficult to study all child behavior and related events experimentally.
- Experimental method needs a well-equipped laboratory, tools, and equipments. However, these may not be possible under all circumstances.
- The results provided by experimental method may not be the same result obtained under natural conditions. The subjects also may not behave in the same way in an experimental situation as they behave normally.
- It is extremely difficult to study infants experimentally because the affective factors dominate during the period of infancy, and it is almost impossible to control such affective factors.
- It is also not possible to study the private and personal experiences of a person in all cases.
- This method is not economical in use.

In spite of these limitations, in many ways, the experimental method is the best technique for collecting scientific information. It proves very useful in psychological research for its objectivity, economy, precision, accuracy, systematisation, reliability and validity. If this method is supplemented with introspection, case history, statistical method etc., then it proves to be very effective and successful in observing, analysing, predicting, and finally modifying human behaviour in desirable channels.

Application of Experimental Method: The application of the experimental method to problems of education has been extremely useful and has contributed to education in a large measure. The following areas of study in education are the result of the application of the experimental method to education.

- **Understanding the Child:** Experimental method has enabled the child psychologists as well as the teachers to understand the nature of the child as well as his development. He has to find out the learning capacity of the child. He comes to know the native endowments of the child and the other related factors.
- **Helps in locating Individual Differences:** Experimental Psychology has also helped in studying individual differences. This enables the teacher to understand and appreciate different stages in the development of the child. Through this method, the teachers come to know the nature and factors of individual differences, and apply this knowledge in the education of children.
- **Study of Likes and Dislikes:** With the help of the experimental method, it is possible for the psychologists and educators to study the likes and dislikes of children in an objective manner.
- **Study of Intelligence:** The application of the experimental method in psychology and education has greatly helped in understanding the nature and measurement of intelligence. After knowing the intellectual capacity of every child, the teacher can pay individual attention and plan for the development of the child.
- **Useful for the Teacher:** Through the experimental method and experimental psychology, the teacher can know about the conditions and forces, which can bring the desired behaviour. It enables the teacher to understand the problems of learning and teaching objectively.
- Nevertheless, the experimental method has been extremely helpful in the development of experimental education.

1.4.3 Case Study Method

A case study is the study of an individual case. The Case study method is usually used in the case of a problem child. Some case studies give cross-sectional views of the subject at the beginning of the study, and some give longitudinal studies of the individual that is historical in nature by providing detailed information regarding the family background of the subject, development of his infancy and childhood, information regarding his schooling, etc. Case study is used in research purposes, and this may give proper clue to the diagnosis and treatment of special problems. This may be used largely for instructional purposes regarding how to summarise and interpret the data collected on the students.

Some case studies end with the diagnosis; others report extended treatment and the success that attended the treatment.

Making and Using a Sase Study: In the case study of a pupil, usually the first step is to collect from school records all-important information pertaining to the pupil. Cumulative records are of much help in this case.

As a rule, the data are entered at regular intervals, and there will usually be a period of several weeks between the time of the last entry on the record and the time of making the case history. The case investigator will therefore find it necessary to interview those who have contact with the pupil, so that he might get the relevant information regarding the child.

The next step is to interview the child himself and if necessary, give him tests. For example, if the case is one of reading disability, a diagnostic silent reading test and an oral reading check test should be given.

When reasonably complete data about the pupil have been collected, the case should be written up and a tentative diagnosis and plan for treatment should be formulated before the treatment starts. The record should be amplified from time to time. A written

record of all these will help for further suggestions before proceeding with a plan for handling the case.

For studying a case, the following suggestions will be of much help for the counselor who prepares the case.

- If possible, select a pupil from your own class who, you feel, needs help and more attention.
- To start with, try to plan the case in a small way. As you proceed, if you feel that you should elaborate the case, plan it on a large scale.
- While collecting data, the pupil should not be put on the defensive. Rather, it is necessary to discuss the problems at a friendly and normal level. The teacher should be like a friend to whom the subject tells about all his worries and difficulties.
- While writing the case, use plain and simple language, and the points should be direct and matter of fact.
- In the report of the case, use both general and specific illustrations.
- The investigator should not attempt to apply the treatment which is beyond his experience. Normally, a teacher can handle such problems arising out of learning difficulties, lack of interest or minor behaviour problems.
- After the case has been released from treatment, it should be followed up so that the subject does not have a relapse. This is especially important in cases involving skills such as reading, spelling and arithmetic. Some pupils, who have improved tremendously during the period of treatment, will tend to return to the old habits later unless they are carefully supervised.

Various Steps in Case Studies:

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

- Remedial steps for removing the causes for maladjustment.
- Follow-up of the case.

Characteristics of a Good Case Study:

- Completeness of data
- Validity of data
- Confidential recording
- Scientific synthesis
- Continuity

Advantages of Case Study Methods:

- It looks at the "whole child". A good case study will examine all possible factors like mental, physical, social, emotional, which may give some clue to the problem behaviour.
- It is one of the important tools of evaluation in the hands of a teacher.
- Reliable interpretation can be effectively ensured.
- It makes the teachers to be more aware of the special problems of individual children.
- With the increased use of the method, it is fundamentally a part of the teaching process itself.
- It helps the teachers to gain a better understanding of normal behaviour and better insights and perspective towards abnormal behaviour of children.

Disadvantages: There are certain limitations in the case study method. These are–

- Case study is highly subjective. It needs highly trained and competent investigators to conduct interview or collect case history.
- The teacher may lack unnecessary skills for collection and interpreting data.
- The case study is time-consuming and durable.
- In some cases, particularly among the children, information about early years may not be available. Even, adults are also found sensitive to reveal some of the secrets of life.

- In spite of these limitations, the case study method is a very useful method for collecting necessary and relevant information about the individual.

1.4.4 Introspection Method

Introspection is composed of two words "intro" and "aspection". "Intro" means within or inward and "aspection" means looking. Hence, it implies self-observation or looking within or looking inward to experience 'one's' own mental state. It is a process of examining one's own mental process of thought, feeling and motives. An individual looks within, observes, analyses, and reports his own feelings. Let us explain this process with the help of an example. Suppose you are happy, and in this state of happiness, you look within yourself. It is said 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 the state of anger or fear, etc.

Introspection is the oldest method, which was formerly used by philosophers. This method was developed by the structuralists in psychology who defined psychology as the study of conscious experiences of the individual.

Merits of Introspection Method:

- It is the cheapest and most economical method. We do not need any apparatus or laboratory for its use.
- This method can be used any time and everywhere.
- It is the easiest method and is readily available to the individual.
- Introspection has generated research, which gradually led to the development of more objective methods. It is still used in all experimental investigations.
- It is the only method with the help of which an individual can know his emotions and feelings.

Limitation of Introspection Method:

- In introspection, the mind studies its own working. However, the mind cannot study itself. For example, when one is in a state of

anger or fear, one cannot study the working of one's mind, and when one is able to study one's mind, the state of anger or fear, etc. disappears.

- Human beings are not static objects. Their mental process is under constant change. Therefore, when one attempts to introspect, the state of mental process disappears. It is difficult to introspect changing psychological experiences.
- The data collected by introspect 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 is highly subjective. It has the danger of being biased and influenced by preconceptions of the individual.
- There is ample scope for the reporter i.e. the individual who introspects to lie deliberately and hide the facts to mislead.
- Normal or superior individuals can do introspection. Abnormal human beings cannot introspect.
- Children cannot do introspection. Adults can do it.
- Highly trained and skilled workers can do introspection.
- The limitations of introspection can be overcome by practice and training, by remaining alert during introspection and by comparing results obtained by experts.

Stages of Introspection: There are three distinct stages of introspection.

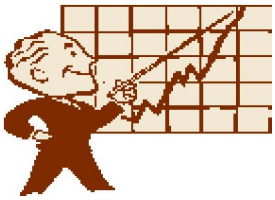
- The first is the state of explicit self-consciousness. The person tries to find the basis or reason for his mental activities. The individual is conscious that he is watching something.
- The second is the stage of reflection and deliberation. Here, the individual begins to think of the good or bad consequences of his activities.
- The third stage is the final stage of drawing conclusion. In this stage, the individual tries to understand himself, and determines whether his actions are desirable or undesirable.

Thus, introspection is self-observation with a view to study the nature of mental process. It is not self-reflection.

Applicability of Introspection Method:

- Introspective method in psychology is a subjective approach to study the mental processes of an individual. It is a very easy and inexpensive method. If other methods like observation, experimentation, and psychoanalysis fail to do so, we have to turn to introspection. The difficulties stated above can be overcome by systematic training and practice. When a person gets proper training and acquires efficiency and skill in the introspection method, he can use it successfully.
- Similarly, due to the unstable condition of mind, correct introspection is not possible. In other words, an introspectionist is no more in the same state of mind when he begins to examine his own mental processes. James S. Ross has remarked, "Reflection on a mental state inevitably changes the character of the state.'' In order to remove this defect from the instrospective method, it has been suggested that a person should allow his mental activity or reaction for a long time without interruption. When the activity is completed, the individual can examine his mental processes with the help of his memory.
- One of the arguments against the introspection method is that it is not possible to test the results achieved by this method. The reason for this is that the results are mostly subjective in nature.
- Although, the introspection method has certain limitations, the psychologists had pointed out that it has a wide application. This method is very useful in the application of psychology to the problems of education. It has been of great help in the analysis of the mental processes. It is through this method that we understand and interpret the experiences of other people. Therefore, in spite of its subjective approach, the introspective ability or power can be regarded as the most desirable quality of a psychologist. This method can provide us direct views and

knowledge of the mental process. Therefore, considering this aspect, the psychologists can never discard the introspection method entirely. Even when we use observation or experimental method, the introspection method can also be used very perfectly to obtain supplementary data.



CHECK YOUR PROGRESS

Q.4: Explain briefly the experimental method.

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Q.5: Write a brief note on the observation method.

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Q.6: Explain two advantages and limitations of the case study method.

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1.5 LET US SUM UP

- Psychology has a unique status as a positive science due to the expansion of its boundaries.
- Etymologically, the word 'Psychology' has been derived from the Greek word "Psyche" which means 'soul' or 'atma', and "logos" which means 'talk of' or 'study of' or 'science of.' The derivative meaning of "Psychology" is the "study of soul" or "Science of soul"
- Educational psychology is one of the most important branches of psychology and it deals with the problems faced by the educationists. In general, educational psychology is an applied branch of general psychology that studies the behaviour of an individual in the learning situation and its problems. The principles, laws, and new findings of general psychology are utilized by educational psychology in the learning situation of the classroom.
- The scope of educational psychology is vast and comprehensive. The scope includes growth and development of the human child, the study of human behaviour, the study of individual differences, the study of measurement and evaluation, the study of personality and adjustment, the study of mental hygiene, abnormalities, and guidance and counseling.
- Observation method, experimental method, case study method and introspection method are discussed in this unit in detail.



1.6 FURTHER READING

1) Agarwalla, Dr. S. (2008). *Psychological Foundation of Education and Statistics*. Bookland.
2) Chauhan, S. S. (1993). *Advanced Educational Psychology*. New Delhi: Vikas Publishing House.

3) Pintrich, P. R. (2000). *Educational Psychology in the Millennium: A Look Back and A Look Forward*. *Educational Psychologist*, 35, 221-226.



1.7 ANSWERS TO CHECK YOUR PROGRESS

Ans. to Q. No. 1: Educational psychology is an applied branch of general psychology. Educational psychology studies the human behaviour in educational situations. It is because the meaning of psychology means to study the human behaviour whereas the meaning of education means the modification of human behaviour.

Ans. to Q. No. 2: According to Skinner, "Educational Psychology utilizes those findings that deal specifically with the experiences and behaviour of human beings in educational situations." In fact, educational psychology is an applied discipline, it is the scientific study of human behaviour, by which the goal of life can be understood, directed, and predicted.

Ans. to Q. No. 3: The scope of educational psychology means the area that educational psychology deals in or implies in the field of study. In fact, the scope of educational psychology basically indicates the following points:

- The limits of operations and applications of educational psychology.
- The branches, topics, and the subject matter with which educational psychology deals.
- Growth and development of the human child, the study of human behaviour, the study of the individual differences, measurement and evaluation, personality and adjustment, study of mental hygiene and abnormalities, and guidance and counseling are some of the areas commonly discussed under educational psychology.

Ans. to Q. No. 4: The experimental method is one of the most important methods of psychology. Through this method, attempts are made to establish the cause and effect relationships through carefully

planned and controlled observation of the subject's behaviour. Some of the characteristics of the experimental method are:

- It essentially requires at least two persons, the experimenter and the subject.
- In experimental method, the conditions are always controlled.
- The experimental method involves two different types of variables– independent and dependent.
- The experimental method is applied on persons in a random order.

Ans. to Q. No. 5: Observation method means observation of an individual's behaviour– his bodily gestures, facial expressions and other bodily actions. The observer makes systematic observation through recording of information in a natural situation. This method is very useful as psychologists accept the view that an individual's overt behaviour is the result of his internal mental conditions. Three principles to be followed in the observation method are:

- Observation should be made not only of the individual's behaviour but of the whole situation.
- Proper planning of the observation process should be made; objectives must be clearly formulated, and proper tools must be used.
- The time of observation should be fixed. Too long time may make the observer distracted and tired; and too short time will not provide the proper information.

Ans. to Q. No. 6: The two advantages of the case study method are,

- The case study method is very effective in understanding an individual's anxiety, worry or any kind of maladjustment of an individual.
- Proper guidance and counseling can be provided to the subject to help the latter adjust with the environment better.

The drawbacks of the case study method are:

- In most cases, the investigators are not technically proficient, and so the data obtained may not be reliable.

- The possibility of errors in understanding the problems as well as in its treatment is high.



1.8 POSSIBLE QUESTIONS

A) Very Short Questions (Answer each question in about 50 words)

Q.1: Define Educational Psychology.

Q.2: How is Psychology related to Education?

Q.3: Explain the meaning of introspection and observation methods of educational Psychology.

Q.4: Mention briefly the importance of the case study method.

Q.5: Write briefly about the importance of the experimental method.

B) Short Questions (Answer each question in about 150 words)

Q.1: Describe the nature and scope of educational psychology.

Q.2: What is the effectiveness of educational psychology as a tool for a teacher in the classroom transaction?

Q.3: Select five classroom problems, where you can make use of the knowledge of educational psychology.

C) Long Questions (Answer each question in about 300-500 words)

Q.1: What do you mean by experimental method? What are the steps to be followed in the experimental method?

Q.2: What do you mean by Introspection method? What are its advantages and disadvantages?

Q.3: Explain the experimental method of educational psychology with its merits and demerits.

Q.4: Explain how the case-study method of educational psychology helps the teacher to modify the behavioural problems of a child.

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UNIT 2: GROWTH AND DEVELOPMENT

UNIT STRUCTURE

2.1 Learning Objectives

2.2 Introduction

2.3 Meaning of Growth and Development

- 2.3.1 Definition of Growth and Development
- 2.3.2 Development, Growth and Maturation
- 2.3.3 Comparison between Growth and Development
- 2.3.4 Characteristics of Development

2.4 Stages of Development

2.5 Various Aspects of Growth and Development

2.6 Principles of Growth and Development

2.7 Educational Implications of the Principles of Growth and Development

2.8 Let Us Sum Up

2.9 Further Reading

2.10 Answers to Check Your Progress

2.11 Possible Questions

2.1 LEARNING OBJECTIVES

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

- explain the meaning, definition, characteristics of growth and development;
- describe the various stages and aspects of growth and development; and
- discuss the principles and educational implications of growth and development.

2.2 INTRODUCTION

The sole aim of education is to bring the all round development in the personality of a child. Educational psychology and technology of education should help in the realisation of this aim. The continuous interaction with the

environment results in the growth and development of the innate capacities, abilities, and potentialities of a child. The task of formal as well as informal education, therefore, is to provide help in the growth and development of the child. Hence, it is imperative that the teachers, supposed to be connected with the task of helping the child to grow and develop satisfactorily, must be acquainted with the nature of growth and development. It is only with the knowledge of growth and development of the learner at each stage of his/ her life, that it is possible for the teachers to render proper guidance, arrange the learning situations, and plan the instructional programmes for bringing the desirable and harmonious development in the personality of the children. In this unit, we shall try to understand the process of growth and development with reference to their various aspects.

2.3 MEANING OF GROWTH AND DEVELOPMENT

Education aims at the all-round harmonious development of an individual. The development of a nation depends upon the development of its children, and there is no doubt that the childhood is the foundation upon which the development of an individual depends. Development of proper attitudes, habits and patterns of behaviour formed during the early years determine, to a great extent, how successfully an individual will adjust himself, as he grows older. It is, therefore, imperative that the teachers who are charged with the responsibility of the development of the child should be acquainted with the meaning and characteristics of development.

Every child is unique. There are individual differences in children, which has a great bearing on their development. The needs of each individual child must be catered to for his optimum development. The United Nations International Children Fund (UNICEF), an important organization of the United Nations, measures the development of a nation in terms of the yardstick of the development of its children. It is of interest to note that this organisation gives a secondary importance to per capita income. Under the auspices of UNICEF, an Italian Committee organized a workshop at Rome in 1990 for promoting the movement of child growth and development. The workshop prepared the *Development Tree,* which represents the rights of the children,

which should be taken into consideration in the development and growth of children. The roots of the tree represent the right to social and economic development, and the branches represent the complementary rights (the right to information, to play, to live in peace, etc.)

2.3.1 Definitions of Development

In the words of E. B. Hurlock (1959), the term "Development means 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 does not consist merely of adding inches to one's height or improving one's ability. Instead, development is a complex process of integrating many structures and functions."

Robert M. Liebert, R. W. Poulos and G. S. Marmor (1979) state, "Development refers to a process of change in growth and capability over time as function of both maturation and interaction with the environment." Thus, development includes: (i) Growth; (ii) Capability; (iii) Maturation; and (iv) Interaction with the environment.

Harold Stevenson (1968), a prominent development psychologist, has put the concept of development as, "Development, psychology is concerned with the study of changes in behaviour throughout the life span."

G. W. Allport (1948) thinks, "The developing individual cannot be thought of a thing in himself. Development, insofar as it is considered to be produced from within the individual himself alone, is only a convenient abstraction."

A. Angyal (1941) opined, "Development cannot be considered in terms of the mind alone but rather in terms of the individual as a whole in relationship with his experience with others. Thus, development is concerned with the biological total process taking place in the subject-object interrelation."

To sum up, development is a series of orderly progression of change towards maturity. 'Orderly' refers to the arrangement of the

changes. That is, each change at each stage is dependent upon what preceded it, and it affects what will come later. Development does not take place haphazardly. The term 'progressive' signifies that changes are leading forward and that the direction is towards adaptation is conductive to survival of the individual. Development has the four basic elements:

- Growth
- Maturation
- Experience
- Social Transmission (Learning through language, schooling or training by parents)

2.3.3 Development, Growth, and Maturation

Development, growth and maturation are terms, which are commonly, used to convey the same meaning but there is a great difference.

Arnold Gessel (1929) wrote, "Growth is a function of the organism rather than that of environment as such. The environment furnishes the foil and the milieu for the manifestation of development, but these manifestations come from inner compulsion and are primarily organized by inherent inner mechanics and by an intrinsic physiology of development. The very plasticity of growth requires that there be limiting and regulatory mechanisms. Growth is a process so intricate and so sensitive that there must be powerful stabilising factors, intrinsic rather than extrinsic, which preserve the balance of the total pattern and direction of the growth trend. Maturation is, in a sense, a name for this regulatory mechanism."



Growth refers to change in size.

Maturation involves qualitative change.

L. D. Crow and A. Crow (1962) suggested that growth refers to structural and physiological changes, and development is concerned with growth as well as those changes in behaviour, which result from environment situations.

Growth takes place when a child grows taller, his bones, muscles, and other parts of the body increase in size. ***Maturation*** is

the unfolding of the characteristics with which the individual is endowed. As the child grows, his mind and body mature and he is able to function at a higher level. ***Development*** is a product of maturation and learning.

Growth does not always contribute to development. A child or adult may grow very fat and heavy, but such growth can hardly be considered development in the sense of advancement to a higher level of maturity. Actually, a person can be stated to have developed if he is physically healthier and/or has more sensory motor skills so that his physical condition is conductive to greater personal effectiveness. Thus, by improving his sensory motor skills and thereby utilizing better the capacities he has received from about two decades of growth, a person can develop even after physical growth stops. Physical growth is quantitative in nature and is usually measured in inches and pounds or their equivalents.



Development involves a series of progressive, orderly and meaningful changes leading to the goals of maturity. Usually growth contributes to development but not always. A person can develop even after physical growth ceases and maturity is attained.

2.3.3 Comparison between Growth and Development

Growth	*Development*
➢ The term growth is used in purely physical sense. It generally refers to an increase in size, length, height and weight. Changes in the quantitative aspects come into the domain of growth.	➢ Development implies the overall changes in shape, form or structure resulting in improved working or functioning. It indicates the changes in the quality or character rather than in quantitative aspects.
➢ Growth is one of the parts of the develop-mental process. In a strict sense, development in its quantitative aspect is termed as growth.	➢ Development is a wider and comprehensive term. It refers to the overall changes in the individual. Growth is one of its parts.
➢ Growth describes the changes, which take place in the body and behaviour of an organism.	➢ Development describes the changes in the organism as a whole and does not list the changes in parts.

➢ Growth does not continue throughout life. It stops when maturity has been attained.	➢ Development is a continuous process. It grows from womb to tomb. It does not end with the attainment of maturity. The changes, however small they may be, continue throughout the life span of an individual.
➢ The changes produced by growth are the subject of measurement. They may be quantified.	➢ Development, as stated earlier, implies improvement in the functioning and behaviour, and hence brings qualitative changes, which are difficult to be measured directly. They are assessed through keen observation in behavioural situations.
➢ Growth may or may not bring development. A child may grow (in terms of weight) by becoming fat, but this growth may not bring any functional improvement (qualitative change) or development.	➢ Development is also possible without growth as we see in the cases of some children that they do not gain in terms of height, weight or size, but they do experience functional improvement or development in physical, social, emotional or intellectual aspects.

Physical development is both qualitative and quantitative and implies increasing capacities and abilities, maturing functional improvement, and progress towards higher levels of potentiality and effectiveness.

Growth can be 'measured', development can be observed by noting the changes in shape as they occur, and the modes of behaviour as their maturation is completed.

2.3.4 Characteristics of Development

The following are the important characteristics of development:

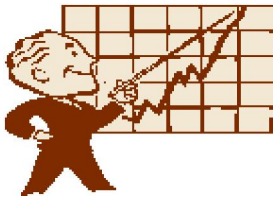
- Childhood is the foundation period of development in the life of an individual.
- Development is the result of maturation and learning.
- Development follows a definite and predictable pattern.
- All individuals are different and their development takes different courses.
- Certain characteristics traits are associated with each phase of development.
- Each period of development involves hazards.
- Traditional beliefs exist about individuals of different ages.
- There is development from generalized to more specific forms of response.
- Development further makes it possible for the child to differentiate among the movements.
- Development in the body structure as well as its functions, proceed from head downward.
- Development also proceeds from the trunk outward towards the more distant parts.
- Development of behaviour is the result of growth and learning.
- Development is gradual. It takes time.
- Development follows a sequence. The child crawls before he creeps, stands before he walks, babbles before he utters a word.
- There is interaction among different aspects of development.
- Development is not uniform in all individuals.
- Development depends on both heredity and environment.



LET US KNOW

Growth and Development means:

- Often used as synonymous terms.
- Important characteristics of a living organism.
- Growth refers to change in size.
- Development implies the overall changes in the individual.
- The process of growth and development goes on simultaneously.



CHECK YOUR PROGRESS

Q.1: Define development.

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Q.2: Maturation involves qualitative change. (Say True or False)

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2.4 STAGES OF DEVELOPMENT

Educators and psychologists have pointed at different ways of describing stages of development in the life span of an individual. A brief account of these stages is given here to show how children behave differently at successive stages. This outline indicates how children learn new and more complex tasks, as they grow older.

I) **Rousseau's (1712-1778) Views on Stages of Development:** The earliest effort at marking out the stages of development was made by Rousseau. He attempted to divide the individual's development into four stages as given:

Stage	***Period and Approximate Age***	***Characteristics***
I) Infancy	1 to 5 years	1) Free wandering stage 2) Simple play things 3) Physical development
II) Childhood	Between 5 to 12 years	1) Development of senses 2) No verbal lessons 3) Activity and experience
III) Pre Adolescence	12 to 15 years	1) Period of developing intellect 2) Study of natural sciences 3) Manual work and industrial arts

IV) Adolescence	15 to 20 years	1) Sex instruction. 2) Moral education through activities and occupation. 3) Understanding of complex social relationship.

II) E.H. Erickson's Eight Stages of PsychoSocial Development: According to Erickson, development is the result of the interaction between the individual's biological needs and the social forces encountered in everyday life and its application over the entire life span. See the order in the following.

Psycho-Social Stage	Tasks or Crisis	Social Condition	Social Psycho-Outcomes
Stage I: Oral Sensory (Birth to 1 year)	Can I trust the world?	Support and provision of basic needs. Lack of support and deprivation.	Basic trust. Basic mistrust.
Stage II: Muscular Anal (2-3 years)	Can I control my own behaviour?	Permissiveness and support. Over protection and lack of support.	Autonomy. Shame and doubt.
Stage III: Loco motor (4-5 genital years)	Can I become independent of my parents by exploring my limits?	Encouragement to explore. Lack of opportunity to explore.	Initiative. Guilt.
Stage IV: Latency (6-11 years)	Can I master the necessary skills to adapt?	Adequate training and encouragement. Poor training and lack of support.	Industry. Inferiority.
Stage V: Puberty and (12-18 adolescence years)	Who am I? What are my beliefs and attitudes?	Internal stability and feedback, which is positive. Confusion of feedback and unclear feedback.	Personal Identity. Role confusion.
Stage VI: Young Adulthood	Can I give fully of myself to another?	Warmth and sharing. Loneliness.	Intimacy. Isolation.
Stage VII: Adulthood	What can I offer to succeeding generations?	Purpose-fullness and productivity. Lack of growth and repression.	Generativity. Stagnation.
Stage VIII: Maturity	Have I found contentment and satisfaction through my life's work and play?	Unity and fulfilment. Disgust and dissatisfaction.	Integrity. Despair.

III) Jean Piaget's (1896-1980) Development Stages: Piaget, a Swiss educator, observed children for about 50 years and wrote more than 20 books on the various aspects of development. He pointed out four stages of development as shown below.

Stage	Age/Periods	Characteristics
1) Sensory motor stage	Birth to 2 years	Manipulation of objects in the environment.
2) Pre-Operational stage	Between 2 to 6 years	Child begins to acquire vocabulary.
3) Concrete Operational stage	Between age of 6 and 11 or 12	Child learns to add, substract, multiply and divide.
4) Formal Operational stage	Between 11 or 12 to 14 or 15	The child begins to think logically.

Summing up: If we include the pre-birth period also, the life span or stages of development of human organism can be divided conveniently into the following stages.

S. No.	Name of the Stage	Period and Approximate Age
1)	Pre-natal (pre-birth) stage	From conception to birth.
2)	Infant Stage	From birth to 3 years of age.
3)	Childhood Stage:	From 4 to 12 years of age or to the onset of puberty.
	i) Pre-Childhood Stage	From 4 to 6 years of age.
	ii) Early Childhood Stage	From 7 to 9 years of age.
	iii) Later Childhood Stage	From 10 to 12 years of age.
4)	Adolescence	From the onset of puberty to the age 0f maturity– Generally 13 to 19 years of age.
5)	Adulthood	From 20 years of age or age of maturity until the age of productivity.
6)	Old age	From the end of the productivity till death.

It is observed that there is no rigidity in the above classification in terms of either the division of life span into stages or the duration of the period mentioned against each stage. There are great individual differences, and it should not presume that every child would necessarily have each stage according to the period indicative above. These are general generalizations drawn. Nevertheless, these generalizations indicate broad outlines of the course to be followed in the development of human organisms.

2.5 VARIOUS ASPECTS OF GROWTH AND DEVELOPMENT

If we use the term growth and development synonymously, the major aspects or areas in which a human child goes ahead for his complete development can be named as follows:

a) Physical development
b) Intellectual or Mental development
c) Emotional development
d) Moral or Character development
e) Social development

Let us now see what we understand by these different aspects of development.

a) Physical development: The physical development of the individual includes the development of his internal as well as external organs.

b) Intellectual or Mental development: It includes the development of intellectual powers like the powers of reasoning and thinking, imagination, concentration, creativity, sensation, perception, memory, association, discrimination, and generalization etc.

c) Emotional development: Under this aspect, starting with the basic instinct, the evolution of various emotions takes place, and also the emotional behaviour is developed to the point of emotional maturity.

d) Moral or Character development: Moral or character development include the evolution of moral sense and development of character. The individual develops his ethical and moral codes.

e) Social development: Initially, the child is selfish and anti-social. Gradually, he is developed into a social being by learning how to behave according to the rules and norms of his society, and by making adjustment to it.

2.6 PRINCIPLES OF GROWTH AND DEVELOPMENT

From the scientific knowledge gathered through observing children, some principles have emerged. These principles enable the parents and

the teachers to understand how children develop, what is expected of them, how to guide them and provide proper environment for their optimum development and so on.

- **Principle of Continuous Development:** First of all, development is a continuous process. Development follows continuity. It goes from womb to tomb and never ceases. An individual starting his life from a tiny cell develops his body, mind, and other aspects of his personality through a continuous stream of development in various dimensions.
- **Rate of Growth and Development is not Uniform:** Although development follows continuity, yet the rate of growth and development is not steady and uniform at all times. It proceeds more rapidly in the early years of life but slows down into later years of infancy. Again, at the dawn of puberty, there is a sudden rise in the speed of growth and development, but it is not maintained for long. Therefore, at no stage, the rate of growth and development show steadiness. It rather takes place by fits and starts.
- **Principle of Individual Difference:** According to this principle, there exist wide individual differences among the children with respect to their growth and development in various dimensions. Each child grows at his own unique rate.
- **Uniformity of Pattern:** Although development does not proceed at a uniform rate and shows marked individual differences, yet it follows a definite sequence or pattern somewhat uniform in the offsprings of a species. For example, all offsprings of human beings begin to grow from head downwards. Similarly, the motor development and language development in all children seems to follow a definite sequence.
- **Development Proceeds from General to Specific Responses:** In all phases of child's development, the general activity precedes specific activity. His responses are of a general sort before they become specific. For example, the boy waves his arms in general which is a random movement before he is capable of so specific a

response as reaching. Similarly, when a newborn infant cries, the whole of the body is involved. With growth, crying is limited to the vocal cords, eyes etc. In language development, the child learns general words before specific. He uses the word daddy in greeting many men, and it is only afterwards that he uses it for his father.

- **Principle of Integration:** Where it is true that development proceeds from general to specific or from whole to parts, it is also seen that specific responses or part movements are combined in the later process of learning or development. "Development" as Kuppusuwamy observes, "thus involves a movement from the whole to the parts and from the parts to the whole." It is the integration of whole and its parts as well as of the specific and general responses that make a child developed satisfactorily in the various dimensions of his growth and development.
- **Principle of Interrelation:** The growth and development in various dimensions like physical, mental, social etc. are interrelated and interdependent. Growth and development in any one dimension affects the growth and development of the child in other dimensions. For example, children with the above-average intelligence are generally found to possess above-average physical and social development. The asset of growth in one dimension diminishes the bright possibility in other dimensions. That is why, the child having poor physical development tend to regress in emotional, social and intellectual development.
- **Development is Predictable:** With the help of the rate of growth and development of a child, it is possible for us to predict the range within which his mature development is going to fall. For example, X-rays of the bones of the wrist of a child will tell approximately, what his ultimate size will be. Similarly, the knowledge of the present mental ability of a child will help in predicting his ultimate mental development.
- **Principle of Interaction of Heredity and Environment:** The individual is the product of interaction between his heredity and

environment. However, genes are important in determining the rate and quality of his growth and development, his social and cultural environment, physical surroundings and the emotional climates will have their own impact.

- **Principle of Interaction of Maturation and Learning:** Growth and development occur because of both maturation and learning. Maturation refers to change in a development organism due to the unfolding and ripening of abilities, characteristics, traits and potentialities present at birth. Learning denotes the changes in behaviour due to training and/or experience. Maturation and learning are interacting.

2.7 EDUCATIONAL IMPLICATIONS OF THE PRINCIPLES OF GROWTH AND DEVELOPMENT

The above-mentioned principles of growth and development carry wide educational meaning for the children, parents and the teachers. It can be explained in the following ways:

- Knowledge of the principles of growth and development tells us that there are wide individual differences among the children with respect to their rate of growth and development. Therefore, we must pay attention to their individual pattern and growth rate while planning the course for their education and development.
- Its knowledge helps us to know what to expect and when to expect from an individual child with respect to his physical, mental, social development etc. at different stages of development. The correct knowledge of the growth trend of a child helps the parents and teachers not to under or over-estimate the future competency or expectancy of their child.
- It helps us to know the direction as well as the general pattern of development. It guides us to locate the degree of abnormality in our children and students and to take like-wise remedial steps. The knowledge that development starts from whole to parts, and then

from parts to whole, helps us to plan the learning procedure and set the learning methods accordingly.

- Principles of inter-relation and interdependence of the various aspects of growth and development help us to aim for the harmonious growth and development of the personality of the child, and warn us not to develop a particular aspect at the cost of one or the other.
- The knowledge of the uniformity of pattern with respect to growth and development makes it possible for the parents and teachers to plan ahead of time for the changes that will take place in their children. Children will also get benefitted if they can be acquainted with these changes before hand.
- The knowledge that heredity and environment both play a joint role in the process of growth and development helps us to pay sufficient attention over the environmental conditions in upbringing the children.

In this way, the knowledge of the principles of growth and development helps much in the well-being of the youngsters.



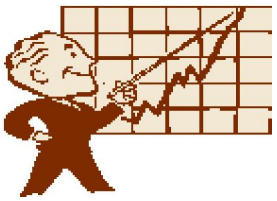
LET US KNOW

The changes which cover physical, emotional, intellectual, and social aspects of a human life are roughly divided into four major classes by Mrs. Hurlock:

i) Change in size
ii) Change in proportion
iii) Disappearance of old features
iv) Acquisition of new features

Various aspects of growth and development are:

- Physical development
- Intellectual development or Mental development
- Emotional development
- Moral or Character development
- Social development



CHECK YOUR PROGRESS

Q.3: Write two principles of growth and development.

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Q.4: Who made the earliest effort at marking out the stage of development?

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2.8 LET US SUM UP

- Development of proper attitudes, habits and patterns of behaviour formed during the early years determines, to a great extent, how successfully an individual will adjust himself, as he grows older. It is, therefore, imperative that the teachers who are charged with the responsibility of the development of the child should be acquainted with the meaning and characteristics of development.
- According to J. E. Anderson (1950), "Development does not consist merely of adding inches to one's height or improving one's ability. Instead, development is a complex process of integrating many structures and functions."
- Growth refers to change in size. Maturation involves qualitative change. Development involves a series of progressive, orderly, and meaningful changes leading to the goals of maturity. Usually, growth

contributes to development but not always. A person can develop even after physical growth ceases and maturity is attained.

- Various aspects of Growth and Development are: Physical development, Intellectual or Mental development, Emotional development, Moral or Character development and Social development.
- The Principles of growth and development are: Principle of continuity, Rate of growth and development is not uniform; Principle of individual differences, Uniformity of Pattern, development proceeds from General to specific responses, Principle of integration, Principle of Interrelation, Development is predictable, Principle of Interaction of Heredity and Environment, Principle of Interaction of Maturation and Learning.



2.9 FURTHER READING

1) Aggarwal, G. C. (1996). *Essential of Educational Psychology*. New Delhi: Vikas Publishing House.
2) Chauhan, S. S. (1993). *Advanced Educational Psychology*. New Delhi: Vikas Publishing House.
3) Mangal, S. K. (1993). *Advanced Educational Psychology*. New Delhi: Prentice Hall of India.
4) Sarma, M. (2008). *Educational Psychology*. Dibrugarh: Tushar Publishing House.



2.10 ANSWERS TO CHECK YOUR PROGRESS

Ans. to Q. No. 1: According to J. E. Anderson (1950), "Development does not consist merely of adding inches to one's height or improving one's ability. Instead, development is a complex process of integrating many structures and functions."

Ans. to Q. No. 2: True

Ans. to Q. No. 3: Principle of Continuous Development: First, development is a continuous process. Development follows continuity. It goes from womb to tomb and never ceases. An individual starting his life from a tiny cell develops his body, mind and other aspects of his personality through a continuous stream of development in these various dimensions.

Rate of growth and development is not uniform: Although development follows continuity, yet the rate of growth and development is not steady and uniform at all times. It proceeds more rapidly in the early years of life, but slows down into later years of infancy. Again, at the dawn of puberty, there is a sudden rise in the speed of growth and development but it is not maintained for long. Therefore, at no stage, the rate of growth and development show steadiness. It rather takes place by fits and starts.

Ans. to Q. No. 4: Rousseau made the earliest efforts at marking out the stages of development.



2.11 POSSIBLE QUESTIONS

A) Short Questions (Answer each question in about 150-300 words)

Q.1: What do you understand by terms like growth and development? Explain.

Q.2: Bring out the differences between growth and development.

Q.3: Explain the four basic elements of development.

Q.4: Identify some characteristics of development.

B) Long Questions (Answer each question in about 300-500 words)

Q.1: Describe the various principles of development.

Q.2: Explain the educational implications of the principles of growth and development.

Q.3: What are the main stages of an individual's development? Give a satisfactory division of human life span into the most accepted stages of development.

Q.4: Discuss in brief the various aspects of human growth and development.

Q.5: Why should a teacher understand human growth and development? Critically explain.

Q.6: "Child not only grows but also develops into man." Explain.

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UNIT 3: LEARNING

UNIT STRUCTURE

3.1 Learning Objectives

3.2 Introduction

3.3 Meaning and Nature of Learning

- 3.3.1 Definition of Learning
- 3.3.2 Goals of Learning

3.4 Learning and Maturation

3.5 Types of Learning

3.6 Theories of Learning

- 3.6.1 Thorndike's Theory of Connectionism
- 3.6.2 Pavlov's Classical Conditioning Theory of Learning
- 3.6.3 B.F. Skinner's Theory of Operant Conditioning
- 3.6.4 Gestalt Theory of Learning by Insight

3.7 Constructivism

3.8 Let Us Sum Up

3.9 Further Reading

3.10 Answers to Check Your Progress

3.11 Possible Questions

3.1 LEARNING OBJECTIVES

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

- explain the meaning, definition, characteristics, nature and goal of learning;
- explore the various theories of learning– its characteristics, limitations and educational implications; and
- discuss Constructivism, its principles, and its importance in classroom interaction.

3.2 INTRODUCTION

Learning is a natural and common experience in life. Everyone loves to learn. All living creatures learn. Learning is the key process in the behaviour

of human beings. Generally, the learning process begins from the birth of a child and continues till death. The learning process begins consciously or unconsciously in the life of every living being from its very infancy. Learning may be described as a form of growth or change in a person, which brings a change or which modifies one's behavioural pattern. In Educational Psychology, learning is the most essential component. Educational Psychology is the study of human behaviour that can be modified through learning. The child starts learning as soon as he comes in contact with the environment. We come across this phenomenon in almost every walk of life. Learning situations are most natural and common in life, and everyone learn one thing or the other although they may not be aware of it. Actually, learning involves new ways of doing things. For example, a child touches a burning candle and gets burnt and withdraws. Another time, when he faces a burning thing, he takes no time to withdraw himself away. He learns to avoid not only the burning candle but also all burning things. Then, we say that the child has learned that if you touch flame, you get burnt. This unit is intended to provide the concept of learning along with its characteristics and nature, and the various theories of learning. The characteristics and limitations of each theory have been discussed in this unit along with its educational implications.

3.3 MEANING AND NATURE OF LEARNING

Learning occupies a very important place in our life. Most of what we do or do not do is influenced by what we learn and how we have learnt it. Learning, therefore, provides a key or structure to one's personality and behaviour. An individual starts learning immediately after his birth or in a strict sense even earlier when in the womb of the mother. Experience– direct or indirect– is found to play a dominant role in moulding and shaping the behaviour of the individual from the very beginning. While approaching a burning matchstick, the child gets burnt and he withdraws. The next time, when he faces a burning match stick, he wastes no time in withdrawing himself away. He learns to avoid not only the burning match stick but also all burning things. When this happens, we say that the child has learned that if

one touches a flame, one gets burnt. In this way, the behaviour of an individual is changed through direct or indirect experiences. This change in behaviour brought about by experience is commonly known as learning. In this way, the term learning broadly speaking, stands for all those changes and modifications in the behaviour of the individual, which he undergoes from his birth till death.

3.3.1 Definition of Learning

- Gardner Murphy defines learning as "The term learning covers every modification in behaviour to meet environmental requirements."
- Henry P. Smith: "Learning is the acquisition of new behaviour or strengthening or weakening of old behaviour as the result of experience.''
- Woodworth: "Any activity can be called learning so far as it develops the individual– (in any respect, good or bad) and makes him alter behaviour and experiences different from what that would otherwise have been.''
- Kingsley and Garry: "Learning is the process by which behaviour (in the broader sense) is originated or changes through practice or training.''
- Pressey, Robinson and Horrocks: "Learning is an episode in which a motivated individual attempts to adapt his behaviour so as to succeed in a situation which he perceives as requiring action to attain a goal".
- Crow and Crow: "Learning is the acquisition of habits, knowledge and attitudes. It involves new ways of doing things, and it operates on an individual's attempts to overcome obstacles or to adjust to new situations. It represents progressive changes in behaviour… It enables him to satisfy interests to attain a goal."
- Hilgard: "Learning is the process by which an activity originates or is changed through reacting to an encountered situation, provided that the characteristics of the changes in activity cannot

be explained on the basis of native response, tendencies, maturation, or temporary states of the organism (e.g. fatigue or drugs, etc.).''

The above definitions reveal the following facts about the meaning and nature of learning.

- **Learning as Adaption or Adjustment:** There is a constant interaction of an individual with his environment. Right from his birth, the individual is faced with the problem of making adjustment and adaptation to his physical as well as social environment. Learning is a proper means to achieve this end. Through a process of continuous learning as how to behave or respond to a particular situation, the individual prepares himself for necessary adjustment and adaptation. This is why; learning is so often described as a process of progressive adjustment to ever changing conditions, which one encounters.
- **Learning as Improvement:** Learning is often considered a process of improvement with practice or training. This means that all types of learning help the child in the path of its progress towards the desired ends or results. However, this is not always true. The child learns so many things in the classroom that did not at all help him to achieve his goal. The habits of idleness, disrespect towards the authority, truancy, developing poor handwriting, and defective pronunciation and exposition etc. are some of them. Therefore, it should be known clearly that learning does not necessarily imply improvement (with respect to the achievement of and end).
- **Learning as Development:** While defining learning as a process of development, it should never be confined to mean 'progress in right direction to achieve certain ends or results' as Woodworth clarifies in his definition. Because of learning, the pattern of development is free to move to either direction– positive or negative. It is no guarantee that individual will always pick up good knowledge, desirable habits, interests and attitudes. He

has equal chances to be drifted to the debit side of the human personality.

- **Learning and Behavioural Changes:** Whatever the direction of the changes may be, it is always true that learning brings progressive changes in the behaviour of an individual because of which the individual can adjust to the changing situation. Changes in the behaviour of an individual are not always brought and controlled by learning only. There are other factors like fatigue, drugs, illness, etc., which produce behavioural changes. However, the behavioural changes brought about by these factors are purely transitory in nature whereas the changes produced by learning (through experience and training) are relatively more enduring and stable.
- **Learning is Growth:** The word growth is generally associated with the body, which is growing, but through the mental growth of the learner. Although it is latent, yet we can perceive its growth. Through his daily activities, the child grows both mentally and physically. Therefore, we say that learning is growth through experience.
- **Learning is Organising Experience:** Learning is not mere addition to knowledge. It is not mere acquisition of facts and skills through drill and repetition. It is the reorganization of experience.
- **Learning is Purposeful:** All true learning is based on purpose. Purpose plays a big role in learning. According to Ryburn, "This purpose is always connected with the use of some instinctive power, with the use of the energy with which we are endowed with birth." We do not learn anything and everything that comes in our way, in a haphazard manner. All school activities should be purposeful so that the child should feel real urge for learning.
- **Learning is Intelligent:** Meaningless efforts do not produce permanent result. Any work done mechanically is without any soul. When a child learns something unintelligently, he is likely to forget it very soon. He does not assimilate but simply commits to memory. Only efforts made intelligently have lasting effects.

- **Learning is Active:** Learning does not take place without a purpose and self-activity. In the teaching-learning process, the activity of the learner counts more than the activity of the teacher. The principle of learning by doing is the main principle, and it has been recommended by all modern educationists. It is the basis of all progressive methods of education such as the Dalton, the Project, the Montessori and the Basic.
- **Learning is both Individual and Social:** Learning is more than an individual activity. It is a social activity also. The individual mind is affected by the group mind consciously as well as unconsciously as individual influenced by his friends, relatives, classmates, parents, etc., and learns their ideas, feelings, and notions. Social agencies like the family, church, film and gangs of playmates have a tremendous influence on the child and are always moulding and remoulding him.
- **Learning is the product of the Environment:** The **e**nvironment plays an important role in the growth and development of the individual. Therefore, the environment should be healthy and rich in educative possibilities.
- **True Learning affects the Conduct of the Learner:** There is a change in the mental structure of the learner after every experience.

3.3.2 Goals in Learning

Goals in learning can be classified in three broad categories– (i) Acquisition of knowledge (ii) Acquisition of skills (iii) Acquisition of attitudes and ideals.

i) Acquisition of Knowledge includes–

(a) Perception (b) Conception (c) Associative learning.

a) *Perception:* Perception refers to the acquisition of specific knowledge about objects or events directly stimulating the senses at any particular moment. An object comes before our sense organs. We get its sensation and attach meaning to it on the basis of our past experience. This is called

perception and the type of learning is known as perception learning. An infant sees a woman. In the past, the woman has fed him. On the basis of that experience, he comprehends that the woman is his nurse or mother.

b) *Conception:* Conception means the acquisition of organized knowledge in the form of general ideas or concepts. Percept refers to an individual or specific situation and concept to general or universal. The child gets the perception of an apple, banana, orange, etc., and is able to locate certain general qualities in them. On the basis of these qualities, he forms a conception of fruit.

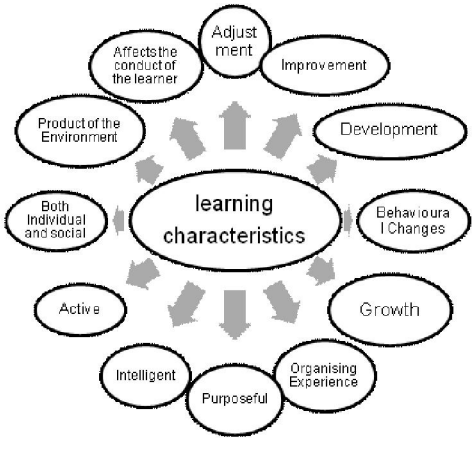
c) *Associative Learning:* Associative learning corresponds to memory, both as the deliberate recall and recognition, past experience, and a habit or automatic memory due to association. Associative learning is fundamental to all other learning.

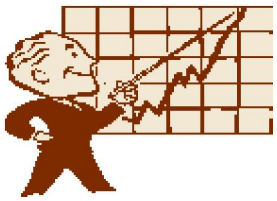
ii) **Acquisition of Skills:** This includes the sensory-motor processes– writing, reading, musical performance, language acquisition in its vocal aspect, art, drawing, handwork, etc.

iii) **Acquisition of Attitudes and Ideals:** This is present in the affective or feeling element. An ideal is a concept which is attached with some worth-while value.



LET US KNOW





CHECK YOUR PROGRESS

Q.1: Define Learning.

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Q.2: Mention two characteristics of learning.

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3.4 LEARNING AND MATURATION

Learning and maturation are closely interrelated and interdependent. Sometimes, it becomes difficult to determine definitely as to which of the behavioural change is the result of learning and which of the consequence of maturation.

A. Weismann (1889) gave the idea of maturation who considered the germ plasm as the carrier of heredity as passed from generation to generation. In recent years, particularly A. Gesell (1930), popularized this term. According to him, “Growth is a process so intricate and so sensitive that there must be powerful stabilizing factors, intrinsic rather than extrinsic growth trend. Maturation is in a sense a name for his regulatory mechanism.”

D. C. Marquis (1931) defined maturation in a more specific way. "Maturation is a modification of the organism pattern in response to stimuli present in the inter-cellular and intra-cellular environments, which at the given moment are independent of external influences."

Later J. A. McGoeth (1942), defined maturation in terms of behaviour change, "Maturation includes any change with age in the conditions of learning which depends primarily upon organic growth factors rather than upon prior practice or experience."

Learning has been defined by McGoeth as, "a change in performance as a function of practice. In most cases, if not in all this change has a direction which satisfies the current motivating conditions of the individual."

L. Carmichael (1947) conducted extensive research on the problem of maturation– learning, and wrote, "Today it is becoming more and more clear that during the whole period of growth and even during maturity, and again especially in the decline of capacity in old age, the behaviour of an organism can always be seen as resulting from the changes, structure and function." Further, he observed that these changes were practically the result of the inherited patterns and that some appeared to be somewhat independent of learning and environmental experience.

M. L. Biggie and M. P. Hunt (1968) wrote, "Maturation is a development process within which a person from time to time manifests different traits the *blueprints* which have been carried in his cells from the time of conception."

George G. Thompson (1979) states, "Maturation is a name for the growth process during which a structure or a function is more and more becoming adult that is, mature." Thompson further observes that these definitions stress different aspects of the maturation process, but are essentially similar in their emphasis on organically internal growth process, that are primarily independent of environmental factors external to the organism.

Thus, maturation involves changes that are associated with normal growth. It is relatively independent of activity, experience and practice.

Learning, on the other hand, is a change in the individual, which is not because of genetic inheritance. It is a process which takes place as a

result of 'stimuli' from 'without'. Activity, experience and training lead to changes in the behaviour in the process of learning.

The behaviour is stated to have matured if a behaviour sequence develops through regular stages, irrespective of intervening practices or training. If training procedures do not modify or speed up the behaviour, such procedures are not casually important and the changes do not classify as learning.

The swimming of tadpoles and the flying of birds can be attributed, primarily to maturation. However, in the case of human beings, it is not easy to decide whether the activities result from maturation or learning. The simplest example is that of a child. The child learns to talk only when he reaches a certain stage or age in maturation. It is also equally true that he does not learn the language just because he attains that age. The language is taught to him. The language which he learns is that which he hears. It is very clear that the two processes maturation and learning are closely related to each other. Maturation assists in the process of learning. Learning takes place only if the stage for that type of learning has been achieved through a process of maturation. A teacher would be effective if he understands the complexity of the changes that take place as a result of both processes and the interaction between the two. The reverse would be harmful. For instance, the normal development of speech in the child would be disrupted if a child were forced to learn certain speech patterns before certain maturation has occurred. On the other hand, the failure to provide specific training in speech at the appropriate time may be a great educational error.

Difference between Maturation and Learning:

Sl. No.	Maturation	Sl. No.	Learning
I)	Maturation is primarily based on heredity.	I)	Learning is primarily based on environment.
II)	Maturation is automatic process for behavioural change.	II)	Learning is planned process for the modification of behaviour.
III)	There is age-limit for the process of maturation.	III)	There is no age-limit for learning. Learning is a life-long process.
IV)	Maturation is related to the structure and potential capacity.	IV)	Learning is related to activities and experiences.

V)	Practice is not required for behavioural change.	V)	Practice is essential for behavioural change.
VI)	Motivation has no effect on maturation.	VI)	Motivation is essential for learning.
VII)	Maturation is influenced by racial differences.	VII)	Learning is influenced by psychological differences.
VIII)	Both suitable and unsuitable type of situations is used.	VIII)	Only conducive or suitable situations are used.

Relationship between Maturation and Learning:

Maturation and learning are not separate and distinct causes of development. Rather, they are closely inter-related, the one aiding or retarding the other. Maturation, which depends upon hereditary endowment, provides the raw material for learning and determines the more general patterns and sequences of individual's behaviour. However, without practice, development would not take place through maturation alone. It is wrong to presume that maturation is limited to the pre-natal and learning to the postnatal periods of individual's life.

There are certain phylogenetic functions which are common to the race, e.g., crawling, creeping, sitting, walking etc. They are mostly due to maturation and less due to learning. There are other ontogenetic functions which are due to the individual only e.g., swimming, cycling etc. They are mostly due to learning and less due to maturation. The following are the inter-relationship of maturation and learning:

- Individual differences in attitudes, interest, ambitions and personality patterns are not due to maturation alone, but due to maturation and learning. If development is the result of maturation alone, there would not have been individual personalities.
- Maturation sets the limits beyond which developments cannot progress even with the most favourable learning methods and the strongest motivation on the part of the learner (Gesell). The point has been stressed by Cattell and others when they said, "All learning and adjustment is limited by inherent properties of the organism."
- Inter-relationship between maturation and learning establishes a "timetable" for learning. The individual cannot learn until he is ready. Development readiness provides the "teachable moment" when the

task should be learned.

As Scott has pointed out, "Any attempt to teach a child or animal at too early a period of development may result in his learning bad habits or simply in his learning "not to learn" either of which results may greatly handicap him in later life."

3.5 TYPES OF LEARNING

Learning, defined as a process of bringing relatively permanent changes in the behaviour of an organism, may be classified in a number of categories depending upon the domain or specific area of the behaviour in which changes are introduced or in terms of the methods or techniques that are employed for the introduction of behavioural changes.

If we follow the former criterion, the learning can be classified as verbal learning (involving verbal expression), learning of motor skills (such as walking, dancing, typing, swimming, etc.), affective learning (learning of habits, interest attitudes, appreciation, etc.) and cognitive learning (learning of concepts, principles, problem solving, etc.).

In the case of the latter criterion, we may categorize learning as trial and error learning, classical conditioning, operant conditioning, chain learning, shaping, learning through generalization, learning through discrimination, serial learning, associate learning, insightful learning, etc.

An alternative basis adopted by Gagne (1970) for classifying learning is worth mentioning. By taking into consideration a specific hierarchical order, he classified learning into eight types, namely, signal learning (classical conditioning), S. R. learning (instrumental and operant conditioning), chain learning, verbal associate learning, multiple discrimination, learning of concepts, multiple discrimination, learning of principles and problem-solving.

Many of these various types of learning are discussed somewhere in this unit at the proper place. However, a few are discussed below:

- **Verbal Learning:** Learning of this type helps in the acquisition of verbal behaviour. The languages we speak, the communication devices we use, are the result of such learning. Rote learning and rote memorization which is a type of school learning is also included

in verbal learning. Signs, pictures, symbols, words, figures, sounds and voices, etc., are employed by the individual as an essential instrument for engaging him in the process of verbal learning.

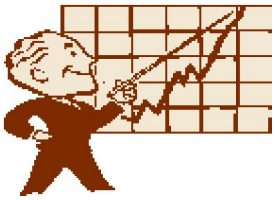
- **Motor Learning:** The learning of all types of motor skills may be included in such type of learning. Learning how to swim, riding a horse, driving a car, flying a plane, playing the piano, hitting a moving target, drawing a geometrical design, adding and multiplying long digits, performing experiments and handling various instruments are the examples of such learning. Acquisition of various skills through such learning helps in acquiring speed and accuracy in the field of operation of these skills, and it creates a sort of confidence in him to perform the task with great ease and satisfaction. The art of these skills can be acquired through a systematic and planned way of the acquisition and fixation of a series of organized actions or responses by making use of some appropriate learning methods and devices.
- **Concept Learning:** A concept in the form of a mental image denotes a generalized idea about the things, persons or events. For example, our concept of "tree" is a mental image that brings to us the similarities or common properties of all the different trees we know. We will call a thing tree which it has some specific characteristics, the image of which we have already acquired in our mind on account of our previous experience, perception or rich imagination. The formation of such concepts on account of previous experience, training or cognitive processes is called concept learning. Such type of concept learning proves very useful in recognizing, naming and identifying the things. All of our behaviour, verbal, symbolic, motor as well as cognitive, is influenced by our concepts. Thus what we do, say, understand, reason and judge is, to a great extent, controlled by the quality of our concept learning.
- **Problem Solving:** In the ladder of learning and acquisition of behaviour, problem solving denotes a higher type of learning. Such type of learning requires the use of the cognitive abilities like reasoning, thinking, power of observation, discrimination,

generalization, imagination, ability to infer and draw conclusions, trying out novel ways and experimenting, etc. Based on the grounds of earlier experiences, the effect of coaching, training, formal or informal learning and acquisition of knowledge, habits, attitudes, interests and learning sets, etc., an individual may be motivated to reach an unknown target or unfolding the mystery of an unresolved problem. How he can be trained to accomplish such a task in the function of problem-solving. This type of learning has essentially caused human beings to contribute significantly to the progress and improvement of society.



LET US KNOW

- Learning is the modification of behaviour by experience.
- Maturation is development of neuromuscular systems that allows behavioural improvement.
- Gagne classified learning into eight types, namely, signal learning (classical conditioning), S. R. learning (instrumental and operant conditioning), chain learning, verbal associate learning, multiple discrimination, learning of concepts, multiple discrimination, learning of principles and problem solving.



CHECK YOUR PROGRESS

Q.3: Maturation and learning is closely ..... (Fill in the blank)

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Q.4: Write three differences between learning and maturation.

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3.6 THEORIES OF LEARNING

What goes in the process of learning? How do we learn? How can a child learn to solve Mathematical problems? How does a girl learn to cook the food or sew the clothes? There are so many questions, the answer of which needs a thorough explanation of the phenomenon of learning. Psychologists have tried to perform experiments for throwing light on the phenomenon of learning and as a result have developed various learning theories. Each theory, with its systematic body of knowledge explains the nature and process of learning. These theories represent broad principles and techniques of learning. The set of rules and the laws of learning, having wide applicability, are drawn from these theories. In other sense, these theories also put forth various methods of learning, and suggest the teacher and learner to take proper steps for the effective learning.

Modern learning theories may be classified into two broad types, namely,

A) Stimulus response-associationist types of theories

B) Gestalt field or field cognition types of theories.

The former interprets learning in terms of the change in behaviour of the learner brought about by association of the response to a series of stimuli. The chief exponents of this type of theories are–Edward L. Thorndike (1874-1949); John B. Waston (1878-1958), and Evan Petrovich Pavlov (1849–1935). While the ideas and system propagated by Thorndike is called “Connectionism”, the system presented by Watson and Pavlov is known as conditioning.

The second type of theory looks upon learning as the change in the field consisting of the learner and environment, and the learner’s perception of the field. These theories emphasise the role of purpose, insight and understanding in the process of learning. The chief exponents of this type of theories are Max Wertheimer, Wolfgang Kohler, Kurt Koffka, and Kurt Lewin.

All these theories belonging to one or the other type represent the viewpoints, held by their propagators about the nature and process of learning. None of these theories is said to be complete in all aspects for

explaining the phenomenon of learning. Each one of them gives a partial description. For example, one theory is good in explaining the learning process in one situation while the others hold equally good in the other different situations. Therefore, it is essential to have a working knowledge of some important theories. These are:

3.6.1 Thorndike's Theory of Connectionism or Theory of Trial and Error

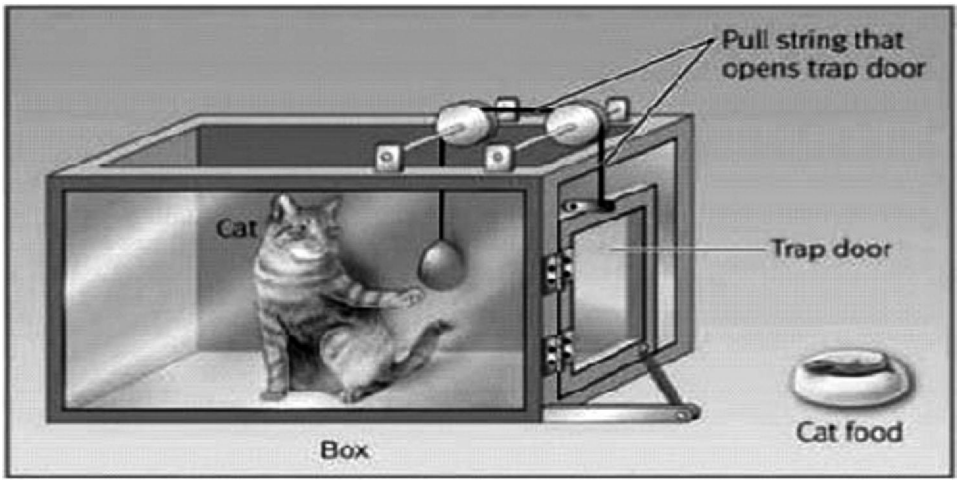
E. L. Thorndike (1874-1949) was the chief exponent of the theory of connectionism or trial and error. The basis of learning accepted by Thorndike is an association between the sense impressions and impulses to action. This association came to be known as a 'bond' or a 'connection'. Since, it is these bonds or connections, which become strengthened or weakened in the making called a 'bond' psychology or simply 'connectionism'. As it believes in stimulus and response type of learning, it is called S. R. Psychology of Learning. Thorndike called it learning by selecting and connecting. It is also known as trial and error theory as learning takes place through random repetitions.

Thorndike propounded his theory on the basis of the experiments conducted on cats, chickens, dogs, fish, monkeys and rats. He placed them under different learning situations and studied them carefully. With the help of these experiments, he tried to evolve certain laws and evolved his theory of connectionism or trial and error. It is interesting to know the type of experiments he performed with these animals. For illustration, below we narrate two of his experiments:

- He put a hungry cat in a puzzle box. There was only one door for exit which could be opened by correctly manipulating a latch. A fish was placed outside the box. The smell of the fish worked as a strong 'motive' for the hungry cat to come out of the box. Consequently, the cat made every possible effort to come out. The situation described by Thorndike himself is as– "It tries to

squeeze through every opening; it claws and bites at the bars or wires, it thrusts its paws through any opening and claws at everything it reaches". In this way, it made a number of random movements. In one of the random movements, by 'chance', the latch was manipulated. The cat came out and got its 'reward'.

- For another trial, the process was repeated. The cat was kept hungry and placed in the same puzzle box. The fish and its smell again worked as 'motive' for getting out of the box. It again made random movements and frantic efforts. But this time, it took less time in coming out. On subsequent trials such incorrect responses– biting, clawing and dashing were gradually diminished out and the cat took less time on every succeeding trial. In due course, it was in a position to manipulate the latch as soon as it was put in the box. In this way, gradually, the cat learned the art of opening the door.



An analysis of the trial and learning indicates the following characteristics:

- Where there is drive or motive, there is learning. In this experiment, the cat was hungry, so its motive was to get food by learning to come out of the cage.
- The organism makes a number of varied types of responses. The cat made these responses– clawing, scratching, walking around, pawing, pulling, etc.

- Some responses lead to the goal and they are known as satisfying responses. The response of pulling the strings, etc. by the cat was satisfying. Some do not lead to the goal and they are known as annoying responses. The responses of clawing, pawing, scratching, and walking were annoying for the cat.
- Satisfying responses become better learned as they lead to the attainment of the goal.
- Annoying responses tend to be eliminated gradually as they do not lead to the goal.

The experiment sums up the following stages in the process of learning:

- **Drive:** In the present experiment, drive was hunger and was intensified with the sight of the food.
- **Goal:** To get the food by getting out of the box.
- **Block:** The cat was confined in the box with a closed door.
- **Random Movements:** The cat, persistently, tried to get out of the box.
- **Chance Success:** Because of this striving and random movement, the cat, by chance, succeeded in opening the door.
- **Selection of Proper Movement:** Gradually, the cat selected the proper way of manipulating the latch out of its random movements.
- **Fixation:** At last, the cat learned the proper way of opening the door by eliminating all the incorrect responses and fixing the only right responses. Now it was able to open the door without any error or in other words, it learned the way of opening the door.

Thorndike named the learning of his experimental cat as "Trial and Error Learning". He maintained that the learning is nothing but the stamping in of the correct responses and stamping out of the incorrect responses through trial and error. In trying for the correct solution the cat made so many vain attempts. It committed errors and errors before getting success. On subsequent trials, it tried to avoid the erroneous ways and repeat the correct way of manipulating the latch. Thorndike called it "Learning by selecting and connecting"

as it provides an opportunity for the selection of the proper responses and correct or associate them with adequate stimuli. In this context, Thorndike wrote, "Learning is connecting. The mind is man's connection system." Learning is caused by the formation of connection in the nervous system between stimuli and response.

The following summary description of the behaviour of 12 cats ranging from 3 to 19 months of age in the puzzle box is quoted from Thorndike's book entitled, "*Animal Intelligence"* (1901). "When put into the box, the cat would show evident signs of discomfort and of an impulse to escape from confinement. It tries to squeeze through any opening. It claws and bites at the bars or wire; it thrusts its paws out through any opening and claws at everything it reaches; it continues its efforts when it strikes anything loose and shaky; it may claw at things within the box. It does not pay very much attention to the food outside, but seems simply to strive instinctively to escape from confinement. The vigour with which it struggles is extra-ordinary. For eight or ten minutes, it will claw, bite and squeeze incessantly. The cat that is clawing all over the box in her impulsive struggle will probably claw the string or loop or button as to open the door. And gradually, all the other non-successful impulses will be stamped out by the resulting pleasure, until, after many trials, the cat will, when put in the box, immediately claw the button or loop in a definite way."

On the basis of his experiments, Thorndike propounded the following laws of learning:

- **The Law of Readiness:** This law states, "When any conduction unit is ready to conduct, for it to do so is satisfying. When any conduction unit is not in readiness to conduct, for it not to do so is annoying." The law is indicative of the learner's state to participate in the learning process. According to Thorndike, readiness is preparation for action. Readiness does not come automatically with maturation. It is a law of preparatory adjustment, not a law about growth. Thorndike termed the neurons and synapses involved in establishment of a specific

bond or connection, a conduction unit. According to this law, for a conduction unit ready to conduct, to do, is satisfying and for it not to do so is annoying.

- **Educational Implications:** Teacher should prepare the minds of the students to be ready to accept the knowledge, skills and aptitudes. For this, he should provide opportunities for those experiences in which students can spontaneously participate. In other words, he should arouse their capacity to link the experiences with their everyday life. 'Simple to complex' is the important maxim. Aptitude tests may be given to the students to find out their readiness to learn.
- **The Law of Effect:** The law states, "Of several responses made to the same situation, those which are accompanied or closely followed by satisfaction to the animal will, other things being equal, be more firmly connected with the situation, so that, when it recurs, they will be more likely to recur, those which are accompanied or closely followed by discomfort to the animal, will, other things being equal, have 'their' connections with that situation weakened, so that, when it recurs, they will be less likely to occur. The greater is the satisfaction or discomfort, the greater is the strengthening or weakening of the bond." Thorndike explains the meaning of *satisfaction* and *discomfort* as, "By a satisfying state of affairs is meant one which the animal does nothing to avoid, often doing such things as attain and preserve it. By a discomforting or annoying state of affairs is meant one which the animal commonly avoids and abandons."
- **Educational Implications:** A pleasing environment should be created in the classroom. The teacher should be sympathetic but firm. He himself should enjoy his work. Experiences provided to the students should be satisfying and meaningful. They should be organized in the order of increasing difficulty. Material should be provided in a number of interesting ways including the use of audio-visual aids.

In simple words, the law of effect means that learning takes place properly when it results in satisfaction and the learner derives pleasure out of it. In the situation when the child meets a failure or gets dissatisfaction, the progress in learning is blocked. All the pleasant experiences have a lasting influence and are remembered for a long time, while the unpleasant ones are soon forgotten. Therefore, the satisfaction or dissatisfaction, pleasure or displeasure obtained as a result of some learning ensures the degree of effectiveness of that learning.

- **The Law of Exercise or Repetition.** It states, "Any response to a situation will, other things being equal, be more strongly connected with the situation in proportion to the number of times it has been connected with that situation and to the average vigour and duration of the connection." According to this law, the more a stimulus-induced response is repeated, the longer it will be retained. The law states, other things being equal, exercise strengthens the bond between situation and response. Conversely, a bond is weakened through failure to exercise it. Thus, the law has two sub-parts, (*i*) law of use, and (*ii*) law of disuse.

  Law of Use means, "When a modifiable connection is made between a situation and response that connection's strength is, other things being equal increased."

  Law of Disuse means, "When a modifiable connection is not made between a situation and response, during a length of time, that connection's strength is decreased.

  Educational Implications: More and more opportunities should be provided to the students to use and repeat the experiences they get in the classroom. Drill strengthens the bonds of S-R. Review of the lesson maintains connections.

- **Subordinate Laws:** Apart from the three laws explained above Thorndike gave the following subordinate laws:
  - **Multiple Response:** Confronted with a new situation the organism responds in a variety of ways before arriving at the correct response.

- **Attitude:** The learner performs the task well if he has his attitude set in the task.
- **Prepotency of Elements:** The learner reacts to the learning situation in a selective manner. He uses his insight, selects the prepotent elements in a situation and bases his response upon those elements.
- **Analog:** The organism responds to a new situation on the basis of the responses made by him in similar situation in the past. He makes responses by comparison or analogy.
- **Associative Shifting:** According to it, we can get any response, from the learner of which he is capable, associated with any situation to which he is sensitive.
- **Principle of Polarity:** It states that connections act more easily in the direction in which they were first formed than in opposite direction.

➢ **Educational Implications of Thorndike's Theory of Learning and Laws:** Thorndike's theory of trial and error and laws of learning have great educational significance. Thorndike's findings have made the learning purposeful and goal-directed. There is no doubt that many discoveries and inventions in various fields of knowledge are the results of trial and error. However, at the same time, it must be recommended that in the case of human beings, trial and error is not always devoid of thinking and understanding. Trial and error, coupled with insight will make the process of learning more effective. Important educational implications are:

- According to Thorndike, readiness is preparation for action. It is very essential for learning. If the child is ready to learn, he learns more quickly, effectively and with greater satisfaction than if he is not ready to learn. He warns us to make the child learn till he is ready to learn and also not to miss any opportunity of providing learning experiences if the child is, already prepared to learn. The right movements

concerning the learning situation and the learner's state of mind should be very well recognized and maximum use of this knowledge should be made by the teacher. He should also attempt to motivate the students by arousing their attention, interest and curiosity.

- The law of effect emphasizes the role of rewards and punishment in the process of learning. Getting reward because of some learning motivates and encourages the child to proceed on the same path with more intensity and enthusiasm while the punishment of any sort discourages him and creates distaste and distraction towards the learning.
- The main task of the teacher in the teaching-learning process is to see what generalizations, principles, etc., he likes his students to remember or forget. Consequently, he must try to strengthen the bonds or connection between the stimuli and the responses of those things, which are not to be remembered. This could be done through drill, repetition and reward. For forgetting, he should make attempts to weaken the connections through disuse and annoying elements.

Thorndike's theory and laws also imply the following:

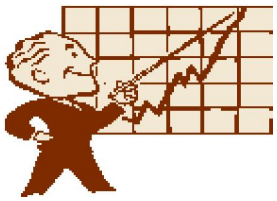
- Mere repetition is of no use. Repetition becomes useful when the response is rewarded. In the case, repetition strengthens the connections.
- Understanding goes out of previous experience. The best way to develop understanding is to develop a body of connections appropriate to that understanding.
- Transfer in learning takes place because of identical elements in the two situations.
- Rewards have more strengthening effect than the corresponding weakening effect of punishment.
- Forgetting takes place because of the law of disuse.
- The child should be encouraged to do his work independently.
- Thorndike has given five aids to improve learning. They are:

I) Interest in the work.

II) Interest in improvement.

III) Significance of the work.

IV) Adventives.



CHECK YOUR PROGRESS

Q.5: What do you mean by satisfaction and discomfort according to Thorndike?

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Q.6: Who wrote the book "Animal Intelligence"?

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Q.7: Mention two sub parts of the law of exercise.

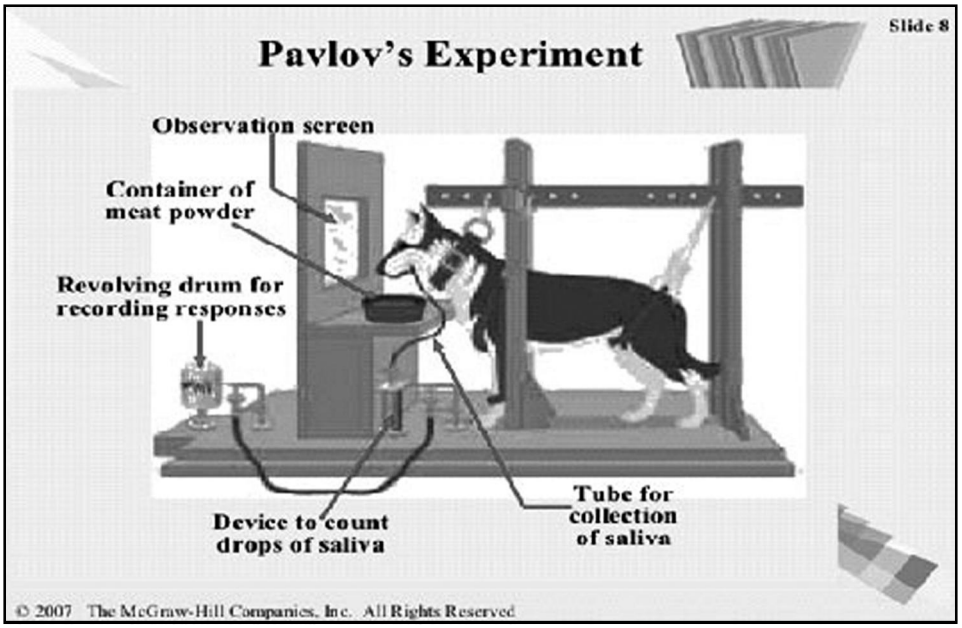
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3.6.2 Pavlov's Classical Conditioning Theory of Learning

Ivan P. Pavlov (1849-1936), a Russian psychologist was the discoverer of classical conditioning theory of learning. He won Novel Prize in 1904 on his research on the digestive process. He was basically interested in studying the process of gastric secretion in dogs. His finding brought about a revolutionary change in the field of learning. Conditioning is the modification of the natural response. By conditioning, Pavlov modified the behaviour of the dog on which he experimented. Now, we modify the behaviour of the learner in such a way as the response originally connected with a particular stimulus comes to be aroused by a different stimulus. The classical experiment conducted by Pavlov will make clear the process of conditioning.

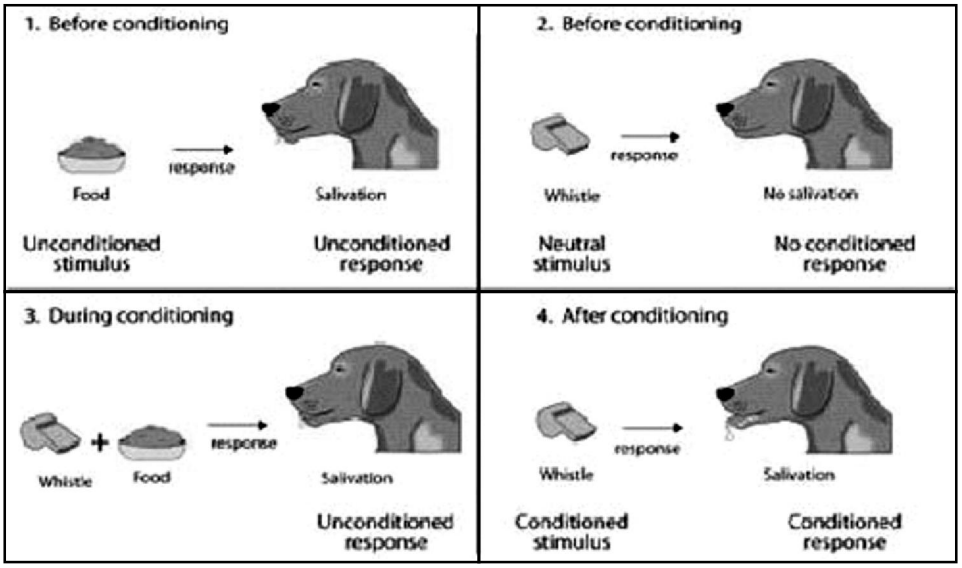
Pavlov's Experiment: In one of his experiments, Pavlov kept a dog hungry during the night and then tied him on the experimental table, which was fitted with certain mechanically controlled devices. The dog was made comfortable and distractions were excluded as far as possible. The observer (Pavlov) kept himself hidden from the view of the dog but was able to view all the movements of the dogs by means of a set of mirrors.



Arrangement was made to give food to the dog through automatic devices. Simultaneously, with this act of offering the food to him, a bell was rung. It was natural that the dog secreted saliva when he saw the food. The saliva went into the tube and it was measured. The experiment went on for some days. After that, the bell was rung one day, but no food accompanied it. The dog secreted the saliva even then. It was observed that the saliva went on coming in the same quantity with the ringing of the bell for some days. The actual stimulus to bring forth the response, i.e., the secretion of saliva, was the sight of the food but it was conditioned in such a way that another stimulus which ordinarily had nothing to do with secretion of saliva began to stimulate it.

Food is the 'natural stimulus' as it motivates the dog to respond. His response is secretion of saliva. Ringing the bell is an

'artificial stimulus', also called 'conditioned stimulus'. The response of the dog when the bell rung is called a 'conditioned response'. Conditioning is thus the modification of the natural response. The abbreviations used are: NS for Natural Stimulus, CS for Conditioned Stimulus, NR for Natural Response and CR for Conditioned Response.



In this experiment, the dog learned to secret saliva at the sound of the bell. This kind of learning was named as Learning by Conditioning.

The experiment was conducted in a windowless soundproof room in order to minimise the effects of extraneous stimuli on the subject.

An apparatus was used to measure the number of drops of the saliva secreted as well as the total amount in cubic centimetres.

Principle of Conditioning: For explaining his theory, Pavlov has given some principles of conditioning.

Principle of Reinforcement: The term reinforcement refers to the following conditioned stimulus by the unconditioned stimulus, i.e., food following the bell. Pavlov stated that it was only reinforcement that led to the conditioning. Without reinforcing the bell with meat, no conditioning could be developed– this was reinforcement. This is applicable to children also. Children's learning becomes effective

when they are rewarded immediately after they perform well. Their behaviour is conditioned with reinforcement. Quite often, the unconditioned stimulus reduces a drive or tension. Thus, the term reinforcement has also come to mean reduction in drives or tensions.

Principle of Sequence and Time Intervals: There is an optimal time between the presentation of the conditioned stimuli and the unconditioned stimuli. If there is any variation, i.e., increase or decrease in the optimal time, then there is no conditioning and bond cannot be formed.

Principle of Stimulus Generalisation: According to this principle, if we are conditioned to one thing, i.e., the bell, then we would be conditioned, more or less, to all sorts of bells. In the earlier stage of learning by conditioning, the animal responded to a number of stimuli, which accompanied the exact conditioned stimulus. The response is the greatest to the conditioned stimulus and goes on decreasing to other stimuli, which are less similar to the original one.

Principle of Differentiation: When two stimuli are sufficiently distinguishable, the organism can be conditioned to respond to one of them. This is done by regularly reinforcing one stimulus and non-reinforcing the other. The organism can be conditioned to react differently to the two stimuli, which at first make nearly the same response. This is how we learn to react differently to different brands of tea or coffee. However, in case the organism is pressed too far it causes experimental neurosis. In the laboratory, when the dog was made to discriminate between two very thin ellipses' it started howling at the experiments. It is clear that response to a particular stimulus can be achieved only through selective reward.

Principle of Extinction: If the sound of the bell is not followed by food, it implies that there is no reinforcement. A stage reaches when the dog stops to secrete saliva. This process is called as extinction. Pavlov noted in his experiments that when the spacing of test trials was increased, the response extinguished rapidly.

Principle of Spontaneous Recovery: The principle of spontaneous recovery explains that there is no complete extinction on account of

the time interval but there is inhibition of CR, when the dog is brought out of the experimental set-up and again put in the set-up after a lapse of time, the dog responds to conditioned stimulus (CS) by gastric secretion. This process is called spontaneous recovery.

Principle of Inhibition: Inhibition may be defined as a process in which a stimulus inhibits a response that would otherwise occur. Pavlov mentioned two types of inhibitions.

a) **External Inhibition:** Once the dog was conditioned, it was found not giving conditioned response in the presence of some stranger. Often, we come across cases when pupil-teachers fail to deliver a well-prepared lesson in the presence of their supervisors.

b) **Internal Inhibition:** Pavlov observed that if complete extinction of CR is obtained by not providing food to the dog and it is then given a period of 24 hours rest, CR will show spontaneous recovery when the dog is tested again. The extinction does not permanently weaken the CR. It was argued by Pavlov that spontaneous recovery proved that CR in extinction did not represent dying of the reflex or any real weakening of the learned SR connections. Some internal inhibitory process blocked it. For example, physical health of the organism or pre-occupation with some other activity etc. may block the response.

- **Principle of Higher Order Conditioning:** When conditioning is done to a new stimulus on the basis of a previous conditioned stimulus, it is designated as higher order conditioning. By this process, conditioning can be done by associating one stimulus with another. The process of conditioning becomes difficult if the process is carried too far.
- **Principle of Secondary Reinforcement:** Conditioned response is established to some stimulus other than the primary one, e.g., food elicited salivation. By repeated presentation, it was found that the sight of food led to salivation or a part response. It is called secondary reinforcement. Secondary reinforcement plays an important role in later

learning especially in the case of children when the reward may be no more than a kind word or some other gesture or some token reward

- **Principle of Age and Conditioning:** The process of conditioning is valuable at all ages but especially in early childhood.

Contribution of Pavlov's Theory of Conditioning to Learning and Classroom Implications: Pavlov's work on the laws of conditioning is considered a landmark contribution to educational Psychology. No learning theorist can ignore the technical and theoretical discoveries of Pavlov. Pavlov's work contributed most richly to the behaviouristic schools and systems of psychology, especially to those of Watson, Gurthie, and Hull and indirectly to Skinner. Pavlov explained learning in terms of physiological changing by adopting an objective method of study. Conditioning was accepted as theoretical framework and practical technique of solving a variety of applied problems. Most of the terminology used in learning was developed by Pavlov.

The principles of classical conditioning can be used in various areas of teaching learning in the classroom also.

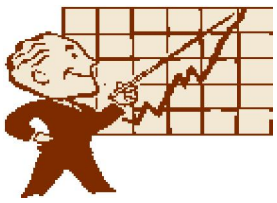
A child learns through conditioning. A child who fears a particular object or subject can be made to seek pleasure from it. Through conditioning, we can dispel fear and hatred, and create love towards subjects. A teacher of English, with his defective methods of teaching or improper behaviour may be disliked by a particular student or a group of students. He may have developed the habit of rebuking children while returning the checked assignment or listening to their answers. Gradually, the students develop hatred for the subject as well as the teacher. On the other hand, a friendly and sympathetic teacher will have a positive impact on the students through the process of conditioning. The students develop positive attitudes towards the subject and the teacher.

The use of audio-visual aids in the teaching-learning process involves the conditioning theory. For instance, the teacher shows

the picture of a cow, along with the written word 'cow'. The teacher speaks out the word 'cow' and asks the students to say 'cow', every time the picture is presented. After some time, the picture of the cow is not presented. Only the written word cow is shown. But the child responds to it by saying cow. He associates the written word cow with the picture of the cow and the sound of the word.

Principles of classical conditioning are very helpful in developing good habits in children– habits of cleanliness, punctuality, respect for others etc. Bad habits can be eliminated through conditioning. Most of the learning is acquired in social environment. Principles of classical conditioning can be used to deconditioning bad habits like fear and anxiety in children. Classical conditioning can be used for developing favourable attitude to subjects, teachers and above all the school. The concept of reinforcement in classical conditions points out the need for immediate rewards. Pavlov's theory of conditioning is criticised on two grounds.

- All learning is not conditioning and on the other hand, it is an active process.
- Learning needs intelligence and understanding but conditioning ignores it by and large.



CHECK YOUR PROGRESS

Q.8: Mention three principles of conditioning.

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Q.9: Write about the process of conditioning.

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3.6.3 B.F. Skinner's Theory of Operant Conditioning

Skinner called his theory as Operant Conditioning, as it is based on certain *operations or actions,* which an organism has to carry out. The term 'operant' stresses that behaviour operates upon the environment to generate its own consequences. An operant is a set of acts which conditions and organism in doing something. In the process of operant conditioning, operant responses are modified or changed by reinforcement. Reinforcement is a special kind or aspect of conditioning within which the tendency for a stimulus to evoke a response on subsequent occasions is increased by reduction of a need.

Most S-R theorists have assumed the existence of a stimulus as a pre-requisite for evoking a response. In the absence of any external stimulus, they have assumed some internal stimuli for evoking the response. Skinner was against this "No stimulus–no response" theory and believed that most of the responses could not be attributed to the known stimuli. He defined two kinds of responses– the one elicited by known stimuli, which is called as respondent or reflexive behaviour and the other emitted by the unknown stimuli, which is called as operant behaviour.

Respondent behaviour is learnt according to Pavlovian model of conditioning. Since it is concerned with the stimuli, it is known as S-type conditioning. Skinner attaches greater importance to operant behaviour which is primarily concerned with response rather than stimuli, it is known as R-type conditioning. Out of many responses

which an organism is capable of giving, the problem with the experimenter is to evoke only the appropriate responses and fix them properly. Thus Skinner changed the usual S-R formula into an R-S formula.

Operations involved in Operant Conditioning: Several operations are involved in the process of operant conditioning. Some of the important operations are briefly described are as follows:

- Shaping (generalization, changing and habit competition.)
- Extinction.
- Spontaneous recovery.
- Concept of reinforcement.

- **Shaping:** Shaping is the most important mechanism used in operant conditioning. It refers to the judicious use of selective reinforcement to bring certain desirable changes in the behaviour of the organism. The basic process in shaping is successive approximation to the desired behaviour. The experimenter shapes or moulds the behaviour of the organism as clay is moulded by a potter in a definite form of a pot.
  - *Principles involved in shaping:* There are three important psychology principles which are involved in the process of successful shaping of behaviour. They are as follows:

  a) Generalization
  b) Habit competition
  c) Each segment in the chain must be linked to the other
- **Extinction:** It is permitting a behaviour to die out by not reinforcing it. This is known as external approach to motivation.
- **Spontaneous Recovery:** Extinction of a response may take place due to non-reinforcement or interference by incompatible responses, but recovery can be spontaneous recovery of the responses, which means extinction and not forgetting.
- **Reinforcement:** A reinforce is the stimulus whose presentation or removable increases the probability of a response. Skinner thinks of two kinds of reinforcers– positive and negative. A positive

reinforce is any stimulus the presentation of which strengthens the probability of a response. A negative reinforce is any situation the withdrawal of which weakens the probability of response. Any electric shock, a loud voice are negative reinforcers while food, water, etc., are positive reinforcers.

Skinner does not attribute motivation to internal process within the organism. He takes for granted the reinforcement of conditions in a common sense way for motivation. Food is reinforcing to a parrot or a pigeon. Knowledge of correctness is reinforcing to a learner in the school. Reward strengthens the behaviour, which preceded it, but punishment does not permanently reduce a tendency to respond. Extinction, permitting behaviour to die out by not reinforcing it, and not punishment, is the appropriate process for breaking habits. This is known as external approach to motivation.

Schedules for Reinforcement: As a result of this external approach, Skinner has worked out the following effective schedules of reinforcement:

- ***Fixed Internal Reinforcement***– Reinforcement is called fixed Internal reinforcement when it is given after a fixed interval of time.
- ***Fixed Ratio Reinforcement***– When reinforcement is given after a fixed number of responses, it is called fixed ration reinforcement.
- ***Variable-Interval Ratio Reinforcement***– When reinforcement is given on varying intervals of time or after a varying number of responses, it is called variable reinforcement.

Learning of a response takes place quickly if every correct response is reinforced, but it is forgotten easily when the reinforcement is stopped. If reinforcement is given after varying number of responses or a varying interval of time, the response is remarkably resistant to extinction

Two Types of Operant Reinforcements: There are two types of operant reinforcements– stimulus discrimination and response discrimination. Stimulus discrimination occurs when a given response is made to one member of a pair of stimuli and not to the

other member of the pair. Differentiation of a response occurs when the response form is adjusted or attested approximately to the situation.

Typical Problems in Learning Explained by Skinner's Theory:

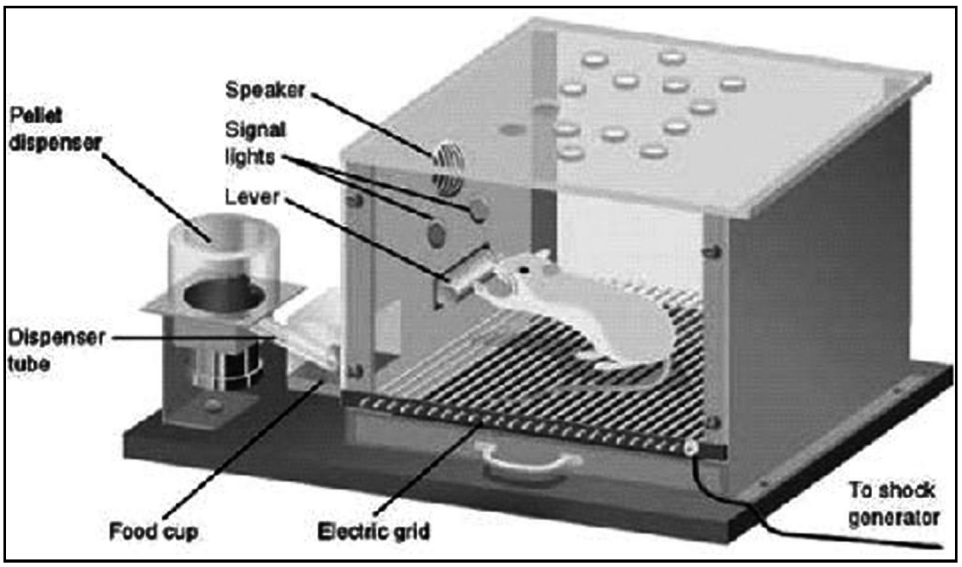
- **Capacity:** Differences in capacity have been attributed to the empirical constants, which are formed in Skinner's law, because the values of these constants vary from species to species.
- **Practise:** Skinner accepts something like a law of exercise for 'Type-S' conditioning and for 'Type-R' conditioning he favours repeated reinforcement. He emphasizes intermittent reinforcement as protection against extinction.
- **Motivation:** Reward increases the operant strength, while punishment has no corresponding weakening influence. Drive level also affects the role of responding.
- **Understanding:** Rapid learning, which has been identified with "insight" by Keller and Schoenfeld, depends upon– (1) Similarity of the problem to one solved earlier, and (2) Simplicity of the problem. Problem-solving is the process of manipulating variables to correct response. It does not involve originality.
- **Transfer:** Generalization, which Skinner calls induction, is the basis of transfer.
- **Forgetting:** There is no special theory proposed by Skinner for forgetting. Extinction of a response may take place due to non-reinforcement or interference by incompatible responses, but, there can be spontaneous recovery of the response also, which means that extinction is not forgetting. True forgetting is slow process of decay with time.

Skinner's Experiments: The early experimental work by Skinner was carried out with rats with pressing levers for food packets in a Skinner box. The experimental base of the analysis was gradually extended to other animals, to human and to situations and behaviours differing increasingly from the original base, i.e., to teaching machine. Entire Programmed Learning is based on Skinner's learning theory.

Skinner constructed a box and equipped it with a lever and a food tray. The lever could be pressed. Skinner placed a hungry rat in the box and the rat would wander over the bar from time to time and push the bar down. The moment it happened, a food pellet would fall into the tray. The rat learned this task of pressing the lever more frequently when the food pellet *reinforced the behaviour.* Skinner modified the procedure, food pellets would be supplied under certain conditions–when the lever was pushed down and a tone was sounded but not under other conditions. The rat generalized and pushed the lever when tone was sounded.

Skinner used pigeons also as subjects where the operant investigation was pecking at a spot that acted as a key to trigger the reinforcement. He also conducted experiments on human beings where the operant was problem-solving. For the pigeons, food was the reinforcement just as it was for the rat in the box. For the human subjects, it would be getting the right answer or a verbal expression of approval.

The first few reinforcements were relatively ineffective but later on the rats of response was extremely rapid.



Educational Implications of Skinner's Theory:

- Learning objectives should be defined very specifically in terms of behaviours.

- Objectives should be arranged in order of simple to complex.
- For developing motivation in the students for classroom work, reinforcers like praise, blames, grades, etc. should be used.
- Proper use of positive and negative gestures also serves as reinforcers to work.
- Reinforcers should be used periodically so that the possibility of extinction of the desired behaviour is resisted.
- In the classroom, the principle of immediacy of reinforcement is very important. Praise for a job done well given immediately can be a stronger reinforce or motivator than a grade given much later.
- Skinner's principles of learning focus attention on the individual's pace of learning. Teaching machines and the programmed learning system have been devised on the basis of the theory of learning founded by Skinner.

Limitations of Operant Conditioning:

- It is doubtful if the results derived from controlled experimental studies on animals would yield the same results on human beings in the social learning situations.
- It is argued that Skinner has ignored the structural and hereditary factors which are very important in the development of psychological process of language.
- The operant reinforcement system does not adequately take into account the elements of creativity, curiosity and spontaneity in the human beings.
- Skinner argues that all human behaviour is acquired during the life-time of the individual. Thus it gives no place to the importance of genetic inheritance.
- Skinner's theory of learning dehumanizes the learning process on account of its emphasis on the mechanization of the mental process.
- Operant theory of learning does not deal with the depth of mind and thus it is artificial in nature.

Comparison between Classical And Operant Conditioning:

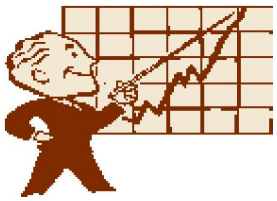
Sl. No.	Classical Conditioning	Sl. No.	Operant Conditioning
i)	It was formulated by a Russian psychologist named Pavlov.	i)	It was formulated by an American psychologist Skinner.
ii)	Pavlov conducted experiments on dogs.	ii)	Skinner conducted experiments on rats and pigeons
iii)	It is called Pavlovian or type-1 learning (respondent).	iii)	It is called Skinnerian or type-2 learning (operant).
iv)	In classical conditioning, the occurrence of conditioned response is forced reflectively by unconditioned stimulus.	iv)	Response is more spontaneous and voluntary in operant conditioning.
v)	The unconditioned stimulus occurs irrespective of subject's behaviour.	v)	The reward is contingent upon the occurrence of response.
vi)	Classical conditioning is preparatory or anticipatory response. It is also called.	vi)	Operant conditioning serves mainly to stress or guide the learner that already has certain responses available.
vii)	The law of contiguity is the basis of association between stimulus-response (S-R).	vii)	The law of effect is the basis of association between stimulus response (S-R).
viii)	Automatic nervous system in the organism is the controlling authority.	viii)	Central nervous system is the organism is the controlling authority.
ix)	There is pairing of unconditioned stimulus and conditioned stimulus.	ix)	There is the pairing of a response and the reinforcing stimulus which follows. There is no pairing of unconditioned stimulus and conditioned stimulus.
x)	Bondage between specific unconditioned stimulus and conditioned stimulus is established.	x)	Tendency to respond in a specific manner is developed.
xi)	Reinforcement takes the first place in the Pavlov's experiment as food is presented first to the elicit the response.	xi)	Reinforcement comes after the response is made by the organism.
xii)	Conditioned stimulus and unconditioned stimulus can be placed in different temporal sequence. Close contiguity is followed.	xii)	Close contiguity is followed and response stimulus chain is formed.
xiii)	In classical conditioning, focus is on the single stimulus response bondage.	xiii)	Operant conditioning is concerned with the sequence of responses. A chain of response is formed leading to the desired goal.

xiv)	Regardless of the occurrence of conditioned response, we present the unconditioned stimulus.	xiv)	Stimulus is presented only if the organism makes the desired response.
xv)	Classical conditioning presents different pictures of behaviour and learning in which an arbitrary stimulus is associated with a specific elicitable response.	xv)	The operant conditioning deals with the differentiation and discrimination of a out of a mass behaviour emitted in response to a complex stimulus field.
xvi)	Classical conditioning lays stress on time control.	xvi)	Operant conditioning lays stress on motivation and reward.
xvii)	Stimulus substitution is the essence in learning.	xvii)	Response-modification is the essence in learning.
xviii)	Initially the classically conditioned reflexes.	xviii)	The operant conditioning cannot have zero strength as it has to occur once at least before it can be reinforced.
xix)	Respondent behaviour is internal.	xix)	Operational behaviour is external. The organism operates on the environment.



LET US KNOW

Prof. Skinner started his research work on behaviour while he was graduated in the Department of Psychology of the Harvard University. In 1931, he wrote his thesis entitled, *The Concept of the Reflex in the Description of the Behaviour*. Thereafter, in the middle of the forties, Skinner conducted a good deal of research at the Minnessota and Indian Universities, on the theory of operant conditioning. Skinner was a practical psychologist who conducted several experiments on rats and pigeons. He popularized 'teaching machines' in learning in 1954. His important publications are: *The Behaviour of Organism* (1938); *Science and Human Behaviour* (1953); *Verbal Behaviour* (1957); *Cumulative Record* (1959); *Beyond Freedom and Dignity* (1971) *and About Behaviourism* (1974).



CHECK YOUR PROGRESS

Q.10: What is reinforcement?

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Q.11: Write the meaning of Operant Conditioning.

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Q.12: What is the most important contribution of this theory in educational practice?

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3.6.4 Gestalt Theory of Learning by Insight

The Gestalt theory of learning, also named as *Learning by Insight,* is the contribution of the German psychologists who were studying the nature of perception. Max Wertheimer (1880-1943) was the founder of Gestalt psychology. He did a lot of research work at the University of Frankfurt and the University of Berlin. Thereafter, he worked at the New School of Social Research in New York city. Wolfgang Kohler and Kurt Koffka were the other German psychologists associated with Wertheimer. Gestalt Theory of Learning (Learning by Wholes) or Learning by Insight states that perceptual phenomena are only experienced as *wholes* or Gestalts.

Learning according to Gestalt Theory, is not by random steps, not by trial and error, not by conditioning but by insight, introspection and understanding. The Gestaltians tend to place far more emphasis on the intrinsic organizing capacity in the brain of the individual and

emphasise the dynamic interaction of the elements in the entire perceptual field. Gestalt theory of learning essentially consists in problem-solving by understanding the relative position of the elements in the entire perspective or situation.

"Gestalt" is a German word for which there is no equivalent English word. The term was carried out into English psychological literature. The nearest English translation of Gestalt is 'configuration' or more simply 'an organized whole in contrast to collection of parts'. Gestalt psychologists consider the process of learning as a Gestalt– an organized whole. A thing cannot be understood by studying its constituent parts, but only by studying it as a totality, is a basic idea behind this theory.

Gestalt School makes a strong attack on Thorndike's Theory of 'trial and error' and asserts that learning is not stamping of correct responses through trial and errors. The behaviourists approach to learning is also not acceptable to Gestaltist as they want to study behaviour as a whole and learning in its totality.

Gestalt psychology is a revolt against S.R. approach to learning. It points out two weaknesses in the theory of conditioning:

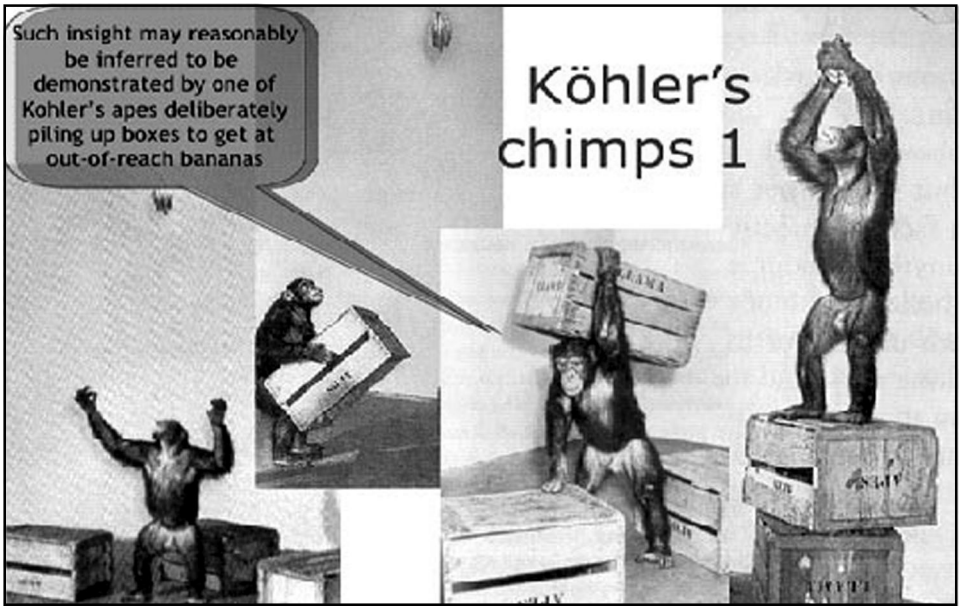
i) Conditioning reduces complex human behaviour to an accumulation of simple conditioned responses.
ii) S.R. theorists attribute learning to reduction of basic organic drives.

Gestalt psychology is primarily concerned with the nature of perception. According to it, an individual perceives wholes and not parts. Learning is viewed as purposive, explorative, imaginative, and creative enterprise in which the total situation is taken into account by the learner. Kohler and Koffka conducted many experiments on Chimpanzees and brought out a book, '*Mentality of Apes*' in 1925 (result of the experiments conducted during 1913-17). These experiments show that learning was not the result of trial and error but of insight and the ability to see relationships between various factors involved in a situation.

A very detailed and systematic treatment of learning from Gestalt view-point is found in Koffka's *Principles of Gestalt Psychology* (1935). As mentioned earlier, Kohler and Koffka were the chief exponents of this theory. They stressed the totality of the process of learning. They took the process of learning as a synthetic activity, which brings forth complete solutions of problems.

Experiment 1:

In one of his experiments, Kohler shut the chimpanzee, Sultan by name, in a big cage. A banana was placed outside, at a considerable distance of the cage. Inside the cage there were two sticks– one of them a long one and the other a bit shorter. The shorter stick could be screwed into the long one. The long stick could not reach the banana but if the other one was screwed into it, the banana could be touched. Sultan tried to get at the banana. He tried the long stick but it does not reach the fruit. The other was still smaller. He sat down and began to play with the sticks. But he is still brooding over the matter. Suddenly, an idea flashed to him. He thrust the smaller stick into the hole of the longer one and thus managed to get at the banana with the help of the combined sticks.



Experiment 2:

In this experiment, the chimpanzee was shut up in a room with unscalable walls. A banana was hanging with the ceiling. The

animal was hungry. He jumped at the fruit but it was too high. He left the efforts and sat down. There was a box lying in the corner of the room. The animal began to play with the box. He then suddenly got up and pushed the box to the centre of the room below the banana, jumped from it and got the fruit.

Principles of learning: Koffka suggested that the laws of perception were equally applicable to learning. A learning situation is a problem situation and the learner has to see the problem as a whole and find its solution by insight. The law of organisation of perception as applicable to learning is the law of Pragnanz and four laws of organisation subordinate to it –the laws of similarity, proximity, closure and good continuation.

The Law of Pragnanz: The German word "Pragnanz" means 'compact but significant'. The law suggests the direction of events. Psychological organisation tends to move in one general direction, always towards the state of Pragnanz, towards good gestalt. A good gestalt has the properties as regularity, simplicity, stability, etc. Therefore, this law speaks of the movement of our psychological organisation towards the direction of stability i.e., we accept only those experiences which do not disturb our psychological organisation (equilibrium). How good the Pragnanz is, is examined by the following subordinate laws:

The Law of Similarity: This law says, "other things being equal, the stimuli that are more similar to one another will have greater tendency to be grouped." Thus learning similar things is easier than learning dissimilar things.

The Law of Proximity: According to this law, "perceptual groups are favoured according to the nearness of the parts." This means that we perceive all closely situated or located things as groups.

The Law of Closure: This law states, "closed areas are more stable than unclosed ones and therefore more readily form figures in perception." It is similar to the Thorndike's law of effect. Unless the work is finished the individual does not feel satisfied.

The Law of Good Continuation: This law states "organisation in perception which appears to go in a particular direction appears to be going infinitely in the same direction." So there is a tendency of factors to give direction, movement and continuation to perceptual organisation. Koffka believes in the trace and create new ones. The essential features of the trace theory are:

i) Trace is the result of experience so that it represents past in the present.

ii) The present process can select, reactivate or communicate with the trace.

iii) There is a resulting new process of recall or recognition.

Factors upon which Insights depends on the following points:

- The learner perceives the situation as a whole.
- The learner tries to understand the relationship between various factors involved in a situation.
- As a result of the understanding the relationship, the learner is helped in the sudden grasping of the solution of the problem.

Overall, insight depends upon the following factors:

i) *Experience*– Past experience assist in the insight of the problems.

ii) *Intelligence*– Basic intelligence of the learner is an important factor in insight learning.

iii) *Learning Situation*– As a common observation insight occurs when there is ample scope for observation in a learning situation.

iv) *Initial Efforts*– The initial efforts in the form of trial and error open the way of insight learning.

v) *Reception and Generalisation*– Learning gained in one situation helps the learner to react insightfully in other identical situations.

The distinctive criteria for insightful solution are given by Yerks (1927) as:

a) Survey of the problem followed by critical solutions.

b) Repetition of the solution after a single critical solution.

According to Werthemier, insight can be developed by productive thinking. Productive thinking helps in the systematic solution of the problem in line with the truth structure of the situation.

Gestalt Theory and Problems of Learning: The following points deserve special attention.

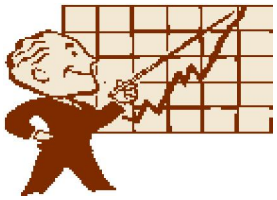
- *Capacity*– Learning depends upon learning capacities of the learner.
- *Practice*– Repetitions bring to light new relationships and consolidate trace systems.
- *Motivation*– Law of effect is recognised in motivation.
- *Understanding*– The relationship between parts and wholes, and means and ends are emphasized.
- *Transfer*– Generalized principles, common patterns and relationships are transferred.
- *Forgetting*– Forgetting takes place because of changes in the trace. Trace may completely disappear or they may not be available at a particular time.

Educational Implications of the Theory of Insight: The Gestalt theory brings the following points into focus.

- **From whole to Parts:** The whole is greater that the parts. Therefore, the teachers should present the picture of a topic or subtopic as a whole. It is especially more important in the case of small children. While teaching the topic *parts of a flower,* the flower should be presented before the students and thereafter the parts should be taken up. Similarly, the *whole* poem may be taken up as a whole.
- **Problem-Solving Approach:** The theory rejects memorisation and rote learning. It stresses that the learners must be given opportunities for using their thinking power and power of observation. The students should be placed in the position of discoverers. They should be provided training, to ponder over questions. *Why* and *How* in place of *What* and *When* should be the keynote of the teaching-learning process. Spoon-feeding in no way results in constructive and creative thinking. Progressive and scientific methods like Heuristic, analytical and problem-solving should be made use of.

- **Integrated Approach:** The contents of a subject should not be treated as the mere collection of isolated facts. They could be closely integrated into a *whole.* In the same way, all subjects and activities of the curriculum should reflect unity and cohesion.
- **Motivation Aspect:** The child's curiosity and interest must be aroused. He should be fully familiarised with the specific aims and purposes of every task that is being undertaken.

Limitations of the Theory: It is argued that not every type of learning is the product of insight. Quite a number of our day-today experiences are the results of chance contiguous associations and not of insight. In insight learning, we cannot altogether eliminate *learning by trial.* Some measure of learning by trial and error comes into play in insight learning also. Not all children are capable of independent thinking. Slow learners need to be taught with other method as well. Mechanical application of rules is also needed in several cases.



CHECK YOUR PROGRESS

Q.13: What is Gestalt?

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Q.14: What is the important contribution of Insight Theory?

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3.6 CONSTRUCTIVISM

In 1710, two philosophers, an Italian named Vico and an Irishman named Berkeley, separately made deplorable assertions that went against the grain of thousands of years of ancient philosophy. They dared to fundamentally change the concept of what knowledge is and what it means to exist. The human mind can only know what it constructs for itself and to be able to say something exists it must be first perceived by the human mind.

Constructivism really got its start in the late 1980s. However, many people did not know how to label what they were doing. The principles of Constructivism are broadly adopted in many areas of education today. The notions of authentic activities, social negotiation, juxtaposition of instructional content, nurturance of reflexivity and the student-centered instruction inspired many instructors to examine and think about the importance of interactions between teachers and students, students and students, and students and learning materials as well. Therefore, both instructors and students may have opportunities to enhance the effectiveness of their teaching and learning.

The constructivism learning theory argues that people produce knowledge and form meaning based upon their experiences. Two of the key concepts within the constructivism learning theory which create the construction of an individual's new knowledge are accommodation and assimilation. Assimilating causes an individual to incorporate new experiences into the old experiences. This causes the individual to develop new outlooks, rethink what were once misunderstandings, and evaluate what is important, ultimately altering their perceptions. Accommodation, on the other hand, is reframing the world and new experiences into the mental capacity already present. Individuals conceive a particular fashion in which the world operates. When things do not operate within that context, they must accommodate and reframing the expectations with the outcomes.

Constructivism gives teachers another perspective to rethink how students learn and to focus on process and provide ways of documenting change and transformation. It also reminds teachers to look for different

ways to engage individual student, develop rich environments for exploration, prepare coherent problem sets and challenges that focus the model building effort, elicit and communicate student perceptions and interpretations. The role of teachers is very important within the constructivism learning theory. Instead of giving a lecture the teachers in this theory function as facilitators whose role is to aid the student when it comes to their own understanding. This takes away focus from the teacher and lecture and puts it upon the student and their learning. The resources and lesson plans that must be initiated for this learning theory take a very different approach toward traditional learning as well. Instead of telling, the teacher must begin asking. Instead of answering questions that only align with their curriculum, the facilitator in this case must make it so that the student comes to the conclusions on their own instead of being told. Also, teachers are continually in conversation with the students, creating the learning experience that is open to new directions depending upon the needs of the student as the learning progresses. Teachers following Piaget's theory of constructivism must challenge the student by making them effective critical thinkers and not being merely a "teacher" but also a mentor, a consultant and a coach.

Principles of Constructivism:

- Constructivist learning environments provide multiple representations of reality.
- These representations represent that complexity of the real world.
- Knowledge construction is emphasized over knowledge reproduction.
- Authentic tasks are emphasised in meaningful context.
- Real world settings or case-based learning is provided.
- Thoughtful reflection on experience is encouraged.
- Enable context and context-dependent knowledge construction.
- Supports collaboration and social negotiation among learners.
- Discovery learning.
- Collaborative activity
- Integration and activation of prior knowledge
- Opportunities for hands-on activities.

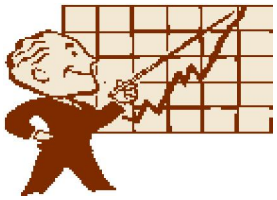
Merriam and Caffarella (1999) suggest that adult learning, while self-directed, must have input from outside influences. That may take the form of investigation, social interaction, or more formal learning environments. The constructivistic learning approach involves educators building school curriculum around the experience of their students. Constructivists believe learner-centric instructional classroom methods will strengthen the commitment and involvement of self-motivated learners because of their high level of interaction. Today, there is a trend for incorporating technology into classrooms o support instructional learning methods. Nevertheless, the constructivistic methods of instruction with using computer technology have developed to meet the instructional goals and conditions. One of the most powerful and versatile tools is the web-based learning. The web-based learning provides learners with optimal learning environment. They can be exposed to the multiple perspectives through collaborative social negotiation within peers or teachers.

Constructivistic theory's (J. Bruner) main theme is that learning is a process in which the learner is able to build on present and previous information. The student is able to take information, create ideas and make choices by utilizing a thought process. The trainer should encourage the student to develop the skills to find out principles on their own. There should be on-going dialog between the student and the trainer. The trainer is responsible for making sure the information is in a format the student can comprehend. The key is to assure the course builds on what has already been learned.



LET US KNOW

- According to Constructivism, knowledge is constructed based on personal experiences and hypotheses of the environment.
- Constructivist teachers pose questions and problems, and then guide students to help them find their own answers.



CHECK YOUR PROGRESS

Q.15: What the principles of constructivism?

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3.6 LET US SUM UP

- Learning stands for all those changes and modifications in the behaviour of the individual, which he undergoes from his birth till death.
- *Crow and Crow:* "Learning is the acquisition of habits, knowledge and attitudes. It involves new ways of doing things, and it operates on an individual's attempts to overcome obstacles or to adjust to new situations. It represents progressive changes in behaviour…It enables him to satisfy interests to attain a goal.
- Learning and maturation are closely interrelated and interdependent. Sometimes, it becomes difficult to determine definitely as to which of the behavioural change is the result of learning, and which of the consequence of maturation.
- E. L. Thorndike (1874-1949) was the chief exponent of the theory of connectionism or trial and error. The basis of learning accepted by Thorndike is an association between the sense impressions and impulses to action. This association came to be known as a 'bond' or a 'connection'. Since it is these bonds or connections which become strengthened or weakened in the making called a 'bond' psychology

or simply 'connectionism'. As it believes in stimulus and response type of learning, it is called S. R. Psychology of Learning. Thorndike called it learning by selecting and connecting. It is also known as trial and error theory as learning takes place through random repetitions.

- Thorndike propounded the following laws of learning: Law of Readiness, Law of Effect and Law of Exercise.
- Ivan P. Pavlov (1849-1936), a Russian psychologist was the discoverer of classical conditioning theory of learning. Conditioning is the modification of the natural response. By conditioning Pavlov modified the behaviour of the dog on which he experimented. Now we modify the behaviour of the learner in such a way as the response originally connected with a particular stimulus comes to be aroused by a different stimulus.
- Skinner called his theory as Operant Conditioning, as it is based on certain *operations or actions* which an organism has to carry out. The term 'operant' stresses that behaviour operates upon the environment to generate its own consequences. An operant is a set of acts which conditions and organism in doing something. In the process of operant conditioning, operant responses are modified or changed by reinforcement. Reinforcement is a special kind or aspect of conditioning within which the tendency for a stimulus to evoke a response on subsequent occasions is increased by reduction of a need.
- Max Wertheimer (1880-1943) was the founder of Gestalt psychology. Learning according to Gestalt Theory, is not by random steps, not by trial and error, not by conditioning but by insight, introspection and understanding.
- The principles of Constructivism are broadly adopted in many areas of education today. The notions of authentic activities, social negotiation, juxtaposition of instructional content, nurturance of reflexivity and the student-centered instruction inspired many instructors to examine and think about the importance of interactions between teachers and students, students and students, and students and learning materials as well. Therefore, both instructors and

students may have opportunities to enhance the effectiveness of their teaching and learning.



3.7 FURTHER READING

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2) Chauhan, S. S. (1993). *Advanced Educational Psychology*. New Delhi: Vikas Publishing House.
3) Mangal, S. K. (1993). *Advanced Educational Psychology*. New Delhi: Prentice Hall of India.
4) Sarma, M. (2008). *Educational Psychology*. Dibrugarh: Tushar Publishing House.



3.8 ANSWERS TO CHECK YOUR PROGRESS

Ans. to Q. No. 1: According to *Crow and Crow*: "Learning is the acquisition of habits, knowledge and attitudes. It involves new ways of doing things, and it operates on an individual's attempts to overcome obstacles or to adjust to new situations. It represents progressive changes in behaviour…It enables him to satisfy interests to attain a goal."

Ans. to Q. No. 2: Two characteristics of learning are:

1) **Learning as adaption or adjustment:** There is a constant interaction of an individual with his environment. Right from his birth, the individual is faced with the problem of making adjustment and adaptation to his physical as well as social environment. Learning is a proper means to achieve this end. Through a process of continuous learning as how to behave or respond to a particular situation the individual prepares himself for necessary adjustment and adaptation. This is why learning is so often described as a process of progressive adjustment to ever changing conditions which one encounters.

2) **Learning as improvement:** Learning is often considered as a process of improvement with practice or training. This means that all types of learning help child in the path of his progress towards desired ends or results. But this is not always true. The child learns so many things in the class room that did not at all, help him to achieve his goal. Habits of idleness disrespect towards authority, truancy, developing poor handwritings and defective the pronunciation etc. are among these. Therefore, it should be known clearly that learning does not necessarily imply improvement (with respect to the achievement of and end).

Ans. to Q. No. 3: Inter-related.

Ans. to Q. No. 4: The three differences between learning and maturation are:

Sl. No.	Maturation	Sl. No.	Learning
I)	Maturation is primarily based on heredity.	I)	Learning is primarily based on environment.
II)	Maturation is automatic process for behavioural change.	II)	Learning is planned process for the modification of behaviour.
III)	There is age-limit for the process of maturation.	III)	There is no age-limit for learning. Learning is a life-long process.

Ans. to Q. No. 5: Thorndike explains the meaning of *satisfaction* and *discomfort* as: "By a satisfying state of affairs is meant one which the animal does nothing to avoid, often doing such things as attain and preserve it. By a discomforting or annoying state of affairs is meant one which the animal commonly avoids and abandons."

Ans. to Q. No. 6: E. L. Thorndike

Ans. to Q. No. 7: Two sub parts of law of exercise are: (i) Law of Use and (ii) Law of Disuse.

Ans. to Q. No. 8: For explaining his theory, Pavlov has given some principles of conditioning.

- **Principle of Reinforcement:** The term reinforcement refers to the following of the conditioned stimulus by the unconditioned stimulus, i.e., food following the bell. Pavlov stated that it was

only reinforcement that led to the conditioning. Without reinforcing the bell with meat, no conditioning could be developed– this was reinforcement. This is applicable to children also. Children's learning becomes effective when they are rewarded immediately after they perform well. Their behaviour is conditioned with reinforcement.

- **Principle of Sequence and Time Intervals:** There is an optimal times between the presentation of the conditioned stimuli and the unconditioned stimuli. If there is any variation i.e., increase or decrease in the optimal time, then there is no conditioning and bond cannot be formed.
- **Principle of Stimulus Generalisation:** According to this principle, if we are conditioned to one thing, i.e., the bell, then we would be conditioned, more or less, to all sorts of bells. In the earlier stage of learning by conditioning the animal responds to a number of stimuli which accompany the exact conditioned stimulus. The response is the greatest to the conditioned stimulus and goes on decreasing to other stimuli which are less similar to the original one.

Ans. to Q. No. 9: The experiment done by Pavlov brings into the picture the four essential elements of the conditioning process. The first element is a natural stimulus, technically known as unconditioned stimulus (US) i.e. food. It results in a natural response known as unconditioned response (UR). This response constitutes the second element. The third element is the artificial stimulus like ringing of the bell which is technically known as Conditioned Stimulus (CS). It is substituted in place of the natural stimulus (food). Initially the conditioned stimulus does not evoke the desired response, i.e. conditioned response (CR); the fourth element is the chain of the conditioning process.

Ans. to Q. No. 10: Reinforcement means rewarding the learner at every step of learning.

Ans. to Q. No. 11: Skinner called his theory as Operant Conditioning, as it is based on certain *operations or actions* which an organism has to

carry out. The term 'operant' stresses that behaviour operates upon the environment to generate its own consequences. An operant is a set of acts which conditions and organism in doing something. In the process of operant conditioning, operant responses are modified or changed by reinforcement. Reinforcement is a special kind or aspect of conditioning within which the tendency for a stimulus to evoke a response on subsequent occasions is increased by reduction of a need.

Ans. to Q. No. 12: The most important contribution of this theory in educational practice is programmed learning and teaching machine.

Ans. to Q. No. 13: "Gestalt" is a German word for which there is no equivalent English word. The term was carried out into English psychological literature. The nearest English translation of Gestalt is 'configuration' or more simply 'an organized whole in contrast to collection of parts'. Gestalt psychologists consider the process of learning as a Gestalt –an organized whole. A thing cannot be understood by study of its constituent parts but only by study of it as a totality, is a basic idea behind this theory.

Ans. to Q. No. 14: The most important contribution of the Insight Theory is that it has given importance on inner psychological functioning such as perception, concept formation, problem solving etc. It has made learning purposeful and a goal oriented task. The learner has to be motivated by arousing his interest and curiosity for learning process.

Ans. to Q. No. 15: The principles of constructivism are:

- Constructivist learning environments provide multiple representations of reality.
- These representations represent that complexity of the real world.
- Knowledge construction is emphasized over knowledge reproduction.
- Authentic tasks are emphasised in meaningful context.
- Real world settings or case-based learning is provided.
- Thoughtful reflection on experience is encouraged.
- Enable context and context-dependent knowledge construction.

- Supports collaboration and social negotiation among learners.
- Discovery learning.
- Collaborative activity
- Integration and activation of prior knowledge
- Opportunities for hands-on activities.



3.11 POSSIBLE QUESTIONS

A) Short Questions (Answer each question in about 150-300 words)

Q.1: Define learning. Write the characteristics of learning.

Q.2: What is reinforcement?

Q.3: Mention the types of learning theories.

Q.4: Who first coined the term "Behaviourism" and what does it mean?

Q.5: What are the characteristics of behaviouristic approach?

Q.6: What do you mean by conditioned response?

Q.7: What are the differences between classical and operant conditioning?

Q.8: What is insightful theory of learning? Illustrate with classroom learning.

Q.9: What are the educational implications of unconscious and conscious imitation of learning?

Q.10: What is constructivism? Write down its principles.

B) Long Questions (Answer each question in about 300-500 words)

Q.1: Discuss the different laws of learning with its educational implications.

Q.2: Discuss various methods of learning. Which one is commonly followed by the young children?

Q.3: Explain the Theory of Connectionism. Discuss its limitations.

Q.4: Explain the contribution of Skinner towards educational theory and practice.

Q.5: Discuss the educational implications of insight learning.

Q.6: Explain the theory of Pavlov's Classical Conditioning. Discuss its limitation.

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UNIT 4: TRANSFER OF LEARNING

UNIT STRUCTURE

4.1 Learning Objectives

4.2 Introduction

4.3 Meaning of Transfer

4.4 Meaning of Transfer of Learning

4.5 Types of Transfer

- 4.5.1 Positive Transfer
- 4.5.2 Negative Transfer
- 4.5.3 Neutral Transfer or Zero Transfer

4.6 Theories of Transfer of Learning

4.7 Conditions of Transfer

4.8 Teaching Methods and Role of a Teacher

4.9 Transfer and Constructivism

4.10 Let Us Sum Up

4.11 Further Reading

4.12 Answers to Check Your Progress

4.13 Possible Questions

4.1 LEARNING OBJECTIVES

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

- explain the meaning of transfer and transfer of training or learning;
- identify the theories of transfer of training;
- discuss the types of transfer as positive, negative, and zero transfer;
- analyze the efforts taken by the teacher for maximizing positive transfer; and
- elaborate the connection between constructivism and transfer of learning.

4.2 INTRODUCTION

This unit introduces you to the components of the most powerful principle of learning, know as transfer. The entire structure of education in schools is based on the assumption that whatever knowledge we acquire

about a particular subject is not confined to it only. It also helps us in future life. According to this theory, knowledge of a subject is not confined to it only. It helps in the knowledge of other subjects as well. This is called Transfer of Training. You should note that Transfer of learning from one performance situation to another is an integral part of skill learning and performance. This unit will introduce you to three types of transfer—positive transfer, negative transfer, and zero transfer. You should be familiar with various theories of transfer that tell about the working procedure of transfer of training. This unit shall help in examining the factors that affect transfer and how the teachers can use past learning effectively to enhance present and future learning. After completion of this unit, you will be able to enlist the various efforts that can be undertaken by the teachers to maximize transfer of training.

4.3 MEANING OF TRANSFER

"Transfer is the basis of all creativity, problem solving and the making of satisfying decisions."

–Madeline Hunter, Mastery Teaching

The word transfer is used to describe the effects of past learning upon present acquisition. In our day-to-day life, how well and how rapidly we learn depends largely upon the kinds and amount of things we have learned previously. In simple terms, transfer may be defined as "the partial or total application or carryover of knowledge, skills, habits, attitudes from one situation to another situation." Hence, the carryover of skills of one learning to other is transfer of training or learning. Such transfer occurs when the learning of one set of material influences the learning of another set of material later. For example, a person who knows to drive a moped can easily learn to drive a scooter.

The two way process of transfer: The principle of learning, called *transfer,* describes a two-part process:

- **Transfer *during* learning**. This refers to the effect that past learning has on the processing and acquisition of new learning.
- **Transfer *of* learning**. This refers to the degree to which the learner in future situation applies the new learning. This type of transfer can

be further separated into near and far transfer. Near transfer describes the use of new learning in very similar and closely related settings. Far transfer includes the ability to use the new learning in a similar setting as well as the ability to solve novel problems that are not very similar but do share common elements with the learning that was initially acquired.



4.4 MEANING OF TRANSFER OF LEARNING

The following definitions will help you to understand the meaning of transfer of training.

According to Crow & Crow (1963), "The carry over habits of thinking, feeling or working of knowledge or of skills from one learning to another usually is referred to as transfer of training."

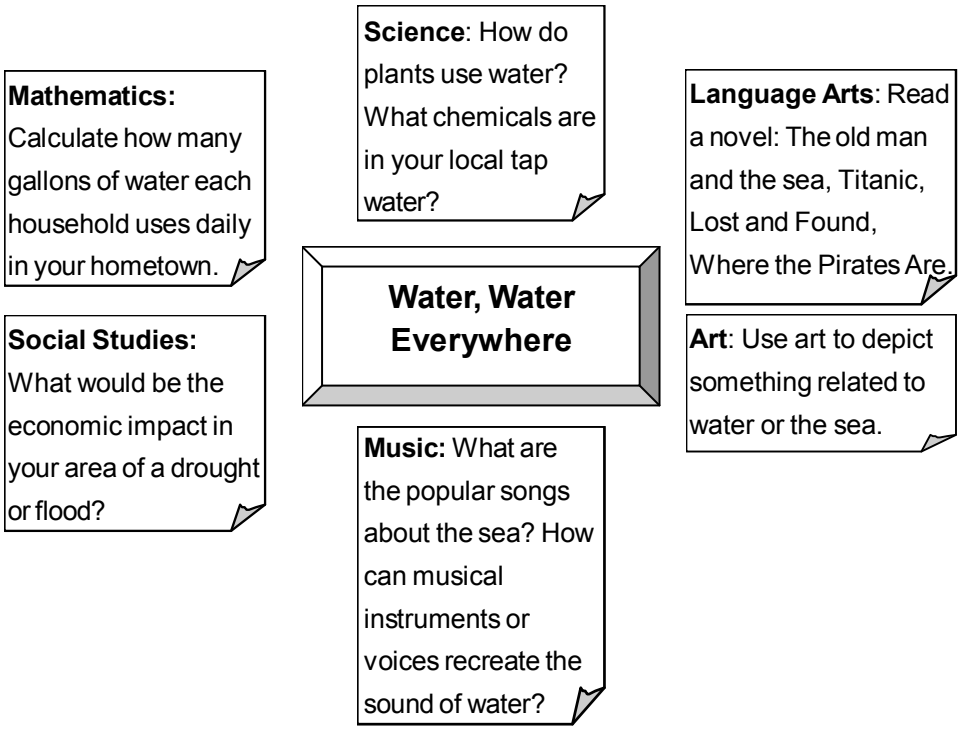
According to M. L. Bigge, "Transfer of learning occurs when a person's learning in one situation influence his learning and performance in other situation."

Therefore, transfer of training means the process of carrying over the habits, thinking, knowledge, skill, and attitudes from one learning situation to another is called transfer of learning or training.



A review of any curriculum reveals that transfer is an integral component and expectation of the learning process. Every day, teachers deliberately or intuitively refer to past learning to make new learning more understandable and meaningful. Students are expected to transfer the knowledge and skills they learn in schools to their daily routines, jobs, and ventures outside the school. Writing and speaking skills should help them communicate with others; scientific knowledge should inform their decisions on environmental and health issues; sociology and civics should help them in solving various social problems. Not only the knowledge & skills acquired in particular subject, but also the habits and interest try to influence other activities to utilize the transferred knowledge. In other words, the effects of schooling should not remain 'specific' but should 'spill' over to new situations. Obviously, the more information the students can transfer from their schooling to the context of everyday life, the greater is the probability that they will be good communicators, informed citizens, critical thinkers, and successful problem solvers.

The educators who advocate thematic units and an integrated curriculum can enhance successful transfer. This approach provides more stimulating experiences to students, and helps them to see the commonalities among diverse topics, while reinforcing understanding for future applications. Thematic units, for instance, could focus on the environment (global warming, recycling, air quality etc.), history (the Civil war, exploring the West etc.), science (sources of electrical power, space exploration, ecosystems etc.) or language arts (tall tales, realistic fiction, poetry etc.). Integrated thematic units cut across curriculum areas. The internet is an excellent source of ideas for integrated units. The following diagram is an example of an integrated thematic unit that could be adapted for elementary and secondary grade levels.



Here is an example of an integrated thematic unit on water. The students have the opportunity to gain a deeper understanding of how water directly affects their daily lives. This approach increases the chances of transfer of learning to future situations.

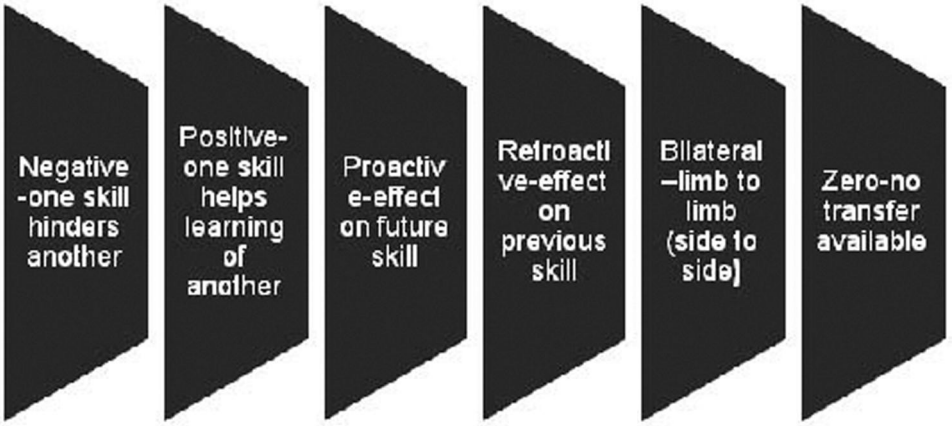


LET US KNOW

- Learning or performance in one situation influences learning or performance in some other situation.
- Transfer may be defined as "the partial or total application or carryover of knowledge, skills, habits, attitudes from one situation to another.
- Thematic units and an integrated curriculum enhance the transfer process.
- Past learning always influences the acquisition of new learning.
- Teachers are frequently the provokers of transfer in their students.

4.5 TYPES OF TRANSFER OF LEARNING

Depending on the learning situations faced by the learner, the following six kinds of transfer can occur:



Out of these six different types, we shall study about three types of transfer in detail.

4.5.1 Positive Transfer

When learning in one situation *facilitates* learning in another situation, it is known as positive transfer. It is stated to be positive when the learning or training carried out in one situation proves helpful to the learner in another situation. For example:

- Skills in playing violin facilitate learning to play piano.
- Knowledge of mathematics facilitates to learn physics in a better way.
- Driving a scooter facilitates driving a motorbike.
- Learning to play badminton may help an individual to play table tennis and lawn tennis.

4.5.2 Negative Transfer

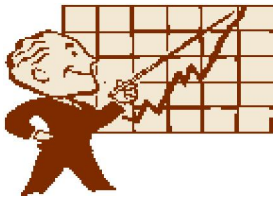
Some times past learning interferes with the learner's understanding of new learning that result in confusion or error. When learning of one task makes the learning of another task harder, it is known as negative transfer. For example:

- Speaking regional language hindering the learning of national or foreign language.
- Left hand drive vehicles hindering the learning of right hand drive.
- Having learned to pronounce 'But' correctly, the child may find it difficult to pronounce 'put' correctly.
- Driving an auto start kinetic Honda Scooter may find difficulty in driving Bajaj or Vespa scooter.

4.5.3 Neutral Transfer or Zero Transfer

When learning of one activity neither facilitates nor hinders the learning of another task, it is a case of neutral transfer. It is also called as zero transfer. Such a situation may arise when the learning activities and subject areas have nothing in common between them. In such cases, it is quite natural that the possession of knowledge and skill related to one area may have no or quite minimal effect on the acquisition of knowledge and skill related to another area. For example:

- Knowledge of history in no way affects the learning of driving a car or a scooter.
- Learning to play football may not help or hinder learning to play volleyball.
- Learning to play Guitar or Sitar neither helps or hinders one's performance in cooking or laundry class.



CHECK YOUR PROGRESS

Q.1: What are the various types of transfer of learning?

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Q.2: What do you mean by Positive transfer? Give one example.

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Q.3: What do you mean by negative transfer? Give one example.

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Q.4: What do you mean by zero transfer? Give one example.

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4.6 THEORIES OF TRANSFER OF LEARNING

There are different theories, which explain transfer of learning.

A) Theory of Formal Discipline: According to the advocates of this theory, the mind is divided into various powers like memory, imagination, observation, reasoning etc. It is possible to strengthen these powers by exercise. When these powers have grown strong, they may be used efficiently, under any situations and conditions. Therefore, in the curriculum, such subjects should be included, which provide practice for the development of these various powers.

The word 'Formal' lays stress on the form of the subject and not on its contact material. If someone is anxious to develop the power of memory, he should study the forms of memory. The study of Arithmetic should be conducted not to make a man a mathematician, but to make him capable of distinguishing between good and bad.

It is the word 'discipline' that expresses the real meaning of this theory. This theory lays stress on the point that, for the proper development and improvement of the mental power, different exercises and self-determination are helpful. In the modern age, many experiments have also been carried out in the field. Generally, the subjects are divided into two categories:

a) Trained group

b) Controlled group

Both the groups are examined, on the basis of certain questions having a bearing on the power of memory. This is called initial test. Later on, the trained group is asked to remember a subject of the similar nature. No rule is explained. The control group is given specific training, and then the trained group and the controlled group are examined together. After this, the result of the preliminary examination and the final examination are compared. An attempt is made to find out which group has made what improvement. Generally, it is seen that the controlled group makes greater progress and improvement in the learning, as compared to trained group.

B) Theory of Identical Elements: E. L. Thorndike has developed this theory. According to him, most of the transfers occur from one situation to another in which there are most similar or identical elements. This theory explains that carrying over from one situation to another is roughly proportional to the degree of resemblance in the situation, in other words—the more is the similarity, the more is the transfer. The degree of transfer increases as the similarity of elements also increases. For example, learning to ride a moped is easy after learning to ride a bicycle. Here, transfer is very fast because of identical elements in both vehicles. Thorndike was convinced that the method used in guiding a pupil's learning activities had a great effect upon the degree of transferability of his learning.

C) Theory of Generalization of Experience: Charles Judd developed this theory. The theory of generalization assumes that what is learnt in task 'A' transfers to task 'B', because in studying 'A', the learner

develops a general principle which applies in part or completely in both 'A' and 'B'.

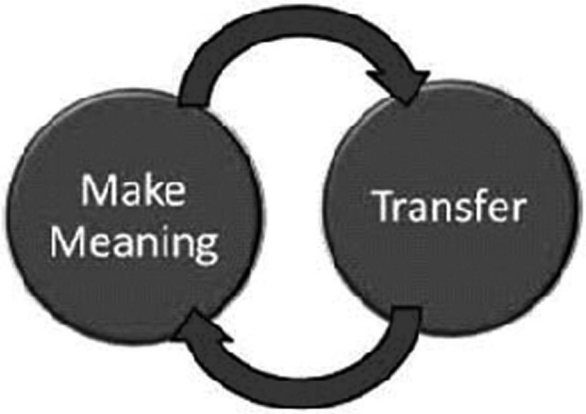
Experiences, habits, and knowledge gained in one situation help us to the extent to which they can be generalized, and applied to another situation. Generalization consists of perceiving and understanding what is common to a number of situations. The ability of individuals to generalize knowledge varies with the degree of their intelligence.

D) **Spearman's Two-Factor Theory:** According to this theory, transfer of training or the power of memory is dependent on two factors: General ability and Special ability. It means that if a child has the general ability to learn a thing quickly, then he shall be able to improve his ability in learning other subjects. It is quite possible that a person may have special ability to learn a particular thing. He held the view that is possible in general ability only. It is not possible in case of special ability. In learning Arithmetic, Science, history etc. there is greater improvement in the general ability.

4.7 CONDITIONS OF TRANSFER

Transfer of training is possible on the following conditions.

- **Generalization:** The more it is possible to find out general rules on the basis of experiences, the more it is possible to transfer the knowledge of one subject to the learning of the other subject.
- **Proper Attitude:** If the attitude of the student with regard to the subject that he wants to transfer is proper, then this attitude is helpful in the positive transfer.
- **Understanding**: The transfer is very much dependent upon the understanding. The more the learning is purposeful and meaningful, the more it is possible that it will be transferred.
- **Degree of Mastery of Material:** Positive transfer of training is possible if the student has the mastery over the material. The greater is the mastery, the greater is the possibility of transfer.



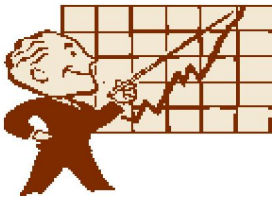
Educational Implications for Transfer of Learning:

- Learning in one situation is capable of exercising positive or negative influence over the learning in another situation.
- As far as possible, efforts should be made to maximize positive transfer and minimize negative transfer.
- For seeking the maximum positive transfer, the teacher while teaching, should try to draw out proper view points in the following ways:
  1) Association, similarities and dissimilarities
  2) Building generalizations
  3) Developing proper understanding and insight
  4) Developing proper ideals

A teacher can take some efforts to maximize Positive transfer among the students. Some of them are as the following:

- **Linking with previous knowledge**: What is being learnt at the present should be linked with what has already been learnt in the past.
- **Integrate theoretical studies with practical experiences:** The teacher should integrate activities with studies.
- **Discourage rote learning**: The teacher should clarify the concepts and provide deep insights into the subject knowledge, and discourage rote learning among the students.
- **Use of Inductive Methods**: The teacher should make use of inductive methods of teaching whenever possible, to develop logical thinking and reasoning among the students.

- **Use of correlation**: The teacher should bring out relationships with various subjects of the curriculum. For example, Laws in science helps to understand land breeze and sea breeze, which are the topics covered in Geography.
- **Transfer in all activities of life**: The teacher should himself/herself imbibe desirable characteristics such as cleanliness through role play, and transfer it in all activities of their life.
- **Limit the use of Classical language**: Classical languages like Persian, Arabic, and Sanskrit have a little transfer value, as they are not used in day-to-day life. Therefore, the teacher should limit the use of such languages, and the school should modify the curriculum to bring out positive changes.
- **Include subjects related to life**: Certain subjects like social studies, functional arithmetic and biological science should find a due place in the curriculum.
- **Curriculum and transfer**: Subjects can be grouped into two categories:
  1) Subjects having a disciplinary value such as theoretical grammar, classical languages and theorems in geometry. These subjects have a little transfer value.
  2) Subjects having a social utility value such as social studies and applied arts. These subjects extend transfer of training to a maximum level.
- **Grouping school subjects**: The curriculum can also be divided into groups such as science group, commerce group etc. As these groups have common components, they lead to maximum transfer.
- **Imbibe ideas among students**: A teacher should encourage the students to draw neat diagrams and have a good handwriting, thus imbibing the quality of cleanliness in them.
- **Organize excursions**: Excursions may be organized for the students to impart firsthand knowledge of the subject discussed in the class.



CHECK YOUR PROGRESS

Q.5: Mention any two conditions of transfer.

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Q.6: What are the educational implications of transfer of training?

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Q.7: What are the two elements in Spearman's two-factor theory?

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4.8 TEACHING METHODS AND ROLE OF A TEACHER

A Teacher should not assume that transfer would automatically occur after the students acquire a sufficient base of information. To teach transfer, we need to consider two major factors: the time sequence and the complexity of transfer link in-between learning. The time sequence refers to the way the teacher will use time and transfer in the learning situation. Transfer can occur from past to present, or from present to future.

Transfer from past to present:

Past learning → Helps in → Present Learning

In this, teacher links in something from the learner's past that helps add sense and meaning to the new learning. It is important to select an

experience that is clear, unambiguous, and closely relevant (not just related) to the new learning. One example is given below:

- A science teacher asks the students to recall that they have learned about plant cells to study the similarities and differences in animal cells.

Transfer from present to future:

Present learning ⟶ Helps in ⟶ Future Learning

The teacher makes the present learning situation as similar as possible to a future situation to which the new learning should transfer. For the transfer to be successful, the students must attain a high degree of original (current) learning, and be able to recognize the critical attitudes and concepts that make the situations similar and different. For example,

- Students learn safe personal and interpersonal hygiene practices to protect their health throughout their lives.

Principles of choosing methods are as follows:

- Fix the goals beforehand, and choose the methods accordingly.
- Keep in view the individual differences.
- Follow the principle of correlation.
- Choose a method, which leads to mental development.
- Provide scope for practical application.

Role of the Teacher:

- The teacher should keep in view the final goal of the subject matter that he/she is going to impart to the child.
- The teacher should give various examples while teaching a particular topic or skill. The teacher should inspire the students to excel in it in future.
- The teacher should proceed from simple to complex. Children should master the simple aspect of learning, and then come to the difficult or complex aspects.
- The teacher should proceed from general to particular. The students should understand the general rules, and only then, the teacher should proceed with particular activity of learning.

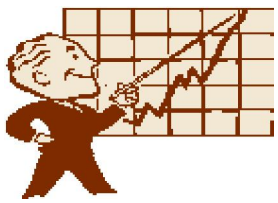
- The teacher should write the views of his pupils when they are busy in learning a particular activity, as a feedback and improvise on his/ her teaching skills.

4.9 TEACHING AND CONSTRUCTIVISM

The proper and frequent use of transfer greatly enhances the constructivist approach to learning .Constructivist teacher are those who:

- Use student responses to alter their instructional strategies and content.
- Foster student dialogue.
- Question student understands before sharing their own.
- Encourage the students to elaborate on their initial responses.
- Allow the student's time to construct relationships and create metaphors.

Thus, to become teachers, we should know the concept of transfer of learning, and use that knowledge to maximize positive transfer among the students to make learning insightful.



CHECK YOUR PROGRESS

Q.8: Mention the methods used by the teachers for transfer of training.

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Q.9: What is the role of a teacher for transfer of training?

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Q.10: How will you connect constructivism to transfer of training?

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4.10 LET US SUM UP

- Knowledge of a subject is not confined to it only. It helps in the knowledge of other subjects as well. This is called Transfer of Training.
- Transfer may be defined as "the partial or total application or carryover of knowledge, skills, habits, attitudes from one situation to another situation".
- Thematic units and an integrated curriculum enhance the transfer process.
- Past learning always influences the acquisition of new learning.
- Teachers are frequently the provokers of transfer for their students.
- When learning in one situation *facilitates* learning in another situation, it is known as positive transfer. It is stated to be positive, when the learning or training carried out in one situation proves helpful to the learner in another situation.
- When past learning *interferes* with learner's understanding of new learning, resulting in confusion or error, it is known as negative transfer. Here, the learning of one task makes the learning of another task harder.
- When learning of one activity neither facilitates nor hinders the learning of another task, it is a case of neutral transfer. It is also called as zero transfer.
- Theory of Formal Discipline, Theory of Identical Elements, Theory of Generalization of Experience, Spearman's Two Factor Theory are the theories of transfer of training.
- Teacher should take various efforts to maximize positive transfer among the students.

- There is a connection between constructivism and transfer of training.
- The greatest amount of transfer is based on the similarity between the two tasks or two contexts (practising games or real life activity).
- The use the transfer helps to identify activities that will promote positive transfer.
- Spatial and timing changes from previously learnt skills to new skills will produce negative transfer.
- If you confuse the learner, it will produce negative transfer. The negative transfer is temporary.



4.11 FURTHER READING

1) Baldwin, T. T., & Ford, K. J. (1988). *Transfer of Training: A Review and Directions for Future Research*. *Personnel Psychology*, 41, 63-105.
2) Broad, M. L., & Newstrom, J. W. (1992). *Transfer of Taining: Action-Packed Strategies to Ensure High Payoff from Training Investments*. New York: Addison-Wesley Publishing Company.
3) Holton, E. F., Bates, R. A, Ruona, W. E. A. (2000). *Development of a Generalized Learning Transfer System Inventory*. Human Resource Development Quarterly.



4.12 ANSWERS TO CHECK YOUR PROGRESS

Ans. to Q. No. 1: There are six types of transfer of training. They are– Negative: One skill hinders another, Positive: One skill helps learning of another, Proactive: Effect on future skill, Retroactive: Effect on previous skill, Bilateral: Limb to limb (side to side), Zero: No transfer available. Among the six types, three most important types are– Positive, Negative, and Zero transfer.

Ans. to Q. No. 2: When learning in one situation *facilitates* learning in another situation, it is known as positive transfer. It is said to be

positive when the learning or training carried out in one situation proves helpful to the learner in another situation. For example, Skills in playing violin facilitate learning to play piano.

Ans. to Q. No. 3: Sometimes, past learning *interferes* with learner's understanding of new learning, resulting in confusion or error. When learning of one task makes the learning of another task harder, it is known as negative transfer. For example, speaking regional language hindering the learning of national or foreign language.

Ans. to Q. No. 4: When learning of one activity neither facilitates nor hinders the learning of another task, it is a case of neutral transfer. It is also called as zero transfer. For example, knowledge of history in no way affects the learning of driving a car or a scooter.

Ans. to Q. No. 5: Two important conditions of transfer are: generalization and proper attitude.

Generalization: The more it is possible to find out general rules on the basis of experiences, the more it is possible to transfer the knowledge of one subject to the learning of the other subject.

Proper attitude: If the attitude of the student with regard to the subject that he wants to transfer is proper, then this attitude is helpful in the positive transfer.

Ans. to Q. No. 6: Transfer of training has educational implications. For seeking maximum positive transfer, the teacher while teaching, should try to draw out proper view-points with the help of associations, similarities and dissimilarities, building generalizations, developing proper understanding and insight and by developing proper ideals.

Ans. to Q. No. 7: Two elements in Spearman's two-factor theory are– General ability and Special ability.

Ans. to Q. No. 8: The teacher should use various methods for maximizing transfer of training. The various methods used by the teacher are– transfer from past to present, and transfer from present to future.

Ans. to Q. No. 9: A teacher plays the most pivotal role in transfer of training. The teacher should proceed from simple to complex. Children should master the simple aspect of learning and then come to the difficult

or complex aspects. The teacher should proceed from general to particular. Students should understand the general rules first, and only then, the teacher should proceed with particular activity of learning.

Ans. to Q. No. 10: There is a close connection of constructivism with transfer of training. The teacher should encourage the students to elaborate on their initial responses. The teacher should allow the students to construct relationships and create metaphors.



4.13 POSSIBLE QUESTIONS

A) Short Questions (Answer each question in about 150-300 words)

Q.1: What do you mean by transfer of training? What are the two processes of transfer?

Q.2: Mention the various types of transfers. Explain with examples the positive, negative and zero transfer.

Q.3: "Thematic units and integrated curriculum enhance the transfer process." Do you agree with this statement? Give reasons.

B) Long Questions (Answer each question in about 300-500 words)

Q.1: Discuss the various theories of transfer of training and their educational implications.

Q.2: Elaborate the role of a teacher for enhancing transfer of training or learning during teaching.

Q.3: Explain various efforts taken by the teacher for maximizing positive transfer and minimizing negative transfer.

Q.4: What are the reasons of negative transfer of training? How does the curriculum play a major role in minimizing negative transfer?

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UNIT 5: MOTIVATION

UNIT STRUCTURE

5.1 Learning Objectives

5.2 Introduction

5.3 Meaning of Motivation

5.4 Techniques of Motivation

5.5 Factors of Motivation

5.6 Role of Motivation in Learning

5.7 Maslow's Self Actualisation Theory

5.8 Let Us Sum Up

5.9 Further Reading

5.10 Answers to Check Your Progress

5.11 Possible Questions

5.1 LEARNING OBJECTIVES

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

- explain the meaning of motivation;
- discuss the techniques of motivation;
- identify the factors of motivation; and
- explain the Maslow's Self-actualization theory of motivation.

5.2 INTRODUCTION

Since ancient times, motivation has been recognised as an important determiner of behaviour. Motive induces a man to act in a particular way in relation to the situation. It may be described as the native spring of action and behaviour. Motivation is very important in education because education aims at finding out the means which may make learning things easier. The utilisation of motivation in the teaching-learning process helps the students to do their work with greater ease and efficiency. As such, research has been conducted on the psychology of motivation. This unit deals with the meaning of motivation, the factors affecting motivation, the role of motivation in learning, and Maslow's Self-Actualisation theory of motivation.

5.2 MEANING OF MOTIVATION

From our daily experience, we know how difficult it is to lead or guide a person from one activity to another or stop him from engaging in an activity. That way, even animals indulge in an activity of their choice. Thus, we observe behavioural differences in both humans and animals in one or many situations. Now, the important question is why do people behave as they do, and how to explain this fact of behavioural differences from one situation to the other. The explanatory construct of motivation is used to answer such a question.

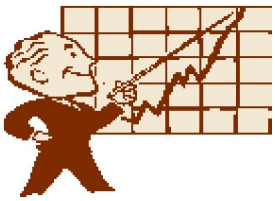
The word "motivation" has been derived from the Latin word 'motun' which means "doing something and for which there is an external stimuli." In the field of education, it is believed that an individual's action and behaviour is determined by some internal stimuli. Thus, it can be said that motivation is that force which imples or incites.

Motivation is said to be essential or sine-qua-non of learning in the sense that it provides economy of learning and attainment. In modern education, learning is described as a self–activity of the learner. In this process of self–learning, the teacher is supposed to create necessary conditions for enhacing the mental readiness of the learner in achieving the objectives of learning. This act of the teacher is by nature psychological and to be called motivation.

Motivation is a psychological state through which activation of the motive in the individual mind can be effected. Motive by itself indicates an inactive mental state that needs to be activated through certain psychological devices or by using necessary conditions. In simplified from, motivation may be said to be the activation of the mind to work out the motive or objective. Motive implies the presence of the aims and objectives in mind, whereas motivation activates it by creating the necessary conditions. It should be noted that in order to activate the individual, external stimulation, arousal of feeling, emotion and sentiment in mind, strengthening and reorganisation of the will force etc. may be needed. Motivation comprises all such extrinsic and intrinsic factors for activation of the individuals. The

different social psychologists have defined motivation and the need of motivation in different ways. Soem of them are as the following:

- According to Crow and Crow, “Motivation is considered with the arousal of the interest in learning which is essential for learning.”
- According to Good, “Motivation is the process of arousing, sustaining and regulaling activity.
- According to Lowell, “Motivation may be defined more formally as a psychological internal process initiated by some needs, which lead to the activity and which will satisfy needs.”
- According to Berelson and Stereir, “Motivation consists of all those desires, drives, needs impulses etc. It is an inner state that energizes, activates or moves, and directs or channels behaviour towards goals.’’



CHECK YOUR PROGRESS

Q.1: What is meant by the term motivation?

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5.4 TECHNIQUES OF MOTIVATION

According to the psychologists, motivation is the Sine Qua Non of learning, which is very important for learning. The success of learning depends to a great extent on the motives which are utilised for the education of the child. The aim of education is to achieve maximum learning in a minimum time. Therefore, it is important that the children are properly motivated. A teacher can adopt certain techniques in the teaching-learning situation to motivate a child. Some of them are given below:

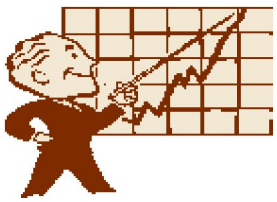
- **Clearness of goal:** The teaching learning activity should be goal-oriented and the learners should have clear objectives of their learning

and doing. Education should not be super imposed on the learners on the pretext of the conventionality and compulsion.

- **Knowledge of success and failure:** Mental readiness in learning may be created through communicating the knowledge of one's success in the previous attempt may be a source of inspiration for subsequent attempts to be made. It is here that Thorndike's law of effect acts as a motivating factor in learning.
- **Praise and Blame:** The teacher may make use of praise, appreciation, and recognition of the students achievement without any reserve. He may also appreciate or reproof undesirable behaviour of the students for negative motivation. Everybody wants praise that stimulates the activity with more vigour and positive motivation. The teacher is an ideal person in the eye of the students may have its powerful impact in this regard.
- **Use of reward and punishment:** A popular and commonly used device of teacher's motivation is the use of reward in recognition and punishment on disapproval of him. Although for effective motivation, he should be aware of the appropiate time, situation, and the sense of promotion in giving such reward and punishment.
- **Cooperation and Competition:** An environment of cooperation to work together in schools may be created. It may promote the sense of involvement and the sense of belongingness to the students. It amy promote corporate life in school. Similarly, the teacher should create situations of group competition among the students both inside and outside the classroom as well as in the play ground. Programmes like debate, group discussion, quiz competition etc. may prove to be very effective.
- **Use of audio-visual aids:** Audio–visual aids may prove to be the more effective means of motivation for the students who are usually unable to make use of abstract thoughts in verbal learning. These aids may have the double effect of seeing and hearing at a time. That may act as a extrinsic factor of motivation.
- **Unconscious motives made Conscious:** The students normally have certain hopes, desires, and motives cherished in their unconscious

mind. Such motives do not find expression and the students are rather ashamed of them. The teacher may help in giving suitable expression to them by creating appropriate situation, and relieving their pent-up feelings and emotion. They may include organising execursion picnic, playing games and sports by the boys and girls together.

- **Formation of Positive attitude:** Attitude may be either positive or negative. Positive attitude means the formation of healthy outlook in mind. The teacher should always be conscious of the formation of positive attitude in the students' mind. He may do so by virtue of his ideal thought, feeling, and activity. It may create an ideal situation for the student's incentive to motivation. It may urge the students to readily accept his thought, feeling, and activity, and create an ideal situation for motivation.
- **Providing real life situation:** Contents of learning should be closely related to real life situation of the learner so that they may be useful and helpful. Correlation between theory and practice in life may naturally make learning purposive and productive that create motivation. Learning content disconnected from life may make learning aimless.
- **Teacher's personality:** The act of motivation in students largely depends on the attractive personality of the teacher. His behaviour, conduct, manners, his art of talking, simplicity, amiability and helpfulness, his personlaity are the characteristics that go a long way in making the students motivated. The teacher's personality itself is a powerful source of motivation to the students.



CHECK YOUR PROGRESS

Q.2: What are the techniques that may be used for motivating the students in the schools?

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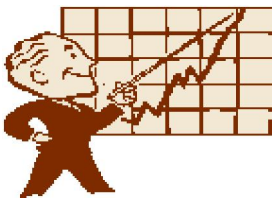
5.5 FACTORS OF MOTIVATION

The student's educational motivation may be different from pupil to pupil, depending on the age or even on the mood of the child. Children cannot truely understand why learning local history is important. An important task is then to figure out how a child's motivation can be raised. Elementary school programmes are focused on new knowledge adquisition and learning process in general. By the end of elementary schooling, the interest in learning decreases due to a range of psychological factors.

It is ncessary to define the factors affecting motivation. Some of the factors of Motivation are as the following:

- **Higher level of Intrest:** High level of both personal and situational intersts are associated with more cognitive engagement, more learning, and higher level of achievement.
- **Classroom environment:** Qualities of a classroom envrionment may impact on the motivation and student's subjective perceptions of the same environmental conditions. There are stronger links between achievement and objectively defined classroom qualities. Thus, it appears that the teachers can influence the learning processes and outcomes by structuring the learning environments.
- **Home Situations:** The situation at home affect the pupils' motivation in the classroom. If children come from homes where they are loved and encouraged, they will approach the classroom work with eagerness and with a willingness to learn. If the pupils do not have a positive home environment, they attend school with a dissatisfaction and a lack of motivation because of physical or emotional problems.
- **Teaching approach:** Learning can be more enjoyable and be tailored to a larger degree when the pupils become part of the learning process. The Students can be motivated when the teachers help them to see what they are learning in a different context. If the pupils are currently learning about a historical figure or event, then, it could be motivating to read novels or short stories that take place in the same time period.

- **Interactive activities:** Using interactive activities can be a motivating factor for positive classroom participation. Besides, the use of puzzles, games, special speakers and visiting museums may also motivate the pupils to go beyond the official and predefined teaching routine and take steps into the larger world to learn more about the subject than what is taught in the school.
- **Higher levels of value:** Task value refers to students' opinion about and the utility or about how interesting they find a given task and the goals that are being pursued. Clearly, students' perceptions of task value are predicated on their interpretation of tasks. Pupils must understand how important it is to do well on the task. The parents and teachers need to provide support to the pupils' understanding of value. Higher value of upcoming results increases the sense of responsibility and the overall interest in the task.
- **Attributions and Controlled beliefs:** The basic construct refers to the belief about the causes of success and failure, and how much perceived control one needs to affect the outcomes or to control one's behaviour. The students must believe that their efforts will lead to success. This assurance enables them to manage their activities and emotions. The students who believe they are in control of their own learning and behaviour are more likely to do well and perform at higher levels than the students who do not feel in control.



CHECK YOUR PROGRESS

Q.3: Identify the factors that affect motivation.

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5.6 ROLE OF MOTIVATION IN LEARNING

The new conception about education is that it should take place in and through the situations in life, that is, through occupational activities which

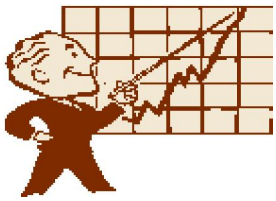
are true of life and are carried out on the basis of cooperation and responsibility necessary for human-beings bound together in a community. It encourages cooperation, and does not encourage exaggereted competition. However, in the schools, marks, divisions, degrees, scholarships, contests etc. are considered to be much reputable incentives for stimulating intellectual endeavour. Much of the school learning, therefore, suffers on account of these false incentives, and progress in social adjustment is much hampered.

Motives have great educational significance. But, their proper use at the right momement is essential. False incentives or too much importance on extranuous factors hamper school learning to a great extent. They are to be avoided.

So, motivation is important. Infact, it is the most important factor in learning. The teacher cannot arouse the interest of children without motivation, because without motivation, no learning is possible. Motivation is important in learning due to the following reasons:

- **Moulds the Behaviour:** Motivation helps to mould the behaviour of the child. It also helps to energise him and make him active in a natural way. Praise, blame, reward, punishment etc. act as powerful incentives for the actions of the children. They are, therefore, of great use in the learning process.
- **Selection of Behaviour:** Motive is of great help in selecting a particular type of behaviour. It also determines how we react to a particular situation.
- **Satisfaction of Motives:** Our behaviour is directed by motives in such a manner, that we feel satisfied after a particular type of behaviour. Therefore, a teacher should make the child motivated to direct his energies towards specific goals.
- **Creates Interest:** A proper use of motivation leads to motivation which creates interests leading to maximum learning. The learners should be encouraged to study in library, ake interest in doing things, and the teachers should create confience in the learners.
- **Development of Personality:** Motivation also leads the children to show varied interest and develop their personality in the right manner. They excel both in the academic and social fields.

- **Maintenance of Discipline:** Proper motivation helps to maintain discipline in the class.
- **Caters to Individual Differences:** The problem of individual differenes can be solved by proper motivation. Every child learns according to its intensity of motivation.
- **Sublimation of Instincts:** Small children are mostly directed by their innate instincts and impulses. Curiosity, construction, self–assertion are some of the driving factors which form the basis of all kinds of their activities. A child is always attracted towards new things. An efficient teacher should be able to stimulate their impulse of curiousity. A teacher should also encourage children in counstucting and creating things and letting their creativity and imagination develop.
- **Real life Situation:** The teacher must create psychological and social needs for learning in his students. Classroom learning must be related to the future life of the individuals, and must corelate with real life situations.
- **Avoid Stressful Procedures:** Mild tension accelerates the problem solving efforts of students. However too much anxeity and stress may disorganize the congestive process and hinder the performance level of the learners. Too much stress may bring down the individual's level of motivation in his efforts to get closer to his goal.



CHECK YOUR PROGRESS

Q.4: Why is motivation important for learning? Explain briefly.

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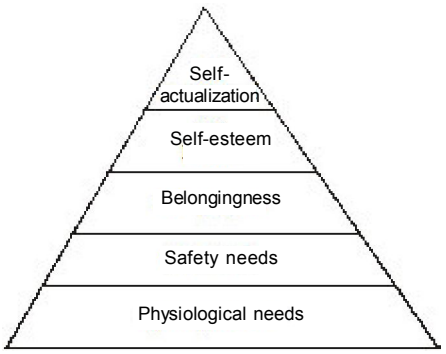
5.7 MASLOW'S SELF ACTUALISATION THEORY

Maslow describes how motives develop stage by stage from purely psysiological drives to complex social purposes. His hierarchy of need is as follows: (i) Gratification of bodily needs, (ii) safety, (iii) love, (iv) Self-esteem, and (v) Self-actualization.

The theory of self-actualization was developed by Abraham Maslow (1908-1970) a professor of Psychology. He was a humanist who believed that man can work out a better world for others as well as for himself. His approach to understand human personality and motivation is different from behaviourism and psychoanalysis. He critically examined the traditional approach of pain, avoidance and pleasure seeking, and tension reduction as the major sources of motivating behaviour. He has consistently argued that the needs are arranged in a hierarchy. As one general type of need is satisfied, another higher order need will emerge and become operative in life. He developd his own system of needs and categorized them into two dimisions, (a) deficit needs and (b) growth needs. The needs of the first category include psysiological needs, such as hunger and thirst. Once these needs are satisfied, the person seeks to satisfy safety needs. Love needs belongingness need and esteem needs. Under the second category, there is only one general need called self–actualization.

The second important concept of Maslow is that each individual has different nature which should be supported and encouraged. He criticized the views of those psychologists who believed that man is selfish, evil, and anti–social. Maslow believed that there are degrees of human manners. He went slightly beyond other need theorists by postulating an order of potency or priority with regard to the structuring of needs within the person.

Maslow developed a hierarchical order of needs from physio-logical to self–actualization needs. The order of needs starts from basic survival or lower order needs to higher order needs. The heirarchy is as follows:



Hierarchy of Needs: Maslow developed a hierarchical order of needs from physiological to self-actualization needs. The order of needs starts from basic survival or lower order needs to higher order needs. The hierarchy is follows:

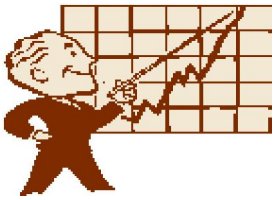
- Physiological needs
- Sefety needs
- Belongingness and love needs
- The esteem needs
- Self actualization need

The hierarchical structure of needs may be discussed as the following:

- **Physiological needs:** The most potent needs of all the needs, yet the least significant for the self–actualizing person, are the physiological needs. According to Maslow, when these physiological needs are deprived for a long period, all other needs fail to appear or recede in the background.
- **Safety needs:** When the physiological needs are successfully fulfilled, then safety needs become the dominant forec in the personality of the individual. Sefety needs are mainly concerned with maintaing order and security. People feel the need of structure, law and order, and to be under someone's direction.
- **Belongingness and love needs:** The needs of this category emphasize the basic psychological nature of human beings to identity with the group life. These are the needs of maknig intimate relationship with other members of the society, being an accepted member of an organized group needing a familiar environment as family etc.

These needs are dependent on the fulfilment and satisfaction of previous categories of needs. The modern developing society, with all its material advantages, is doing a great harm of disintegrating the family and social life of the people.

- **The esteem needs:** Esteem needs are divided into two categories: (1) Self-esteem, self-respect, self-regard, and self-valuation. (2) Relating to respect from others: reputation, status, social success, and fame. The need of self-evaluation occurs in those persons who are comfortably situated. They are quite secure in the satisfaction of lower needs. A professor who has established a high reputation and does not worry about getting work, may become quite discriminating about what type of works he accepts. Such a professor may accept only those assignments which may challenge his skills. The quality of work is a matter of some concern to him, it fulfils a need for self-respect, a need to feel good for himself.
- **Self-actualizalition:** The highest need, in the hierarchical system proposed by Maslow, is self-actualization. It means to fulfil one's individual nature in all its aspects, being what one can be. The person, who is talented in music, may experience tension if he does not attain the perfection. The man who is interested in nature wants to spend much of his time in the midst of nature. People can be motivated towards self-actualization only when their lower order needs have been statisfied.



CHECK YOUR PROGRESS

Q.5: Explain briefly the Self Actualisation Theory given by Maslow.

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5.8 LET US SUM UP

- Motivation is an important condition of learning.
- Successful learning takes place only when we are motivated to learn a particular subject.
- Good says, “Motivation is the process of arousing sustaining and regulating activity”.
- Motivation is of great importance in learning. Therefore, the teachers should adopt certain techniques to arouse the interest of the children, thus motivating them to learn.
- A teacher can adopt certain techniques in the teaching learning situation to motivate a child.
- Motives have great educational significance, but their proper use at the right moment is very essential.
- A teacher cannot arouse the interest of the children without motivation, without which no learning is possible.
- Maslow describes how motives develop stage by stage from purely psychological drives to complex social purposes.
- Maslow has developed a hierarchical order of needs from psychological to self-actualization needs.
- Motivation is said to be essential or Sine-Qua-Non of learning, in the sense that it provides economy of learning and attainment.



5.9 FURTHER READING

1) Atkinson, J. W. (1964). *An Introduction to Motivation*. Princeton: Van Strand.
2) Bolles Robert, C. (1967). *Theory of Motivation*. New York: Harper & Row.
3) Hall, J. F. (1961). *Psychology of Motivation*. Chicago: Lippincot.



5.10 ANSWERS TO CHECK YOUR PROGRESS

Ans. to Q. No. 1: Motivation is an external stimuli that helps the learners to create the state of mind to know something or to learn. Motive implies the presence of the aims and objectives in mind, whereas motivation activates it by creating necessary condition. In order to activate the individual, external stimulation, arousal of feeling, emotion and sentiment in mind, strengthening and reorganisation of the will force etc. may be needed. Motivation comprises all such extrinsic and intrinsic factors for activating the individuals.

Ans. to Q. No. 2: Clearness of goal, knowledge on success and failure, praise, use of reward and punishment, cooperation and competition, positive thinking or attitude, use of audio-visual aids etc. are some of the techniques that helps the learners to develop the motivation to learn.

Ans. to Q. No. 3: The belief system, higher level of interest, condition of the family or home, teaching approaches, interactive activities among the learners are some of the factors that affect motivation.

Ans. to Q. No. 4: Motivation plays a significant role in motivating the learmers or students to learn. It helps the learners to mould the behaviour, develop interest and personality, arousing the positive attitude or stimuli to learn, provide the individual spaces to cater their individual differences and so on.

Ans. to Q. No. 5: The highest need, in the hierarchical system proposed by Maslow, is self-actualization. It means to fulfil one's individual nature in all its aspects, being what one can be. The person, who is talented in music, may experience tension if he does not attain the perfection. People can be motivated towards self-actualization only when their lower order needs have been statisfied.



5.11 POSSIBLE QUESTIONS

A) Short Questions (Answer each question in about 150-300 words)

Q.1: What is meant by motivation?

Q.2: How would you like to define motivation.

Q.3: Explain some techniques of motivation.

Q.4: What are the factors that are responsible for motivating the children to learn?

B) Long Questions (Answer each question in about 300-500 words)

Q.1: How will you motivate children in classroom teaching? Explain.

Q.2: Why do you think that motivation is important for learning? Explain the role of motiavtion in learning.

Q.3: Discuss the hierarchical order of needs given by Maslow.

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UNIT 6: INTELLIGENCE AND ITS THEORIES

UNIT STRUCTURE

6.1 Learning Objectives

6.2 Introduction

6.3 Meaning of Intelligence

- 6.3.1 Nature of Intelligence
- 6.4.1 Characteristics of Intelligence

6.4 Theories of Intelligence

6.5 Role of Heredity and Environment upon Intelligence

6.6 Binet Simon Scale

6.7 Classification of Intelligence Test

- 6.7.1 Verbal Test of Intelligence
- 6.7.2 Nonverbal Test of Intelligence
- 6.7.3 Performance Test of Intelligence

6.8 Individual Test of Intelligence

- 6.8.1 Individual Verbal Test
- 6.8.2 Individual Nonverbal Test

6.9 Group Verbal Test

- 6.9.1 Group Verbal Test
- 6.9.2 Group Nonverbal Test

6.10 Age Scale and Point Scale Test

6.11 Uses of Intelligence Test

6.12 Let Us Sum Up

6.13 Further Reading

6.14 Answers to Check Your Progress

6.15 Possible Questions

6.1 LEARNING OBJECTIVES

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

- define the meaning, definition, nature and characteristics of intelligence;
- classify theories of intelligence;

- describe role of heredity and environment upon intelligence;
- explain Binet Simon Scale;
- describe classification of intelligence test; and
- list out various uses of intelligence test.

6.2 INTRODUCTION

It is a common observation in schools that some students learn readily while others in the same class, reading the same books, being taught by the same teachers face great difficulty. Some solve problems more easily, whereas, some others find it difficult. It is acknowledged by all teachers that one of the most important single variable that affects schooling is Intelligence Now the question arise as to what is Intelligence. What is the nature of Intelligence? In this unit, we shall discuss the concept, definition and nature of intelligence, and its theories.

6.3 MEANING OF INTELLIGENCE

Intelligence is one of the most controversial topics in psychology. The psychologists for defining intelligence provide different views. It has been defined as the ability to learn, to solve problem, to carry an abstract thinking, to adapt to new situation etc. The concept of intelligence affects the content and organization of the intelligence tests. Hence, it is necessary to examine some of the definitions of intelligence in order to have a clear idea about the nature of intelligence. In this regard, the following definitions may be taken into consideration.

- In the words of Binet, Intelligence is, “Judgment of good sense, initiative, ability to comprehend and to reason well and to adapt one’s self to circumstances.” Thus, intelligence is the capacity to judge well, to reason well, and to comprehend well. It is the capacity to adapt oneself to new situations and conditions of life.
- According to Stern, “Intelligence is the general mental adaptability to new problems and conditions of life.”
- According to Terman, “An individual is intelligent in proportion as he is able to carry on abstract thinking.”

- According to Wells, "Intelligence means precisely the power of so rebinding our behavior patterns as to act better in a novel situation."

However, the most comprehensive and acceptable definition of intelligence is given by Wechsler.

- According to Wechsler, "Intelligence is the aggregate or global capacity of the individual to act purposefully, to think rationally, and to deal effectively with his environment."

All the definitions stress the following aspects of intelligence.

i) **Ability to learn:** Intelligence is the ability to learn. The more intelligent a person is the more extensive is his ability to learn.

ii) **Ability to adjust to a new situation:** Intelligence is the capacity to behave effectively according to novel situation. It is the capacity of an individual to act more effectively and more appropriately in novel situations.

iii) **Ability to carry on abstract thinking:** Intelligence includes the ability to abstract thinking. This means the effective use of concepts and symbols in dealing with situations.

6.3.1 Nature of Intelligence

On the basis of our reading the definitions of Intelligence, we can derive certain important points about intelligence and its functioning. These are:

- Intelligence is a native capacity.
- It is independent of training and acquired experiences.
- It is the comprehensive term used for such behaviour as understanding, thinking, remembering, reasoning etc.
- It has no organic entry. It is a way of behaving.
- Intelligence is using knowledge rather than storing knowledge. Intelligence is intellect put to use.
- It is the ability to deal with abstraction.
- Learning ability of a person depends upon intelligence.
- In is the mental capacity or mental energy available with an individual at a particular time in a particular situation.

- This capacity, available with an individual can be judged only in terms of the quality of behaviour or performance.

Thus, intelligence is a construct, which psychologists have evolved to explain differences in behavior in various field of activity.

6.3.2 Characteristics of the Intelligence

The characteristics of intelligence are as the following:

- Intelligence is an inborn natural power.
- With the help of the power of intelligence, a man is capable of facing the difficult circumstances, problems, difficulties and complicated situations.
- It helps a man in learning things.
- It helps a man to solve even the complicated problems and situations.
- There is no difference in intelligence due to differences in sex.
- Heredity exercises a good deal of influence on intelligence.
- The study of the development of the intelligence has proved that if a child is brought up in a healthy and proper environment, than his IQ shall be more than a child brought up in a different environment.
- There is difference between intelligence and knowledge.

6.4 THEORY OF INTELLIGENCE

It is apparent from the definitions of intelligence that psychologists have different ideas about intelligence. Hence, in order to understand the nature of intelligence, one has to go through the different theories of intelligence. Alfred Binet in France, Spearman in Britain, and Thurstone, Thorndike, Thompson, Vermon etc, in America propounded different theories of intelligence. Therefore, the educationists have enumerated the following theories of intelligence:

- Binet's Uni-Factor Theory
- Spearman's Two Factor Theory
- Thorndike's Multifactor Theory

- Thompson's Group Factor Theory
- Thurston's Multifactor Theory
- Vernon and Burt's Hierarchical Theory
- Guildford's Three Dimensional Theory

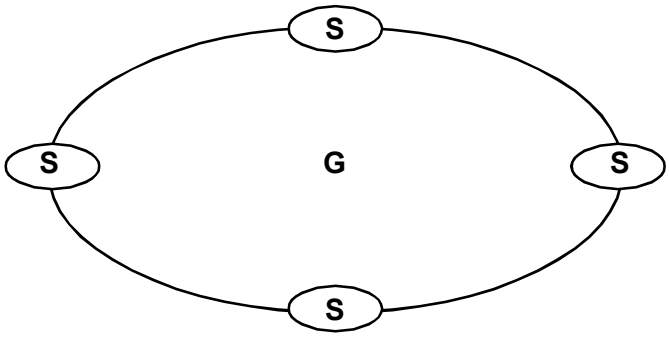
- **Binet's Uni Factor Theory:** The theory was originally developed by Binet. The supporters of the theory considered intelligence as the faculty, which affects all the mental activities. According to this theory, if a person is proficient in one area, he should also be in the order.
- **Spearman's Two-Factor Theory:** Spearman was the founder of this theory. His opinion was that there are two elements in the intelligence of every individual:
  - General factor, which is generally called 'G', is the factor which is present in all the intellectual exercises. The following may be remembered about the factor 'G'–
    a) The factor 'G' is omnipresent.
    b) It is obtained by a human being from birth.
    c) Different things are necessary for every action for every action of the factor.
    d) The 'G' varies with the individual's ability.
  - Specific factor is known as factor 'S'. It is present in special action only. The readers are advised to remember the following about the factor 'S'–
    a) It is not in-born.
    b) This factor is obtained by various exercises.
    c) This specific factor varies with the individuals.
    d) The factors are different for different actions.
    e) A person would be an expert according to the proportion of specific factor in him.

  Spearman's two-factor theory includes two things.

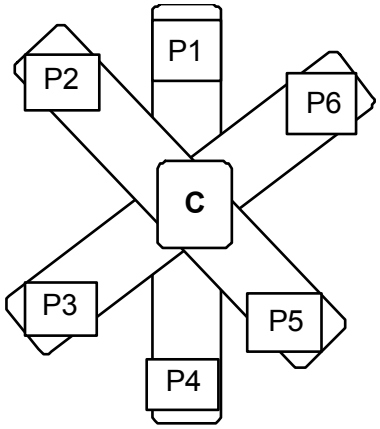
  (a) Educations of Relations and **(b) Educations of Correlates.**

  Education of relations means the knowledge of relation among two things or parts of things. Education of correlates means to think another related thing, when the relation between two things is

apprehended. Later on, Spearman talked about group factor as well; e.g.-mechanical ability, mental speed, etc. Thus, indirectly, there are three elements in Spearman's theory: (a) 'g' or general factor, which on entail is doing all activities. (b)'s' or specific ability, which is different in each activity, (c) group factor, which is in between these two factors, 'g' and 's' Spearman's theory can be understood well with the help of following figure. In this figure, the correlation among four school subjects is shown. As is apparent from the diagram, some subjects require more general ability as compared to others.



- **Thorndike's Multifactor Theory:** According to Thorndike, there is nothing like one intelligence, but there are several intelligences, which overlap each other. The correlation in different tests can be obtained because some characteristics of one text are found in another, i.e. both the activities involve some common factors. Thus, Thorndike rejecting Spearman's 'g' factor, introduced 'Common factor'. According to him, this common factor is essentially involved in all activities in some quantity. Thorndike has mentioned in his book 'Measurement of Intelligence' that individuals differ, in two directions in doing two things: (a) number of items (b) difficulty levels of items. There are individuals, who know several things about different subjects, but their knowledge is not made with regard to one subject. On the other hand, there are such individuals who have deep knowledge of one subject as compared to other subjects. Such individuals are unaware of many such things, which are known to a common man. Thus, Thorndike regarded intelligence as knowledge. This fact can be shown through the following diagram:



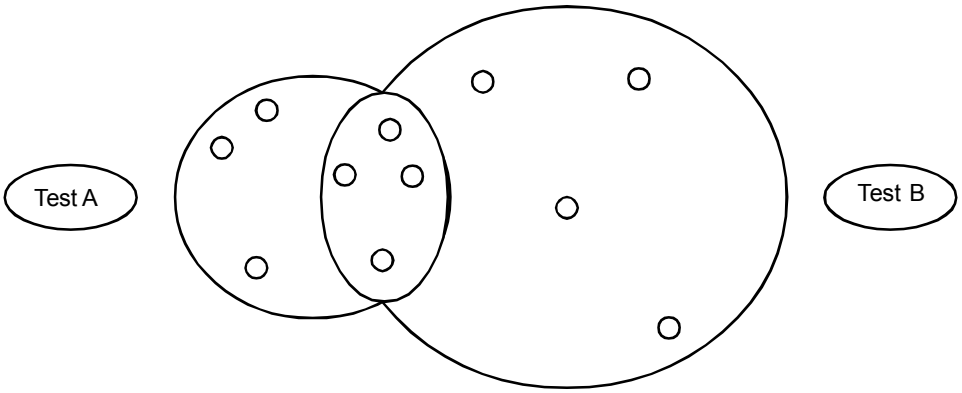
C = Common factor

P1 = Verbal Ability P4 = Memory

P2 = Reasoning Ability P5 = Spatial Ability

P3 = Numerical Ability P6 = Word Fluency

- **Thompson's Group Factor Theory:** According to Thompson, the mind consists of various independent powers. A test measures only a few of these powers. If two tests measure the same power, then some common factors exist between the two. The theory is also known therefore as common factor or group factor theory. The theory can be presented diagrammatically as in the following figure.



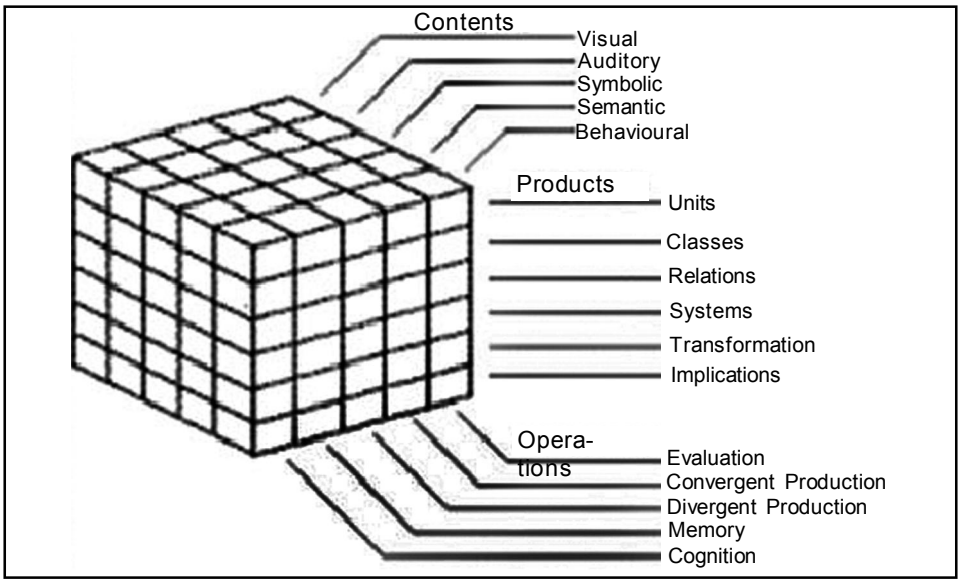
Small circles represent factors, and large circles are representative of tests. In both the test 4's' factors are common. Both tests are positively correlated.

- **Thurston's Multifactor Theory:** Thurston's multifactor theory, in fact, is mid way, between Spearman's two-factor theory and Thorndike's ability theory. Thurston is famous for his factor analytic approach. He showed about 12 primary mental abilities for the

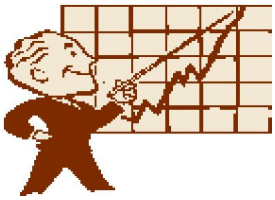
structure of intelligence. Some of them combined together for group factor, which reveal the intelligence of an individual for a specific area, main among them used by Thurston and other investigators.

1) Verbal Ability (V)
2) Word Fluency (W)
3) Number Ability (N)
4) Spatial Ability (S)
5) Memory (M)
6) Perceptual Speed (PS)
7) Reasoning Ability (R)
8) Ability to solve Problems (P)

- **Vernon's and Burt's Hierarchical Theory:** This is a new theory in the field of intelligence. Vernon and Burt have given a new plan of factor's arrangement. In this system, a hierarchical importance is given to mental abilities. The shape of this plan is like a tree, which starts from 'g' factor of Spearman. On the second stage, are two broad factors: (1) Practical Ability, and (2) Academic Ability. Further division of factor takes place at next step. Practical ability is divided into perceptual, mechanical, and spatial ability, while academic ability is divided into reasoning, numerical and verbal ability. The theory is propounded on the basis of the factor analysis approach.
- **Guildford Three Dimensional Theory:** On the basis of 20 years of research work, Guildford (1967) gave a box model of intelligence. It is known as structure of Intellect Model. The model classifies cognitive traits on three dimensions:
  1) **Operations:** It includes cognition, memory, divergent production, convergent production, and evaluation.
  2) **Contents:** The information about the nature on which operations are to be done.
  3) **Products:** The form of its formations in the mind of the subject is explained under the dimension.



Guildford classifies the intellect into operations, which it can perform; different contents of these operations and different products; by taking all possible interactions we obtain 120 cells corresponding to different mental abilities.



CHECK YOUR PROGRESS

Q.1: Give one standard definition of Intelligence.

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Q.2: Mention any two characteristics of intelligence.

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Q.3: What do you mean by Spearman's two-factor theory?

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6.5 ROLE OF HEREDITY AND ENVIRONMENT UPON INTELLIGENCE

Like most aspects of human behavior and cognition, intelligence is a complex trait that is influenced by both genetic and environmental factors.

Intelligence is challenging to study, in part because it can be defined and measured in different ways. Most definitions of intelligence include the ability to learn from experiences and adapt to changing environments. The elements of intelligence include the ability to reason, plan, solve problems, think abstractly, and understand complex ideas. Many studies rely on a measure of intelligence called the intelligence quotient (IQ).

Researchers have conducted many studies to look for genes that influence intelligence. Many of these studies have focused on similarities and differences in IQ within families, particularly looking at adopted children and twins. These studies suggest that genetic factors underlie about 50 percent of the difference in intelligence among individuals. Other studies have examined variations across the entire genomes of many people (an approach called **genome-wide association studies** or GWAS) to determine whether any specific areas of the genome are associated with IQ. These studies have not conclusively identified any genes that underlie differences in intelligence. It is likely that a large number of genes are involved, each of which makes only a small contribution to a person's intelligence.

Intelligence is also strongly influenced by the environment. Factors related to a child's home environment and parenting, education and availability of learning resources, and nutrition, among others, all contribute to intelligence. A person's environment and genes influence each other, and it can be challenging to tease apart the effects of the environment from those of genetics. For example, if a child's IQ is similar to that of his or her parents, is that similarity due to genetic factors passed down from parent to child, to shared environmental factors, or (most likely) to a combination of both? It is clear that both environmental and genetic factors play a part in determining intelligence.

Measurement of Intelligence: Men have always been interested in measuring the abilities of their fellow men. To the Psychologists, intelligence

is the ability to perform certain type of tasks. We can measure observable manifestation of the ability. An intelligence test is a general measure of current cognitive abilities. The development of Intelligence testing may be attributed to the study of individual differences. The Psychologists for the measurement of Intelligence have developed many tests. The very first taste of Intelligence was intended for schools and thus it stressed the aptitudes involved in primary education. It was published in 1905 by Alfred Benet. Let us therefore discuss the Binet Intelligence Test in the following section.

6.6 BINET SIMON INTELLIGENCE TEST

The French psychologist Alfred Binet along with Theodore Simon devised the first intelligence test, which was first published in 1905. Binet originally developed his test to identify slow learners in Paris schools. The three important aspects were:

- Using complex tasks as test items
- Using age standards
- Measuring general mental ability

Binet's first scale, which was published in 1905, consisted of 30 items arranged in the ascending order of difficulty. This scale was designed to measure a wide variety of functions and special emphasis on judgment, comprehension and reasoning, which Binet regarded as essential components of intelligence. Although sensory and perceptual tests were included, the test content was basically verbal.

After working with the scale for three years, Binet published a second scale in 1908. The number of test items is increased from 30 items to 59 items. Some unsatisfactory items were eliminated from the earlier scale. All items were grouped into age levels from 3 to 13 years. It was for the first time that the scale introduced the concept of mental age. Mental age was established by testing large samples of each age group.

A third revision of the Binet-Simon scale appeared in 1911. In this scale, no fundamental changes were introduced. The scale was extended to adult level. However, no tests were provided for the 11, 13 and 14 years levels. The Binet Simon scale attracted attention of the psychologists

throughout the world. Translations and adaptations appeared in many languages. The first and most famous adaptation was done in 1916 by L. M. Terman, and his associates at Stanford University and known as the Stanford Binet Test. It was the first test to provide detailed administrative and scoring instructions. Stanford Binet intelligence test was the healthiest and the direct descendent of Binet's original scale. The last revision of Stanford Binet Test was done in 1960.

6.7 CLASSIFICATION OF INTELLIGENCE TESTS

A large number of intelligence tests have been developed after Binet's intelligence test scale. These tests are classified into various types on the basis of the nature of administration and on the basis of scoring procedure involved as can be found in the following.

a) Classification on the basis of **form**-Verbal test and Non verbal/ Performance test.

b) Classification on the basis of **administration**-Individual test and Group tests.

c) Classification on the basis of **scoring**-Age Scale tests and Point Scale test.

Different specific types of intelligence tests are discussed below.

Intelligence Test

Individual	**Verbal Non-Verbal Individual Verbal**	**Performance or Individual Non-Verbal**
Group	**Group Verbal**	**Group Non-Verbal**

Illustration: Types of Intelligence Tests.

6.7.1 Verbal Test of in Intelligence

Verbal tests are comparatively older than the other kinds of tests. Intelligence can be measured in terms of exercise of individual thoughts, judgments, observations, reasoning, comparison, analysis, and problem solving which find expression in verbal and spoken

responses. In these test the subject makes use of language. Instructions are given in words-written, oral or both. The testes are required to use language verbal or written for their responses. Thus, the content is loaded with varieties of verbal materials, such as:

- **Vocabulary Tests:** In this test, the subject is required to give the meanings of words or phrases.
- **Memory Tests:** These are designed to test the subject's immediate and long-term memory and included recall and recognition type of items.
- **Comprehension Tests:** In this type of tests, the subject is tested for the ability to grasp, understand and react to a given situations.
- **Information Tests:** In these tests, the subject's knowledge about the things around is tested.
- **Association Tests:** Through these test items, the subject is tested for his ability to point out similarities and dissimilarities between two or more concepts.
- **Reasoning Tests:** In these tests, the subject is asked to provide answers, which demonstrate his ability to reason-logically, analytically, synthetically, inductively, or deductively.

Verbal tests may be individual or group, spoken or written, but their main characteristic is that they are linguistic. Binet Simon Tests and its revisions are examples of verbal test.

6.7.2 Nonverbal Test of Intelligence

A child who has a serious speech defector that language development is retarded will be handicapped in such tests. For the benefit of these groups, some tests have been developed that do not require language. These are known as nonverbal language. Items of nonverbal tests are figure, analogies figure, classification, following directions, diagram, form of pictures, geometric figure etc. Consequently, illiterate individuals may also be tested with the help of nonverbal tests. In these tests, the subject may use paper and

pencil but he does not need to know words or numerical figures. Some tests belonging to this category are:

- **Chicago Nonverbal Tests:** This nonverbal has proved most useful for young children aged 12 and13 years.
- **Raven's Progressive Matrices Tests:** It is a very popular nonverbal group test of intelligence. It was developed in the UK. The test has been designed to evaluate the subjects' ability-(a) to see the relationship geometric figures or design; and (b) to perceive the structure of a design in order to select the appropriate part for completion of each pattern.
- **Army Beta Tests:** It was developed in World War I in the USA for testing the intelligence of soldiers who were either illiterate or were not familiar with the English language. It was developed as a substitute of Army Alpha Test, which was a group verbal test (we will discuss later). It is a paper- pencil test. In this scale, scoring is done in a point scale. Army Beta test consisted 7 sections of subtests.

6.7.3 Performance Test of Intelligence

Performance tests are a typical form of nonverbal tests. They are similar to the nonverbal tests of intelligence**.** In performance tests, the use of language is eliminated from test content and response, although directions are generally given orally. Performance test consist of a variety of items. Maze drawing, block design are some examples of performance test. The content of the tests are in form of material objects. The directions or instruction to the subject are conveyed by the tester through oral instructions or pantomimes and signs. There are two types of performance tests—Battery and Omnibus. In Battery type performance tests, all items of one kind are put together in a subtest with its own instruction and practice sample and with its own time limits. In Omnibus type, all items are put together for the whole test as a single test.

6.8 INDIVIDUAL TEST

Individual test of intelligence: An individual test is administered to one person at a time. Individual testing was originally designed by Alfred Binet. An individual test can be verbal, non verbal or performance. Thus, individual tests are again subdivided as

- Individual verbal test
- Individual nonverbal / performance test

6.8.1 Individual Verbal Test

The Stanford Binet scale is the well known example of individual verbal tests. The French psychologist Alfred Binet along with Theodore Simon developed the original Binet Simon test to identify the slow learners in Paris schools.

Wechsler Bellevue Intelligence Test: David Wechsler is another name associated with the construction of individual verbal intelligence test after Binet. Wechsler pointed out that the assumption that the I.Q. should remain constant was not found to be true. There is great variability of I.Q. for different ages. David Wechsler developed a scale for measuring adult intelligence, known as Wechsler Bellevue Intelligence Scale in 1939. In 1955, the scale was modified and re-standardized on the Wechsler Adult Intelligence Scale (WAIS). The latest edition of WAIS was prepared in 1981. Wechsler Adult Intelligence Scale (WAIS) consists of 11 subtests-6 subtests in the verbal scale and 5 in the performance scale.

Wechsler Intelligence Scale for Children (WISC): Wechsler Intelligence Scale for Children (WISC) was an extension of the Wechsler Bellevue to lower age levels. The test is similar to that of adults. Only one WISC subtest (Maze) did not appear in the adult form. WISC scales were constructed by eliminating some of the difficult items and adding easier items to the adult scale. In 1974, a revised version of the WISC was published.

6.8.2 Individual Nonverbal Test

Nonverbal or non-language tests of intelligence for testing one individual at a time come under this category. In these tests, language is not used and it includes items, which require responses in terms of motor activities. These tests are developed to overcome the difficulties, which are faced while using the verbal tests. These tests require the child to do 'something' rather than reply a question. Generally, these tests include items of the following types block designs, mazes, object assembly or puzzles, picture arrangement, picture completion etc. In these tests, no language is used; even instruction can be given through demonstration or action. Some of the better-known scales are:

a) Alexander's pass-along,
b) Koh's Design test,
c) Pinter-Patterson Scale etc. (this test is discussed above)

6.9 GROUP TEST OF INTELLIGENCE

Group intelligence tests were originally designed to be economical substitute for individual tests. Group tests can be administered to more than one individual of a given age at a time by one examiner. These can ensure more uniformity of procedure. Individual test was developed in French, and Group test was developed in America, and its 'mother was necessity of war'.

Group test was the test used in America in 1917-18 for quick recruitment of war officials and soldiers. Arthur Otis was the originator of this type of test. Group intelligence tests are composed of several type of items– vocabulary, general information, arithmetic, reasoning etc. Group test are easy to administer. The directions and manuals for examiners have been worked out, so that even a layman can administer these tests. Group tests are scored more rigidly. Simplicity of responses is regarded as an asset as an asset in Group tests. Group tests are of both verbal and nonverbal types. Thus, they are classified as:

- Group Verbal Intelligence Test
- Group Nonverbal Intelligence Test

6.9.1 Group Verbal Intelligence Test

The tests, which require the use of language and are applied to a group of individuals at a time come under this category. Verbal group tests are the language tests-questions of which are arranged in a small booklet. They are heavily weighted with vocabulary items either in traditional form or in variations. The testees are to answer the items the items by 'yes' or 'no' or in brief words. There are precise instructions to the testees. Army Alpha Tests is the example of Group Verbal Intelligence test.

Army Alpha Tests: Army Alpha Test is the most widely known group verbal test. At the time of first World War in 1917, it was required to select persons for recruitment in the American army. Army Alpha Test was a paper pencil test. After the World War, the test was also used for general purposes with some revisions. Army Alpha Test was composed of 8 subtests.

6.9.2 Group Nonverbal Intellgence Test

These tests do not necessitate the use of language and are applicable to a group of individuals at a time. These are designed to test intelligence without the use of language. The test items contain pictures, diagrams, and geometrical figures etc. printed in a booklet. The subject is required to fill in some empty spaces, to draw some empty figures, to point out similarities etc. In case of group nonverbal tests, the test materials are provided in booklets and require the use of paper and pencil on the part of the testees. Army Beta Test is an example of group nonverbal intelligence tests.

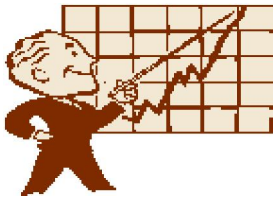
Comparison of Individual and Group Tests: We can draw the following distinctions between individual and group tests.

- Individual tests are administered on an individual at a time; but group tests are administered on many individuals at the same time.
- Individual tests are time and money consuming. But, group tests are economical as it saves time, money and energy.

- Individual tests require trained testers to administer the test. But, no trained examiners are needed to administer group tests. Detailed manuals and instructions are provided with the test so that, anyone can administer the test.
- The examiner can study the behavior of the individual directly in individual testing, as there is face-to-face interaction. However, in case of group test, there is no face-to-face interaction and behavior of individuals cannot be studied directly.

6.10 AGE SCALE AND POINT SCALE TEST

Age scale tests are organized on either year-basis, or age units. In these tests, the items are selected on the basis of success at various ages. Test items are varied, unrelated, and ungraded. In these tests, scoring is done on the basis of mental age. These tests provide qualitative evaluation of the general mental ability of a person. Measurements are not fully subjected to statistical treatment in case of age scale test of intelligence. However, the point scale tests have single homogeneous graded scale. Here tests are selected in terms of functions measured. It is a scale, which gives a point score and not a mental age. In point scale tests; age wise organization of items is dropped. However, a point scale may be converted into an age scale or an age scale into a point scale. In point scale test, the test items are graded as to be available for wide range of ages. These tests provide quantitative evaluation. Measurement of different ages is comparable in case of point scale tests. Items are weighted unequally in these tests. All analysis of the test scores is possible in case of point scale tests.



CHECK YOUR PROGRESS

Q.4: What is Wechsler Intelligence Scale for Children (WISC)?

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Q.5: What is the difference between Army Alpha test and Army Beta test?

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Q.6: State any two differences between group intelligence test and individual intelligence test.

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6.11 USES OF INTELLIGENCE TEST

Intelligence tests are used for a variety of purposes, such as–

- **Use of Classification:** Intelligence tests find their greatest use in classification and grading of pupils according to their ability. Only then, their course of study, nature of treatment, and method of instruction may be planned according to their abilities and fitness.
- **Use for Selection:** Intelligence tests can be properly used for the purpose of selection of suitable candidates for different purposes such as admission to an educational program or course of instruction, to offer a scholarship to gifted students, to select students for giving special responsibilities in the school's academic and co curricular programmes, selection of trainees for a vocational programmes or job etc.
- **Use of Diagnosis:** Intelligence tests are used to diagnose and discriminate the differences in the mental functioning of an individual. These are utilized for:
  - Identifying exceptional children like gifted, backward, feeble minded.

- Assessing the degree of mental retardation or extent of giftedness.
- Diagnosing the cause of problematic behaviour and suggesting remedial measures.

- **Use of Prediction:** There is a close relationship between intelligence and school achievement. Intelligence test results indicate the success and failure of the students in their academic career. Besides these, such test can also be used in deciding success in their chosen professions and social careers.
- **Use in Educational Guidance:** Intelligence tests are good predictors of academic achievement because of high correlation between the two. It can be judged on the basis of the results of intelligence test, what subjects a particular student should study, how one should proceed on one's course of learning etc.
- **Use in Research Work:** Intelligence tests are very much needed for research in the field of education, psychology, and sociology. In short, intelligence tests give the most valuable objective measurements about the levels and qualities of mental abilities of children. These tests can be utilized for identifying and assessing the degree of mental retardation or extent of giftedness, suggesting possible remedial action, and for providing suitable educational programmes. These are suitable tools for research.



6.12 LET US SUM UP

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

- There is a great role of heredity and environment upon intelligence.
- There are various theories of intelligence such as– Binet's Uni-Factor Theory, Spearman's Two Factor Theory, Thorndike's Multifactor Theory, Thompson's Group Factor Theory, Vernon and Burt's Hierarchical Theory, Guildford Three Dimensional Theory.
- French psychologist Alfred Binet along with Theodore Simon devised the first intelligence test, which was first published in 1905. Binet originally developed his test to identify slow learners in Paris schools.
- Intelligence test can be classified on the basis of form, administration and scoring.
- Classification on the basis of form– Verbal test and Non verbal/ Performance test.
- Classification on the basis of administration– Individual test and Group tests.
- Classification on the basis of scoring– Age Scale tests and Point Scale test.
- Individual tests require trained testers to administer the test. But, no trained examiners are needed to administer group tests. Detailed manuals and instructions are provided with the test so that, anyone can administer the test.



6.13 FURTHER READING

1) Butcher, H. J. (1968). *Human Intelligence and Its Nature & Assessment*. London: Methun & Co.
2) Chaplin, Jamesh P., & Krawiee. (1974). *Systems & Theories of Psychology*. New York: Holt Rinehart & Winston.
3) Ceci S. J. (1990). *On Intelligence... More or Less: A Bio-Ecological Treatise on Intellectual Development*. Englewood Cliffs, NJ : Prentice Hall.
4) Chauhan, S. S. (1998). *Advanced Educational Psychology*. New Delhi: Vikas Publishing House Pvt. Ltd.

5) Gardner, H. (1998). *Frames of Mind: The Theory of Multiple Intelligence*. New York: Basic Books.



6.14 ANSWERS TO CHECK YOUR PROGRESS

Ans. to Q. No. 1: According to Stern, "Intelligence is the general mental adaptability to new problems and conditions of life."

Ans. to Q. No. 2:
- It helps a man to solve even complicated and comprehended problems and situations.
- There is no difference in intelligence due to differences in sex.

Ans. to Q. No. 3: Spearman's opinion was that there are two elements in the intelligence of every individual– 'G ' factor and 'S' factor. General factor, which is generally called 'G', is the factor, which is present in all the intellectual exercises. Specific factor is known as factor 'S'. It is present in special action only.

Ans. to Q. No. 4: Wechsler Intelligence Scale for Children (WISC) was an extension of the Wechsler Bellevue to lower age levels. The test is similar to that of adults. Only one WISC subtest (Maze) did not appear in the adult form. WISC scales were constructed by eliminating some of the difficult items and adding easier items to the adult scale.

Ans to Q. No. 5: The difference between Army Alpha test and Army Beta test is: Army Alpha Test is the most widely known group verbal test. At the time of first World War in 1917, it was used to select persons for recruitment in American army. Army Beta test was also developed in World War I in the USA. It was used for testing the intelligence of soldiers who were either illiterate or were not familiar with the English language. It was known as group non-verbal test.

Ans. to Q. No. 6: The differences between group intelligence test and individual intelligence test are:
- Individual tests are administered on individual at a time; but group tests are administered on many individual at the same time.
- Individual tests are time and money consuming. However, group tests are economical saving time, money and energy.



6.15 POSSIBLE QUESTIONS

A) Short Questions (Answer each question in about 150-300 words)

Q.1: What is intelligence? Give some characteristics of intelligence.

Q.2: Explain the nature of intelligence.

Q.3: What is Intelligence Test? Describe any one of the standardized verbal test of intelligence.

Q.4: Discuss the importance of intelligence tests in educational evaluation.

Q.5: Write short notes on:

a) Army Alpha Test

b) Army Beta Test

c) Thurston's Multifactor theory

d) Age scale and point scale test

e) Wechsler Intelligence Scale for Children

B) Long Questions (Answer each question in about 300-500 words)

Q.1: Classify intelligence tests and bring out the distinctive features of each type.

Q.2: Mention the various theories of intelligence. Explain in detail about any two theories of intelligence.

Q.3: Distinguish between individual and group test of intelligence. Explain various types of group and individual tests of intelligence.

Q.4: Describe the nature of Stanford–Binet test and make a comparative study of Wechsler scales and Binet scales.

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UNIT 7: CREATIVITY

UNIT STRUCTURE

7.1 Learning Objectives

7.2 Introduction

7.3 Concept of Creativity

7.4 Characteristics of Creativity

7.5 Factors Influencing Creativity

7.6 Steps involved in Creativity

7.7 Characteristics of a Creative Person

7.8 Relationship between Creativity and Intelligence

7.9 Relationship between Creativity and Education

7.9.1 Role of Home in the Promotion of Creativity

7.9.2 Role of School in the Promotion of Creativity

7.10 Let Us Sum Up

7.11 Further Reading

7.12 Answers to Check Your Progress

7.13 Possible Questions

7.1 LEARNING OBJECTIVES

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

- define creativity;
- describe the characteristics of creativity;
- explain creativity as a process and a product;
- describe the steps involved in creativity;
- identify the characteristics of a creative person;
- explain the relationship between creativity, intelligence, and education;
- discuss the role of home and school on creativity; and
- describe how to nurture creativity among people.

7.2 INTRODUCTION

This unit on Creativity will introduce you to the concept of creativity, its characteristics as a psychological attribute, the characteristics of a

creative person, and the role of home and school in promoting creativity. Creativity is one of the distinguishing characteristics of human beings. However, it is a controversial topic in the field of psychology. People have been trying to understand it—starting from the concept of Almighty as the greatest creator to every human being having some amount of creativity, whether it is inborn or nurtured, and so on. There are different theories to understand it. Let us in this unit try to understand it in the educational context.

7.3 CONCEPT OF CREATIVITY

As you know, creativity is one of the most valued qualities of human beings which enormously affect all spheres of life. It is an important contributor in changing history and in moulding the world. Creativity is the act of turning new and imaginative ideas into reality. It is characterised by the ability to perceive the world in new ways, to find the hidden patterns, to make connections between the seemingly unrelated phenomena, and to generate solutions.

Creativity essentially relates to the potentials of an individual for generating new ideas, forms and practices. It is the result of the convergence of the basic cognitive processes, core domain knowledge, and environmental, personal, and motivational factors. It is the capacity to produce something that is both new and adaptive. It is a complex phenomenon as it is determined by a wide range of factors. It requires a multifaceted approach to understand it. However, the degree and quality of creative expression is relative. It varies from individual to individual and from age to age, as one grows in terms of years, experience and maturity.

Let us now, try to understand the concept of creativity in the light of some of the definitions provided by some famous psychologists.

In 1980, Guilford stated, “of all the qualities that man possesses, those that contribute to his creative thinking have been most important for his wellbeing and his advancement.” According to him, “Creativity sometimes refers to creativity potential, sometimes to creative production, and sometimes to creative productivity.”

According to Skinner, “Creative thinking means that the conclusions or predictions of an individual are new, original, ingenious and unusual.”

According to Simpson, “Creative thinking involves new forms of thinking away from the traditional forms.” Therefore, creativity includes curiosity, imagination, research, novelty, etc.

The above definitions point out that creativity means original thinking, new types of associations, divergent thinking and behaviour, new solutions of old problems, flexibility and a new approach in different fields of life. The creative individual is very much aware of new problems. His thinking is dynamic, flexible, original and novel. He has more than average curiosity and is always busy in finding out new solutions to the traditional problems. Creativity is a very precious and unique quality in an individual as it enables him to solve the complicated problems in the different walks of life. Suppression of creativity of the child leads to learning disabilities, behaviour problems, dropouts and mental conflicts, and above all, a great loss to mankind. In the words of C.V. Good, “the factors of creativity are tentatively described as associate and ideational fluency, originality, adaptive and spontaneous flexibility that make logical evolution.

7.4 CHARACTERISTICS OF CREATIVITY

Creativity is considered a highly particularized and substantive capacity. After understanding the concept of creativity, let us now enumerate its characteristics:

- ***Universal:*** Creativity is universal in nature. It is not confined to any person or any particular group of people. Everyone has creative ability to some or the other extent.
- ***Novelty:*** Creativity is characterized by novelty, i.e. the ability to produce something new. However, it is not necessary to be entirely new. It can be a combination of new and old ideas in a new framework which never existed before. Novelty also implies that the expression should not be repetition or reproduction of something already done.
- ***Divergence:*** Creativity involves divergent thinking, more than convergent thinking. It is regarded as one of the most important

characteristics of creativity. Divergent thinking refers to ability of a person to evolve a general multiple possible solutions when any problem arises.

- ***Requires free Atmosphere:*** Creativity requires a free environment to be fostered. Restrictions and rigid atmosphere hinders the development of creativity. The teacher should allow adequate freedom to the children in responding to a situation. They should be encouraged to think out as many ideas as they can for the solution of a problem.
- ***Wide Scope:*** Creativity has very wide horizons. It includes all the aspects of human life. It is not restricted by any limits or boundaries. It may find expression through poetry, literature, science and technology, leadership, business, art and fine arts and even through some day-to-day activities.
- ***Innate as well as Acquired:*** Creativity is a natural endowment. One's creativity may be the function of natural endowment as well as its nurturing. Thus, creativity is innate as well as acquired. It can be located through psychological investigations and need to be properly nourished.
- ***Relationship with Intelligence:*** Though creativity cannot be separated from intelligence, it is not necessary that only the persons with IQ can create something new. The individual of average intelligence can also bring forward a new idea, a new object or a new discovery. Intelligence and creativity are not the essential condition of each other however, a certain level of intelligence is necessary for successful creative expression.
- ***Adventurous and Open Thinking:*** Creativity is adventurous and open thinking. It challenges stereotyped and closed thinking. It encourages and demands complete freedom to accept and express the multiplicity of responses, choices and lines of action. It involves out of the box thinking rather than the routine activities.
- ***Process as well as Product:*** Creativity is both a process and a product. It is a process from which the product comes and it is the

process of hypothesis formation, hypothesis testing, and communication of result. It refers to both the process of writing a piece of poetry as well as the poem itself.

- ***Individualistic as well as Socialistic:*** Creativity is individualistic approach in the beginning and later on it is accepted by all. That is, the process of creativity is individualistic; however the product of creativity has social implications.

The above discussion has clearly stated that creativity is the quality which leads to the production of something new and desirable. It is the rearrangement of concepts so as to produce something which had not previously existed. Creativity is so personal involving intuition and imagination to a great extent.

7.5 FACTORS INFLUENCING CREATIVITY

Though creativity is universal, you see differences in the degree of creativity among people. This difference may be attributed to various factors affecting creativity.

- **Motivation:** One of the most influential factors of creativity is motivation. The motivation or the urge to create something new or to innovate is necessary to bring out the creative potentials of the children.
- **Courage:** Courage is another major factor influencing creativity. Creativity is thinking against the flow. Therefore, it requires courage to defy the trend and propose a new trend without the fear of failure.
- **Experiences:** Experience is a key player in creative thinking. The more you experience the more one can influence. These experiences define one's ideas and creativity, which are presented through your work.
- **Resources:** The range of resources that a person is exposed to also affects the development of creative abilities. Wide and varied resources provide more opportunities for the promotion of creativity.
- **Management/Governance:** This refers to the administrative environment of the individual. It may be at school, home, or any

organization. A rigid, strict and routine type of governance mars the creativity and a flexible management or administration promotes it.

- **Pressure/Challenge:** The type of pressure or challenges that a person faces also affect the development of creativity. However, the nature of pressure or the challenge should be positive. It should lead to stretching of the person's ability but not to the breaking point.
- **Space and Time**: Creativity requires an appropriate space and right amount of time to carry out the creative process and for creative expression. It takes time to get into your creative mode. You must realize that it will take time to achieve something truly original and creative.

7.6 STEPS INVOLVED IN CREATIVITY

As a process, it is believed that creative expressions go through some stages. Different psychologists have divided these stages into different ways. Some have divided it into 4 stages, others into 5 stages, and some into 7 stages. In general, creativity is believed to follow the following stages:

- **Preparation:** The first stage is preparation. It involves formulation of a problem, collection of information, survey of relevant work in the area, preliminary knowledge of the subject, trial, and error. For this, an individual makes thorough preparation with the help of his previous learning. For e.g. if you are a musician you are absorbing a lot of the music that is inspiring you to create this new piece.
- **Incubation:** This stage is characterized by absence of any activity related to the problem. The problem is set aside for a while. In this stage, an individual instead of understanding overt activities displays covert behaviour. The creative thinker is not consciously thinking about his creation, and the problem is being solved without his awareness.
- **Illumination:** After incubation, the creative ideas, the solution of the problem comes to the mind all of a sudden, with flashes of insight and thoughts. The ideas, which come up with flash, are very crucial and significant from the point of view of creative thinking.

- **Verification:** This is the final stage, where an individual tests, evaluates and verifies the situation. It is determined whether the solution found in the illumination stage is correct and feasible or not. If the solution is found to be correct, it is accepted. If it is wrong, the creative thinking again starts from the beginning.

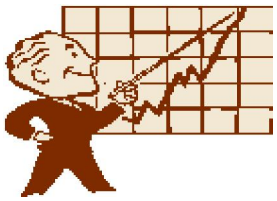
7.7 CHARACTERISTICS OF A CREATIVE PERSON

In day-to-day life, it may be very easy for you to identify the people who are creative. For example, a poet, songwriter, innovator, storywriter, scientists, etc. are considered having creative abilities. You will find some common characteristics of the creative persons in any field, which have been identified by a number of researchers like Cattell, Torrance Mackinnon, Foster etc. These are as follows:

- Originality of ideas and expression.
- Adaptability and a sense of adventure.
- Independent in thinking.
- Independent judgement.
- A high degree of awareness, enthusiasm, and concentration.
- An investigative and curious nature.
- Fluency in expression.
- Flexibility in thought, perception and action.
- Good Memory and general knowledge.
- An ambitious nature.
- Diversity and divergence of thought.
- Spontaneity and ease of expression.
- Awareness of obligations and responsibilities.
- Respect for the other's opinion.
- Self-respect, self-discipline and impartial justice.
- Ability to make unusual associations or connections between seemingly unrelated or remote ideas.
- Have a large number of ideas or solutions to problems.
- Display intellectual playfulness, fantasize, imagine, and daydream.
- Have a keen or unusual sense of humour.

- Courageous to go against the trend, but may still be emotionally hurt by non-acceptance.
- Frequently challenge the existing facts or authority or experts.

It is significant for you to remember that it is not necessary that every creative person exhibits all these characteristics. However, most of these traits are found in the creative persons in one way or the other.



CHECK YOUR PROGRESS

Q.1: Give one definition of creativity.

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Q.2: Mention the steps of creativity as a process.

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Q.3: State any two characteristics of a creative person.

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7.8 RELATIONSHIP BETWEEN CREATIVITY AND INTELLIGENCE

You have learnt that both intelligence and creativity are psychological attributes. The researchers have found that there is no positive correlation between intelligence and creativity. None of these is an essential prerequisite of the other. It means high intelligence does not imply high creative abilities. Also higher creative abilities do not imply higher intelligence. Intelligence certainly plays a part in creative thinking, but not how you might expect. Your IQ is generally measured by an ability to interpret information and provide solutions, no matter the circumstance. Being able to come up with creative ideas isn't something you need an overly-high IQ to accomplish. Once you've got a level of knowledge gathering and utilization that's about average, you are considered having the creative potential. However, it may be concluded

that a certain level of intelligence is necessary for successful creative expression. Kitano & Kirby (1986) explains this relationship as "an individual can be extremely bright but uncreative, or highly creative but not necessarily intellectually gifted". Thus, creativity is very different thing from intelligence. You can be a high I.Q. person but a very clumsy one, when it comes to creativity. So you can be intelligent but not creative. You cannot be a fool and yet creative. But a creative person cannot be called an intelligent.

7.9 RELATIONSHIP BETWEEN CREATIVITY AND EDUCATION

Though creativity is a natural endowment, appropriate opportunities, proper training and education is necessary for creative expression. This is not restricted only to great persons in the fields of science, arts, music, etc. As you have already learned that creativity is universal but its degree may vary, it is important to realize that everyone should be provided with a conducive environment for the full development of his or her creativity. The grain of creativity is universal, and it might be inherent in any individual in any sphere of activity. Education, as you understand, is the all round development of the child. Creativity is considered a significant component of an individual's personality. So education also encompasses development of creative abilities when it indicates all round development.

It is therefore, essential that education should provide the children conditions and opportunities for the full growth and development of their creative abilities. However, education is not confined only to schools. Both the home and the school play an equally important role in fostering creativity in the children. Let us now see the role of home and school in fostering creativity.

7.9.1 Role of School in the Promotion of Creativity

The teachers at schools can give proper stimulation and nurturing of the traits which help to develop creativity, namely originality, flexibility, enthusiasm, independence, divergent thinking, self-confidence etc. in his pupils.

There are some positive steps through which the teacher can foster creativity among the children–

- The teacher should provide opportunities to children to derive satisfaction from identifying themselves as the causes of a product.
- Sufficient opportunities should be given to the children for artistic expression which will ultimately culminate in some novelties.
- A healthy atmosphere for creative expression should be provided in such a way so as to stimulate and develop creative thinking among the children.
- The children should be encouraged to imbibe good qualities like self-confidence, self-reliance, self-feeling etc. They should be made aware of the criticism of their creative expression.
- Always avoid rigid attitudes towards the problems of children. The factors like conservation, faulty habits of work, anxiety and frustration, authoritarian attitude of the teachers etc. should be avoid as far as possible.
- The school curriculum should be so organized that it provides opportunities for creative work by children. The curriculum should also cater to the individual needs of each student for fostering creativity among them.
- For fostering creativity among the children, the teacher should apply different special techniques and methods like brain storming, gaming techniques, teaching models like Bruner's concept attainment model etc.
- The teacher should help pupils apprehend and think over the eventualities of their own actions. They should be encouraged to draw inferences of their own accomplishment which provide them avenues for mental exercises.

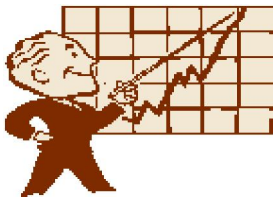
For fostering creativity among children, the tradition-oriented memorization by role and fixed and rigid system of evaluation should be avoided. The students should be encouraged to think themselves about the various view points and act accordingly.

7.9.2 Role of Home in the Promotion of Creativity

You have seen that home is the second school for the children. The home environment of a child greatly influences the creativity aspect. It includes the physical, emotional, and social environment of home. Physical environment implies the physical resources available and accessible for the children; social environment include the familial relationship between parents and children and among the siblings or other members of the family; and the emotional environment indicates the emotional safety and comfort provided to the children at home. Home can play a significant role in promoting creativity by consciously designing the home environment. The following matters may be pointed out regarding home environment:

- The children should be provided with stimulating materials at home. This can be done by making appropriate type of toys, games, and reading materials available to them.
- Use of resources like TV, computer, mobile, internet, etc. by the children should be seriously monitored and should be directed towards educational experiences.
- The creative expressions of the children should be encouraged and appropriate time and space should be provided at home for their display.
- Home can also play an important role in exposing children to various forms of creative expressions. For example, you may take them to some cultural events, art exhibition, story time in library, etc.
- Another way to provide opportunity for promoting creativity is sharing of hobbies and interests among the family members. For e.g., kite flying, doing puzzles, sports, painting, etc. may be shared with the children.
- Reading aloud to the children or taking turn to read aloud is another way to introduce them to the creative world. Doing different characters' voices is a great way to get creative.

- You should take care that too much love and too much fear will not promote creativity. So, the emotional environment of the family should ensure emotional safety for the children to express their creativity freely in a constructive way.
- The natural curiosity among the children leads them to ask a lot of questions. They should be permitted to ask questions freely without any hesitation. Also care should be taken to give an appropriate reply to their question.
- You should allow children to make mistakes and take chances, within reason. Making mistakes is an excellent way to learn. Not getting an opportunity to experiment or to fail is a barrier to promotion of creative abilities.
- Any kind of creative activity by the children should be allowed and encouraged through emotional support and resources should be made available as far as possible.



CHECK YOUR PROGRESS

Q.4: What is the relationship between intelligence and creativity?

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Q.5: How can the home environment be made physically resourceful for promoting creativity?

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7.10 LET US SUM UP

- Creativity is one of the distinguishing characteristics of human beings.
- Creativity is the act of turning new and imaginative ideas into reality. It is characterised by the ability to perceive the world in new ways, to

find hidden patterns, to make connections between the seemingly unrelated phenomena, and to generate solutions.

- The degree and quality of creative expression is relative. It varies from individual to individual and from age to age, as one grows in years, experience and maturity.
- Creativity means original thinking, new types of associations, divergent thinking and behaviour, new solutions of old problems, flexibility and a new approach in different fields of life.
- Creativity is considered a highly particularized and substantive capacity. It is characterized by universal, novelty, divergence, requires free atmosphere, wide scope, innate as well as acquired, relationship with intelligence, adventurous and open thinking.
- Creativity is both a process as well as product.
- Creativity, as a process, follows certain stages, which are— preparation, incubation, illumination and verification.
- Some common characteristics of the creative persons in any field are– originality of ideas and expression, adaptability and a sense of adventure, independent in thinking, independent judgement, a high degree of awareness, enthusiasm and concentration, an investigative and curious nature, fluency in expression, flexibility in thought, perception and action, good memory and general knowledge, an ambitious nature, diversity and divergence of thought, spontaneity and ease of expression, awareness of obligations and responsibilities, respect for the other's opinion, ability to make unusual associations, multiple solutions to problems, intellectual playfulness, fantasize, have a keen or unusual sense of humour, courageous.
- Regarding the relationship between creativity and intelligence, it was found that there is no positive correlation between intelligence and creativity. None of these is an essential prerequisite of the other.
- Appropriate opportunities, proper training and education are necessary for creative expression.
- It is therefore, essential that education should provide the children conditions and opportunities for full growth and development of their creative abilities.

- Both home and school influence the development of creativity among the children.
- Some ways to develop creativity in schools have been discussed like providing opportunities to children to derive satisfaction from identifying themselves as the causes of a product, providing opportunities for artistic expression, a healthy atmosphere for creative expression, applying techniques and methods like brain storming, gaming techniques, teaching models like Bruner's concept attainment model etc.
- The home (physical, emotional and social) environment of a child also influences the creativity aspect. The home environment may foster creativity by providing stimulating learning materials, monitoring use of resources like TV, computer, mobile, internet, etc. by the children, providing time and space for creative expression at home, exposing them to various forms of creative expressions, ensuring emotional safety for the children to express their creativity, addressing to their curiosity, allowing them to make errors, etc.



7.11 FURTHER READING

1) Aggarwal, J. C. (2014). *Essentials of Educational Psychology*. New Delhi: Vikas Publishing House.
2) Berliner, D. C., & Calfee, R. C. (1996). *Handbook of Educational Psychology*. Routledge.
3) Kulshrestha, S. P. *Educational Psychology*. R Lall Book Depot.
4) Mangal, S. K. (1997). *Advanced Educational Psychology*. New Delhi: PHI Learning Pvt. Ltd.
5) Woolfolk, A. (2004). *Educational Psychology*. Pearson Education.



7.12 ANSWERS TO CHECK YOUR PROGRESS

Ans. to Q. No. 1: According to Skinner, "Creative thinking means that the conclusions or predictions of an individual are new, original, ingenious and unusual."

Ans. to Q. No. 2: The steps of creativity are preparation, incubation, illumination and verification.

Ans. to Q. No. 3: A creative person has originality of ideas and expression and has independent thinking.

Ans. to Q. No. 4: There is no positive correlation between intelligence and creativity. None of these is an essential prerequisite of the other.

Ans. to Q. No. 5: The home environment can be made physically resourceful by making various creativity stimulating materials at home. For example, appropriate type of toys and reading materials, games, etc. may be made available to them.



7.13 POSSIBLE QUESTIONS

A) Very Short Questions (Answer each question in about 50 words)

Q.1: State any five characteristics of creativity.

Q.2: Mention the factors affecting creativity.

Q.3: What is the role of parents in ensuring emotional environment for promoting creativity?

B) Short Questions (Answer each question in about 150 words)

Q.1: Define creativity in the light of definitions given by various psychologists.

Q.2: Why is it said that the scope of creativity is very wide?

Q.3: Why is the incubation stage important in creativity?

Q.4: How is ego related to creativity?

C) Long Questions (Answer each question in about 300-500 words)

Q.1: Explain with appropriate examples how creativity is both a process as well as a product.

Q.2: Describe the role of school in promoting creativity.

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UNIT 8: MEMORY AND FORGETTING

UNIT STRUCTURE

8.1 Learning Objectives

8.2 Introduction

8.3 Meaning of Memory

- 8.3.1 Definitions of Memory
- 8.3.2 Characteristics of Memory

8.4 Types of Memory

8.5 Training for Improving Memory

- 8.5.1 Role of Teacher in Improvement of Memory

8.6 Meaning of Forgetting

- 8.6.1 Definitions of Forgetting
- 8.6.2 Characteristics of Forgetting

8.7 Theories of Forgetting

8.8 Let Us Sum Up

8.9 Further Reading

8.10 Answers to Check Your Progress

8.11 Possible Questions

8.1 LEARNING OBJECTIVES

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

- explain the meaning, definitions and characteristics of memory;
- discuss the different types of memory;
- describe the different measures for memory training /improvement process;
- explain the meaning of forgetting; and
- discuss different theories of forgetting.

8.2 INTRODUCTION

Memory plays an important role in our life. Learning will make no sense if we do not retain it. It is only the capacity of memory, which enables

us to relate different events, experiences, conditions, people, and objects. In our everyday life, almost all activities in one way or the other deal with memory. Memory establishes links across diverse experiences. Thus, memory is a great mental capacity. It is really a great magical power of our life. It is needed for mastering the cognitive competencies, solving different problems of our life as well as in making social relationships. Loss of memory means loss of one's self. In this unit, we shall discuss memory, the definitions of memory, types, and the methods of improving memory. Forgetting, its meaning, characteristics and theories are also discussed at the concluding part of the unit.

8.3 MEANING OF MEMORY

Memory is popularly defined as the power of reproduction or recollection of past events. It is the recall of an old personal experience, which had temporarily dropped from our consciousness. It is the ability or faculty of remembering. The mind has the power to conserve the experiences or the after effects of activity, and reproduces them whenever needed. The capacity to conserve the past and reproduce them when necessary is known as memory. Thus, memory is a remarkable mental process or system, which receives information from external or internal stimuli, retains it and makes it available on a future occasion. It provides continuity to our experiences across different time points. However, it is worth mentioning that this simple characteristic of memory does not mean that our memory is like a tape recorder, which records something and plays whenever we demand. Our memory system performs this but it is more dynamic and versatile than that. We remember not only verbal material but also visual experiences, tactile impressions, feelings of different emotions, like pain and joy, motor skill, events, activities and so on.

8.3.1 Definitions of Memory

For a Layman, memory implies the power to remember the experience. However, the psychologists have attempted to define memory in different ways. A few definitions of memory are given below:

According to Stout, "Memory is the ideal revival, as far as ideal real revival is merely reproduction in which the objects of past experience are reinstated as far as possible in the order and manner of their original occurrences."

According to Woodworth, "Memory consists in remembering what has previously been learnt."

Ross defines memory as "a complex process involving the establishment of dispositions, their retention and the recalling of experiences that have left the disposition behind them." Thus, memory is a "new experience determined by the disposition laid down by previous experiences, the relation between the two being clearly apprehended."

According to McDougal, "In the strictest or narrowest sense, memory or remembering implies imagining of events as experienced in the past."

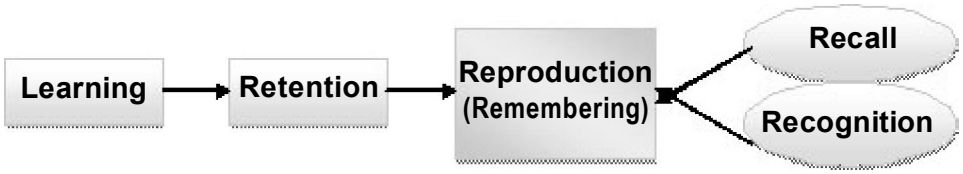
Ryburn *has given a simple definition of memory* as "The power that we have to store experience and bring them into the field of consciousness something after the experience have occurred, is termed memory."

From the analysis of the above definitions, we may conclude that memory is a three-fold function of mind that involves learning, retaining and remembering. Their nature may be stated as the following:

- **Learning** or registration means individual needs to derive sense experience from the environment in order to register its impression in the mind.
- **Retaining:** Learning experience received is being retained in the form of image. Retention is the factor responsible for preserving the material learnt.
- **Recall:** It is the mental revival of those experiences which have been learnt. This mental revival may again take the form of recall and recognition.

Memory is, therefore, the conservation of past experiences to be utilized later, as and when the occasion arises. It involves

learning, retention, recall, and recognition. The process of memorization starts with learning or experiencing something. It ends with its revival and reproduction. It is also known as remembering. Remembering may take the form of recall and recognition. Recall is the mental revival of past event. On the other hand, recognition is the mental process of identifying or verifying of past images. These four factors are interrelated. Recall is impossible without retention, and retention is useless without recall. Again, retention and recall both would be meaningless without recognition. In short, we can present the process of memorization as the following:

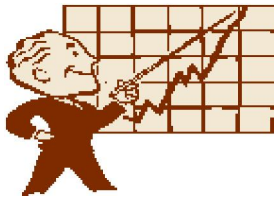


8.3.2 Characteristics of Memory

After discussing the meaning and definitions of memory, we can point out some important characteristics of memory process as the following:

- Memory consists of the recollection of previous experiences.
- Memory is a mental process, which consists in learning, retaining, and remembering.
- Memory is determined by the retaining power of the individual.
- Memory is an active process of our mind. It is not passive.
- Ancient psychologists explained memory as a mental power. But, in modern times, memory is a mental process not a mental power.
- Act of memorization depends upon sensory experiences. Thus, memory cannot take place without sensory experiences.
- Our unconscious mind plays an important role in the memory process.
- Memory is a mechanical process. There is no place for creativity in memory.

- Repetition is an essential condition of memory. It makes learning long lasting. On the other hand, lack of repetition induces forgetting.
- Memory is influenced by intellectual ability of the individual. A good mental organization improves memory.
- We neither receive nor retain all the experiences presented to us because there is great deal of selectivity related with the process of memory.



CHECK YOUR PROGRESS

Q.1: What is memory? State some characteristics of memory.

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8.4 TYPES OF MEMORY

Psychologists have classified memory into certain types on the basis of their nature and functions. These are:

a) **Habit memory and True Memory or Image:** The famous psychologist Burgson divided memory broadly into two types as– habit memory and true memory. According to Burgson, past experiences survive in two forms– through motor mechanism and through independent recollection. Memory formed through motor mechanism i.e. physical repetition of an activity is known as the

habit memory. Habit is a function of the body. When our memory is a product of the repetitions of bodily activity, then it is known as habit memory. Thus, habit memory depends more on physical repetition than on images retained in mind. It is a mechanical type of memory. No mental efforts are needed in this type of memory. Typing, swimming, playing musical instruments etc. are examples of habit memory. Similarly, we remember multiplication table because of habit memory, as we have learned these by rote as verbal habit .On the other hand, true memory involves images or mental pictures of object of memory. To get true memory, we have to store images of our learning in our mind. This type of memory is also known as pure memory because our true ability of memorization finds expression in this type of memory on the basis of mental images. True memory is related to our mind. It depends upon our retaining power.

b) **Immediate Memory and Permanent Memory:** Immediate memory is needed when we want to remember a thing for a short time and then forget it. We enter the cinema-hall and remember the seat number given on our ticket. After occupying the seat, we forget it. It is an example of immediate memory. It helps us to learn a thing immediately with speed and accuracy, remembering it for a short time and forget it rapidly after use. In immediate memory, the retention time is very brief i.e. the time gap between learning and remembering is very short. Under permanent memory, it is possible to remember a thing permanently. In permanent memory, the time gap between learning and remembering is long. We have to retain our experiences for long. Remembering of our name is the simplest example of our permanent memory. Permanent memory is the best form of memory.

c) **Logical Memory and Rote memory:** Logical memory is based on logical thinking. It takes into consideration the purposeful and insightful learning. Here, instead of mechanical memorization, the learner tries to understand what he learns and why he learns. Logical learning needs intelligence, reasoning, the power of understanding

etc. It can be compared to pure memory. On the other hand, rote memory is a mechanical type of memory. It is based on verbal repetition. There is no need of applying understanding, intelligence, logical ability etc. Some students have a good rote memory. They can mug up the material and produce it at the time of examination. It is a very temporary type of memory.

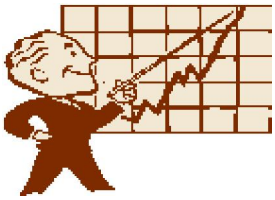
d) **Active Memory and Passive Memory:** In active memory, one has to remain active or make deliberate attempts for recollecting the past experiences. In answering the question in examination hall, we are required to make use of this type of memory. In passive memory, the past experiences are recalled spontaneously. For example, when somebody comes from our native village the mere sight of him is enough to remind us about our fields, neighbours and other so many related things.

e) **Associated Memory:** Associative memory is an attempt to remember something by associating it with a similar experience. The individual having this type of memory is able to associate the previously learned things with so many related things and then establish multiple connections. There are few factors or principles of association, which influence over associative memory, such as, law of similarity, law of dissimilarity, law of contiguity etc. For example, the daughters' face reminds us about her mother, because of similarity, black reminds us white because of dissimilarity, freedom movement remind us about Mahatma Gandhi because of contiguity so on .

f) **Sensory Memory:** We gather information through our senses. The memory that we get from immediate sensory experience is known as sensory memory. For example, if we hold a picture in front of us and look at it steadily for a while, then after closing our eyes we can notice a clear image of the picture last before us. Usually, the image of any object lasts in our sensory memory for about ½ a second. Sensory memory is a type of memory that occurs within the sense while it is being transmitted to the brain. With the help of five sense

organs, we can get five different types of sensory memory such as visual, auditory, tactual, olfactory and gustatory. In our day-to-day life, we mostly used visual and auditory memory.

g) **Short Term Memory and Long term Memory:** Modern psychologists have classified memory as short-term memory and long-term memory on the basis of modern information processing model. These are similar to immediate and permanent memory. We are continually bombarded by different sensory stimulations from our environment. However, we cannot respond to all of them. We focus our attention on those things, which are significant. The process of attention limits our inputs of information from the environment. Thus, through selective attention, the information enters short-term memory. It holds information for few seconds. Then, we encode the information and it goes to long-term memory. Long-term memory has the capacity to retain information. It is relatively permanent memory in which information is stored for use at a later time.



CHECK YOUR PROGRESS

Q.2: Identify which type of memory seems to operate in the following cases:

a) Playing a musical instrument.

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b) Using a telephone number from telephone diary.

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c) A teacher while teaching about a poem recites from memory a poem of the same poet, which she learnt in her childhood.

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d) Answering a question in examination hall using reasoning.

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e) Remembering the name of your school friend.

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Q.3: Explain:

a) Rote memory and Logical memory.

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b) Immediate memory and Permanent memory.

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8.5 TRAINING FOR IMPROVING MEMORY

Improvement of memory is a commonly expressed desire on the part of every individual. However, whether memory can be improved by training or not is a controversial issue. William McDougal had expressed his view that memory can be improved by practice. On the other hand, William James maintained that retentiveness is a physiological ability and hence, it is unchangeable. It is innate and mostly depends upon heredity. Easy grasp and rapid recall mainly depend upon one's intelligence. It is the power of learning, not the power of retention that is improved by practice. Therefore, some improvement of memory is possible if one could improve the conditions and methods of learning.

Thus, Stout contends that memory can be improved, but only in special directions. According to him, there is no improvement of general memory ability through practice. We can improve memory in some specific area through training. By long practice, the actors came to remember and recall their dialogues. However, the effects of practice are strictly confined to the special field and do not spread to other fields of work.

From the above discussion, it may be stated that we cannot expect general improvement of our memory. Certain favourable conditions may

help in the effective use of memory. In general, the improvement of memory consists in improved management of learning process. While going to improve the memory of a child, we may approach the problem from two channels:

A) Favourable conditions which improve remembering.

B) Economic methods which improve memory.

A) Favourable conditions which improve remembering:

- **Will to learn:** The learners' will or intention to learn affects the retention of the material. Intention to learn enhances concentrations. In addition, concentration gives longer retention and better recall. Material, read, heard, or seen without intention are difficult to remember.
- **Interest:** Interest is an essential condition of memory. We easily recall the items that interest us most. For example, if a boy is interested in sports then he will easily recall different sport news. A shopkeeper will recall readily and accurately the price of each commodity.
- **Motivation:** Motivation is an important condition of memory. Motivation facilitates learning and enhances memory. Motivation kindles interest. Interest is the mother of attention, which is the mother of memory.
- **Rest:** Rest is an important psychophysical condition of learning and remembering. Rest can remove fatigue and boredom. Any event or learning which takes place in healthful condition and atmosphere free from fatigue improves remembering.
- **Emotion:** While trying to recall something, the child should be free from excessive anxiety, fear and other emotional factors that try to block memory. Sometimes, an emotion fixes a memory forever, sometimes sustained attention and sometimes an association of one fact with another.
- **Association:** The principle of association is very helpful in remembering and recall. When two ideas are associated with each other, one idea gives rise to a number of old ideas associated with it.

- **Meaningfulness:** Meaningfulness of materials is important in effective learning and longer retention.
- **Rhythm:** Rhythm is an aid to memory. Children get to remember songs and poems when they hear by recitation and not by mere reading. Poetry is more easily memorized, because of its natural rhythm.
- **Organization:** While preparing for learning, a learner needs to pay attention to organize the material in some form. Such an organization may help by creating a natural context and provide relevant cues while remembering the learned material. In the absence of natural organization, the learner may create an artificial one. The failure of students in recalling the materials learnt is mainly on account of poor organization.
- **Frequency:** The idea that comes to our mind frequently i.e. repeated frequency is recalled easily. Therefore, we can recall school assembly prayer very easily.

B) Economic methods, which improve memory: Memory can be improved with improved method in addition to the above noted favourable conditions. A few such methods to economize memorization are suggested below:

- **Recitation:** Recitation is an important technique to affect economy in memory. It means speaking and reciting to oneself. It implies that learning should be done by repeating a lesson, while laying stress on sound pronunciation, reading etc. Recitation again is a device helpful for retention. Recitation means repeating aloud a poem or a passage from memory. However, recitation may be sub vocal. Recitation, vocal or sub vocal, is useful to a student because it enables him to use the material before a lapse of time causes forgetting. It immediately motivates the learner by making the learner aware of the degree of success being achieved; it helps the learner to use it.
- **Periodic review:** Periodic review of learned material improves memory. It has been found experimentally that the closer the

review is to original leaning the greater is the amount retained. This indicates that review, soon after the original learning, may prevent rapid forgetting that normally takes places immediately after practice.

- **Over learning:** The repetition of some matter after it has been learnt to the point of one successful reproduction is called over learning. Over learning minimize forgetting and fixes the new material permanently in the mind of the learner. Longer amount of over learning brings larger degree of retention. If we have a topic, and it has been learned once, it is forgotten but over learning makes it permanent. For example, if 5 repetitions of a poem are needed to recite it, 10 repetitions would fix it in the mind for a longer time. Over learning makes initial learning thorough and permanent. However, these repetitions should not be simply unintelligent ones. They should involve reviewing the material just read, reciting to oneself, placing the material in a new context, and reading similar materials in another context. The educational significance of over learning to the classroom teacher and the student is great. Students should be encouraged to review immediately the work they have just completed.
- **Whole versus part method:** One can learn a lesson as a whole or in parts. Memorization is not only facilitated by over learning. It is also facilitated by the whole method, which means that a long poem can be committed to memory by reading and rereading. If on the other hand, the poem or the passage is learnt verse by verse or sentence by sentence, it is learnt by the part method. Experiments have shown that about $1/5^{th}$ of the time of learning can be economized by the use of whole method as against part method. There are advantages and disadvantages of both these methods. A combination of these methods is suggested. When a child is required to learn a poem or a passage in prose, its meaning should first be made clear to him. Some part of it may be difficult, e.g., some phrases may be hard to understand on

the part of the learner. These parts may be learnt by the part method. After that, each part may be placed in total context. Such a combination of two methods may be little more time consuming, but it is helpful for memorization. Which method should be adopted depends upon the nature and size of the material to be learnt and the intelligence of the learner. If the material is meaningful, the whole method is advantageous; if the size of the material is short, it is useful to learn it by part method, and if the learner is intelligent, he/she learns a material by whole method more easily.

- **Mass versus Distributed /Spaced learning:** It is psychologically sound to reasonably space the learning time. It is a simple fact that an hour spent every day in learning a subject results in more thorough and permanent learning than the same number of hours, devoted to its study at the end of the term. Spaced or distributed effort at learning any subject results in more learning than in massed one. Spaced learning is also economical and effective. The reasons are given below:
  - Massed learning by sticking to a task for longer periods by the child develops a tendency to inattentiveness. One's attention fluctuates if one tries to concentrate on a job for longer periods.
  - Trying to do the same thing repeatedly within a short space of time is against the natural tendency to resist early repetition of an act.
  - It means that the study period should be short and not very long. However, how short should the study period be? It depends upon the individual learner, the material to be learnt, and the conditions under which the material is learnt. The more mature the individual, the more capable he is for prolonged work. If the material requires constant attention and is difficult to learn, shorter periods are more fruitful. Long periods of study are not always fruitless. If the material is too

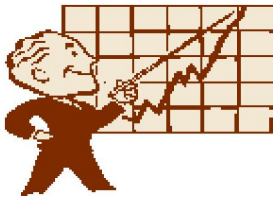
easy, longer periods of study are recommended. If motivation is high, massed practice is useful. The principle of distributed effort has a great significance for the timetable builders. It is convenient for the student to learn different subjects in different periods.

- Massed practice causes boredom and boredom causes errors. Hence, distributed effort is particularly advantageous in learning many motor skills like typewriting. Proficiency in simple motor activities can be achieved in relatively short practice periods once or twice a day until competence is gained. The practice periods for younger students should be shorter than those for the older ones.

- **Learning by doing:** Learning by doing or active learning produces more permanent effect than passive learning. By activity, we do not mean simply muscular activity. One has to be mentally active if one wants to learn speedily, precisely, and retain it permanently. When the child listens to the lecture given by the teacher, he is mentally active, but he is mentally more active when he recites and discusses. Listening as a process may be derogated but here too the listener has to accept or reject the ideas presented. In a traditional school, where the child sits and listens, he does not learn effectively. In a progressive school in which activity is involved in the learning process, there is a better learning and retention, provided the activity is meaningful.
- **Mnemonics:** Memory can be formed by a system of forming artificial association. Rote memory is sometimes improved by the use of arbitrary and artificial association called Mnemonics. For example, the use of mnemonics such as 'VIBGYOR' helps in easy remembering and longer retention of the colours of rainbow. The jingle 'Thirty days hath September' also serves as Mnemonics device. Here a learner could use acronyms i.e. first letter of each of the points being mastered, or an arrangement that makes the points meaningful to pronounce. Thus, when the

individual wants to recall, it will be very easy to retrieve it from memory. A typical example is the arrangement of the characteristics of living things as MR NIGER i.e. M = Movement, R = Respiration, N = Nutrition, I = Irritability, G = Growth, E = Excretion, and R = Reproduction.

In short, we can conclude that improvement of memory depends upon some specific conditions or factors and on some specific methods of learning. Thus, it demands the necessary improvement in the techniques and methods of learning, the learning situations or environment and learner's state of mind.



CHECK YOUR PROGRESS

Q.4: Mention some of the favourable conditions which help in memory training.

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Q.5: Mention some economic methods which help to improve memory.

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8.5.1 Role of the Teacher in Improvement of Memory

In order to improve the memory of the students, the teacher should take the following steps:

- The teacher should try to use the improved methods of teaching and guide the students properly and nicely.
- The question that the teacher is going to put to the students should be clear.
- Students should be made to pay proper attention before they learn a particular lesson.

- Unnecessary things should be avoided and rote memory as far as possible should be discouraged.
- Students should be encouraged to remember things in the way they can.
- Correlation should be established between different subjects and life.
- Interest and intelligence of the students should be kept in mind.
- The students should be encouraged to have the will to learn a thing.
- Learning of the lessons should be spaced. Proper interval should be given in repeating a thing and learning it.

8.6 MEANING OF FORGETTING

Forgetting is the failure to recall past experiences and is generally taken as a mark of poor memory. After learning, we try to retain everything we learn. However, in spite of our best efforts it is not possible for us to remember everything. This inability to remember is commonly known as forgetting. Forgetting is a typical mental condition, which is present in all kinds of learning. A psychological phenomenon occurs in between retaining and remembering. It is just the opposite side of remembering and essentially a failure in the ability of reproducing.

It is a common experience that the memory of many events and experiences become 'dim' over time. According to Freud, forgetting is caused by a motive of displeasure. We forget because we do not want to remember something. We may exclude memories or push them out of consciousness intentionally to protect our mental health. Thus, forgetting may be considered a defense mechanism of mind.

Generally, we are always worried about forgetting. However, forgetting may be considered a boon to us. It may be considered an essential condition of memory. We have hundreds and thousands of experiences every day in our life. To remember all of these without forgetting will be a difficult task. Forgetting makes room to accommodate new experiences in our mind. Thus, forgetting need not be always to our disadvantage. Indeed, when we

consider the number of experiences that we have and a good deal of them unpleasant, forgetting is a blessing to human being. One must be able to forget the incorrect responses in order to acquire correct ones. Therefore, it is said, "to remember well, we must forget great deal". Our life would have been miserable, if we were to remember all sort of experience. But, unreasonable and excessive forgetfulness causes great harm to us. Forgetting should not be confused with unlearning .Unlearning is to reduce the strength of a habit deliberately while forgetting is the automatic dropping out of a habit because of a number of factors.

8.6.1 Definitions of Forgetting

We are well acquainted with the process of forgetting. But, to get a clear concept of the term, some definitions are given below:

- According to Munn– Forgetting is the loss, permanent or temporary, at the ability to recall or recognize something learned earlier.
- According to Drever– Forgetting means failure at any time to recall an experience, when attempting to do so, or perform an action previously learned. In this way, forgetting is just the opposition of remembering and essentially a failure in the ability of reproducing.
- Bhatia defines forgetting as– Forgetting is the failure of the individual to receive in consciousness an idea or group of ideas without the help of the original stimulus.

You must have seen that in all these definitions, forgetting is termed as memory failure**.**

8.6.2 Characteristics of Forgetting

Forgetting as a psychological phenomenon has some specific characteristics. It is necessary to discuss about these characteristics to get a better grasp of it. Some important characteristics of forgetting are mentioned below:

- It is the permanent or temporary loss of the ability to remember. In this way, forgetting is just the opposite of remembering.
- It is a psychological phenomenon that occurs in between retaining and remembering.
- It is a tropical mental condition, which is present in all kinds of learning.
- It is an essential aspect of the leaning process. Irrelevant aspects of learning should always be forgotten in order to make room for learning of relevant ones.
- It is an essential condition of memory.
- Forgetting protect our mental health as a defense mechanism.

8.7 THEORIES OF FORGETTING

Forgetting is a universal phenomenon. It appears in every human being in some degree. Everyone forgets things; like a person's name, where they left their keys, the ending to a movie, or how to do math problems. However, the reason why we forget something may differ. Have you ever felt like a piece of information has just disappeared from memory? Alternatively, have you had situations where you have no memory of a certain event? Or maybe, you know certain pieces of information exist in your mind, but you just cannot seem to retrieve it. The concern about the causes of forgetting as to how and why it happens has led to extensive research and development of some theories of forgetting. There are several theories that address why we forget memories and information over time. Some of the important theories of forgetting are:

- **The Trace Decay Theory:** Trace decay (also called disuse theory) is the earliest theory of forgetting. According to this theory, forgetting is thought to be due to the fading of or decay of memory traces in the brain with the passage of time, as a result of general metabolic process of brain. These traces are also called as engrams. These memory traces, which are formed in our neurological systems, are responsible for our memory. This notion was proposed by early psychologists as a general explanation of forgetting. The Decay theory suggests that

a memory trace begins to fade and disappear, unless it is occasionally used. It means if learnt processes are not used for a long time, the traces get faded and become unavailable. Thus, this theory of forgetting states that all memories fade automatically as a function of time. Hence, it is the lapse of time that is responsible for forgetting.

But, this explanation is not considered a complete explanation of forgetting. This theory has been proved inadequate on several grounds. Most theorists believe that once information has been transferred to long-term memory, it is stored there permanently. The theorists believe that the memory is always there, but the mental path to get to the memory has decayed. For example, people might easily remember their first day of high school, but completely forget the last movie they saw. Similarly, people remember many events of early childhood during old age without distortion. This may be because of the strong links (emotion, visual, etc.) the person has to the memory. This is why, people, who see a horrific accident, have a hard time in forgetting it. With the Decay theory, when information fades, what really fades is the link to that information, not the information itself. The information is there, but we just cannot find it. It is like a path in the woods that leads to a cabin; the more you use the path, the easily it is to find the cabin. However, if you do not use the path for several years, the path will eventually fade. The cabin will still exist, but will be harder to find because the path that leads there has faded.

Another argument given by the psychologists against this decay theory is that, if forgetting takes place because memory traces decay due to disuse, then people who go to sleep after memorizing should forget more compared to those who remain awake, simply because there is no way in which memory traces can be put to use during sleep. Results, however, show just the opposite. Those who remain awake after memorizing (waking condition) show greater forgetting than those who sleep (sleeping condition). Thus, this theory cannot explain forgetting adequately.

- **Theory of Inhibition or Interference:** If forgetting is not due to trace decay then why does it take place? The trace decay theory was soon replaced by another theory of forgetting which suggested that interference is the main cause of forgetting. This interference theory of forgetting has perhaps been the most influential one. It suggests that forgetting is due to interference between various information that the memory store contains. This theory explains that, all our learning and experiences create memory traces. When more and more memory traces are formed, some overlapping of traces takes place resulting in the obliteration and interference. The Interference theory suggests that some memories compete and interfere with other memories, and that memory loss occurs when information stored either before or after a given memory hinders the ability to remember it.

  This theory assumes that learning and memorizing involve forming of associations. People keep acquiring numerous such associations and each of these rests independently without any mutual conflict. However, interference comes about at a time of retrieval when these various sets of associations compete with each other for retrieval.

  - **Retroactive inhibition:** Retroactive interference occurs when new information interferes with your ability to remember previously learned information. It is called retroactive because the interference is with the memory of events that came before the interfering activity. For example, a student learnt about interest in psychology last week, this week he learns about attention. Now, he tries to recall information about interest but the points pertaining to attention will come to his memory. It occurs when information works backwards to interfere with earlier information, so previously learned information is lost because it is mixed up with new and somewhat similar information. Thus, retroactive inhibition is backward moving.

- **Proactive inhibition:** Proactive interference occurs when an old memory makes it more difficult to remember new information. If the earlier learning interferes with later learning and inhibits recall of new material, it is known as proactive inhibition. This often occurs when memories are learnt in similar contexts, or regarding similar things. For example, you could have trouble learning a new math concept because it conflicts with preconceived notions or assumptions you may have regarding a similar topic. Similarly, if you know English, you find it difficult to learn French. Here current information is lost because it is mixed up with previously learned information that may be similar. Proactive inhibition is forward moving.



LET US KNOW

- **Retroactive Inference:** Retroactive inference occurs when newly learned information makes people forget old information.
- **Proactive Inference:** Proactive Inference occurs when old information makes people forget newly learned information.

- **Forgetting due to Retrieval Failure:** Retrieval cues are aids, which help us in recovering information stored in the memory. Forgetting can occur not only because the memory traces have decayed over time (as suggested by the disuse theory) or because independent sets of stored associations compete at the time of recall (as suggested by the interference theory), but also because at the time of recall, either the retrieval cues are absent or they are inappropriate. Hence, the inability to retrieve a memory is one of the most common causes of forgetting. This retrieval failure is the failure to recall a memory due to missing stimuli or cues that were present at the time the memory was encoded. Retrieval failure forgetting is also known as 'Cue-dependent forgetting'. Generally, the failure to recall information occurs in the absence of memory cues. With retrieval

failure, the information still exists in memory, but just not readily available without specific cues. This theory tells that a memory is temporarily forgotten simply because it cannot be retrieved, but with the proper cue, that information can be brought to mind. For example, you might not remember the name of an actor in a movie, but his name might suddenly pop into your mind if you see a clip from a movie For example, you might not remember the name of an actor in a movie, if someone tells you the name begins with the letter "L". The movie or the letter would be acting as a cue for remembering the actor's name. There are three types of cues that can stop this type of forgetting:

Semantic cues are used when a memory is retrieved because of its association with another memory. For example, someone forgets everything about his trip to Ohio until he is reminded that he visited a certain friend there, and that cue causes him to recollect many more events of the trip.

State-dependent cues are governed by the state of mind at the time of encoding. The emotional or mental state of the person (such as being inebriated, drugged, upset, anxious, or happy) is the key to establishing cues. Under cue-dependent forgetting theory, a memory might be forgotten until a person is in the same state.

Context-dependent cues depend on the environment and situation. Memory retrieval can be facilitated or triggered by replication of the context in which the memory was encoded. Such conditions can include weather, company, location, and the smell of a particular odour, hearing a certain song, or even tasting a specific flavor.

- **The Repression Theory:** Repression is a defensive mechanism. Some individuals undergo experience that is traumatic. A traumatic experience emotionally hurts a person. People may actively work to forget memories, especially those of traumatic or disturbing events or experiences. Though they try to come to conscious level, they are pushed back or avoided consciously. It is a kind of repression through which painful, threatening, and embarrassing memories are

held out of consciousness. As explained by Freud in his theory of psychoanalysis, the painful experiences and forbidden wishes are pushed into the unconscious, and the individual does not want to remember them. The repressive forgetting theory suggests people forget because they push unpleasant thoughts and feelings deep into their unconscious. Thus, we forget those memories, which we do not want to remember.

- **Ineffective Encoding:** The inability to remember information may sometimes have less to do with forgetting and more to do with the fact that it never made its way into long-term memory. This type of forgetting is caused because the person did not pay attention in the first place. Encoding failure or ineffective coding may prevent information from entering long-term memory, and thus, the information never being stored to be able to be retrieved at a later date. This may happen when you meet someone and later you cannot remember his or her name. This is probably because you were preoccupied when you were introduced, and the name never made it to long term memory. Another example of ineffective coding can also be exhibited by trying to draw the back of a dime from memory. Chances are you probably remember the shape and color, but probably could not draw many of the details even though you have seen hundreds of dimes over the course of your life. The reason for this is that only details necessary for distinguishing dimes from other coins were encoded into your long-term memory.
- **Gestalt Theory of Forgetting:** Gestalt theory explains forgetting in terms of perception. It explains that memory depends on the tendency to perceive the object as a whole. “The perception of the whole dominates the perception of parts and makes them conform as far as possible to the configuration of the whole.” It is proven by experiments in which the subject is shown some irregular figures, and then he is required to draw it from memory. The results shows that reproduced figures differ to some extent from the original figure, and the modification made by the subject can be explained as an

attempt at leveling, sharpening of some part, or normalizing it to some familiar shape on the basis of perception.

- **Theory of Stress:** Forgetfulness or loss of memory under stress and high anxiety is not uncommon. Many hard working and ambitious students aspire for high scores in final examinations and to achieve such ends they put in long hours in studies. However, when they receive the question paper, they become extremely nervous and forget everything they had prepared well.
- **Lack of Organization:** Another explanation of forgetting is that it is due to lack of organization and systematization of learned material. It is observed that people who are good at recollection are generally very systematic in their habit, and those who are quick to forget, are those who adopt incoherent and confusing ways of doing things.

  Thus, we can conclude that forgetting requires more than one explanation. It may be due to blocking of original learning by interpolated learning, absence of proper habit to organize learning materials, change of stimuli conditions, or unconscious motives etc.

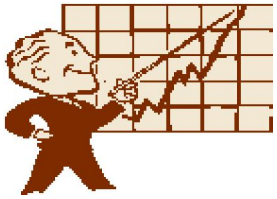


ACTIVITY 8.1

a) Request your friend to learn two separate lists of nonsense syllables (list A and list B) one after the other, and after a while, ask her/him to recall the nonsense syllables of list A. While trying to recall the items of list A, s/he recalls some of the items of list B. Why?

b) You could not remember the name of an actor in a movie, but his name suddenly pops in your mind by seeing a clip from the movie. Which theory of forgetting is the explanation of this situation?

c) A student does not want to remember the name of a teacher who has severely “punished him in his school days”. Which theory of forgetting is the explanation of this situation?



CHECK YOUR PROGRESS

Q.6: Define the term 'forgetting'.

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Q.7: What are the different causes of forgetting?

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8.8 LET US SUM UP

- Memory is popularly defined as the power of reproduction or recollection of past events.
- It is the recall of an old personal experience, which had temporarily dropped from our consciousness. Psychologists have classified memory into certain types on the basis of their nature and functions.
- These are habit memory and true or image memory, immediate memory and permanent memory, logical memory and rote memory, sensory memory, associated memory, active memory and passive memory, short-term memory and long-term memory.
- Forgetting is a psychological phenomenon. It is the failure to recall past experiences, and is generally taken as a mark of poor memory.
- There are several theories that address why we forget memories and information over time including trace decay theory, interference theory, ineffective encoding, cue-dependent forgetting and gestalt theory of forgetting.



8.9 FURTHER READING

1) Agarwala, J. C. (1996). *Essentials of Educational Psychology*. New Delhi: Vikash Publishing House.

2) Bhatia, B. D., & Safaya, R. N. (2000). *Educational Psychology and Guidance*. New Delhi: Dhanpat Rai & Sons.

3) Dandekar, W. N. (2002). *Psychological Foundation of Education*. Macmillan India Ltd.

4) Mangal, S. K. (1990). *Advance Educational Psychology*. Ludhiana: Prakash Brothers.



8.10 ANSWERS TO CHECK YOUR PROGRESS

Ans. to Q. No. 1: The process of memorization starts with learning or experiencing something. It ends with its revival and reproduction of past events. Thus, memory is a great mental capacity. It is needed for mastering the cognitive competencies, solving different problems of our life as well as in making social relationships.

Some of the characteristics of memory are:

- Memory consists of the recollection of previous experiences.
- Memory is a mental process, which consists in learning, retaining, and remembering.
- Memory is determined by the retaining power of the individual.
- Memory is an active process of our mind. It is not passive.
- Ancient psychologists explained memory as a mental power. But, in modern times, memory is a mental process not a mental power.

Ans. to Q. No. 2: **(a)** Habit Memory, **(b)** Immediate memory, **(c)** Associative Memory, **(d)** Logical Memory, **(e)** True Memory

Ans. to Q. No. 3: **a) Rote Memory and Logical Memory:** Rote memory is verbal repetition, mechanically, of a material, it is somewhat similar to habit memory. Rote memory occurs without proper

understanding of the subject matter; for example, learning multiplication tables by young students. But logical memory involves proper understanding of the learnt material. It does not depend on mere physical repetition.

b) **Immediate Memory and Permanent Memory:** When a learnt material is reproduced or recalled soon after learning it, it is called immediate memory. The time between learning a material and reproducing it is very less. But after a long time most of the learnt material is forgotten. But the ability to remember something even after a long period of time from learning it, is called permanent memory. Permanent memory is the best form of memory.

Ans. to Q. No. 4: Motivation, interest, rest, emotion, association, will to learn, good health etc. are some of the conditions that help to improve remembering.

Ans. to Q. No. 5: Recitation, periodic review, over learning, learning by doing, whole versus part learning, spaced learning are some economic methods of memorization or remembering.

Ans. to Q. No. 6: Forgetting means fading of impressions from the mind, or in other words, inability to remember something is forgetting. According to James Drever, "Forgetting means failure at anytime to recall an experience when attempting to do so, or to perform an action previously learned".

Ans. to Q. No. 7: The different causes of forgetting are lack of interest, old age, brain injury, lapse of time, lack of practice of learnt material, emotional condition, use of alcohol and drugs, retroactive inhibition and repression.



8.11 POSSIBLE QUESTIONS

A) Short Questions (Answer each question in about 150 words)

Q.1: What is memory? Give some definitions of memory

Q.2: Explain briefly two most important factors of memory.

Q.3: Explain the process involved in memorization. Mention some characteristics of memory.

Q.4: Describe two economic methods of memory.

Q.5: Is the rest necessary to remember? If so, why?

Q.6: What is forgetting? Mention its characteristics.

Q.7: Explain the term 'interference'. How does it affect forgetting?

Q.8: Explain the following statements:

a) Forgetting is a blessing.

b) Forgetting is a defense mechanism

B) Long Questions (Answer each question in about 300-500 words)

Q.1: What do you mean by memory? Discuss the factors of memory.

Q.2: Describe the different types of memory. How can memory be improved?

Q.3: Why do we forget? Discuss some of the causes of forgetting by giving suitable examples.

Q.4: What is forgetting? Describe the different theories of forgetting. Discuss the different types of memory.

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UNIT 9: REASONING AND PROBLEM SOLVING

UNIT STRUCTURE

9.1 Learning Objectives

9.2 Introduction

9.3 Meaning of Reasoning

9.4 Definitions of Reasoning

9.5 Characteristics of Reasoning

9.6 Types of Reasoning

9.7 Meaning of Problem Solving

9.8 Approaches to Problem Solving

9.9 The Problem-Solving Cycle

9.10 Factors Affecting Problem Solving

9.11 Strategies for Effective Problem Solving

9.12 Principles for Teaching Problem Solving

9.13 Let Us Sum Up

9.14 Further Reading

9.15 Answer to Check Your Progress

9.16 Possible Questions

9.1 LEARNING OBJECTIVES

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

- define the meaning of reasoning;
- identify the characteristics of reasoning;
- discuss the various types of reasoning;
- explain the meaning and nature of problem solving;
- enumerate the principles of teaching problem solving; and
- explain the different problem solving strategies.

9.2 INTRODUCTION

"Intellectuals solve problems; geniuses prevent them."

–Albert Einstein.

Everyday problem solving involves examining the solutions that individuals generate when faced with problems that take place in their everyday life. The skills for problem solving are very important in every human's life. The major part of our lives is spent solving problems. Problem solving therefore involves reflection, induction, deduction, and even creation. Reasoning, which is an important aspect of cognition, plays a significant role in the complex phenomena involving one's cognitive abilities.

9.3 MEANING OF REASONING

Reasoning is a process by which we attain a belief, which we regard as the result of a previous knowledge. It is the cognitive process of looking for reasons, beliefs, conclusions, actions, or feelings. We, human beings, use reason at almost every moment of our life. In our life, we try to guess the consequences of our actions, deduce as much as we can from our perceptions and logic. Reasoning helps us to survive, especially in the present world, which is more dynamic and fast, with more information to process at a time as never before. Reasoning is the main factor helping the mankind to move forward.

Reasoning essentially involves thinking. One may come across some commands given by teachers such as 'just scratch your brain to find solution to this problem to this problem' or, 'just concentrate on the problem, apply your mind' etc. So, while reasoning, one has to explore deep into the mind's regions, do mental acts, interpret symbols, or make use of language. It is education which transforms "reasoning savage" into a "reasoning human being.' It involves a conscious effort to make sense of a thing or a relationship between things, normally with reference to an agreed convention on certain axiomatic or a priori assumptions. Some people would argue that it is a linguistic convention in itself, in that it applies to communication between people which is intended to lead to agreement or understanding of an object, statement or person. Reasoning is broadly defined as the process of drawing conclusions. It is related to Psychology, Philosophy, Linguistics, Cognitive science, Logic, Probability theory and Artificial Intelligence.

It is one of the best forms of controlled thinking towards the solutions of a problem. It is realistic in the sense that the solution is sought always with reference to the reality of the situation. Reasoning is used not only when we want to solve an immediate problem but also when we anticipate future problems. Reasoning plays a significant role in one's adjustment to the environment. It not only determines one's cognitive activities, but also influences one's behaviour and personality. Reasoning is a highly specialized thinking which helps an individual to mentally explore the cause and effect relationship of an event or solution of a problem by adopting some well-organized and systematic steps based on previous experience combined with present observation.

9.4 DEFINITIONS OF REASONING

Experts have defined reasoning in different ways. Some of them are mentioned below:

Garret (1948) defined reasoning as "Step-wise thinking with a purpose or goal in mind."

According to Munn (1967), "Reasoning is combining past experiences in order to solve a problem which can be solved by mere reproduction of earlier solutions."

Skinner (1968) defined reasoning as a process which describes the mental recognition of cause and effect relationships. It may be the prediction of an event from an observed cause or the inference of a cause from an observed event.

As Sherman defined, "Reasoning is a process of thinking during which the individual is aware of a problem identifies, evaluates, and decides upon a solution."

According to James Drever (1968), "Reasoning is a process of thinking involving inference, or of solving problems by employing general principles."

9.5 CHARACTERISTICS OF REASONING

The characteristics of reasoning are listed below:

- All reasoning has a purpose.

- All reasoning is an attempt to figure something out, to settle some questions, to solve some problems.
- All reasoning is based on assumptions.
- All reasoning is done from some point of view.
- All reasoning is based on data, information, and evidence.
- All reasoning is expressed through, and shaped by, concepts and ideas.
- All reasoning contains inferences by which we draw conclusions and give meaning to data.
- All reasoning leads to somewhere, has implications and consequences.
- Reasoning is organized. It is systematic and purposeful. It concentrates on fundamentals and makes pertinent associations.
- Reason is man's tool of understanding. It is the method of identifying entities through one's senses. It is the means of integrating those perceptions into concepts, gaining knowledge through this integration that knowledge into the rest of one's knowledge, and evaluating and manipulating ideas and facts.

9.6 TYPES OF REASONING

The main types of reasoning are as mentioned below: (a) Deductive, (b) Inductive, (c) Abduction, (d) Reductive Reasoning, (e) Fallacious Reasoning, (f) Analogical reasoning.

- **Deductive Reasoning:** The theory of deductive reasoning was set by Aristotle. Deduction means determining the conclusion. It is the form of reasoning in which the conclusion follows logically and coherently from the factual premises and proposition. These deductive arguments are based upon the concept of sound and consistent reasoning. If the premises are true, then the systematic reasoning with a constructed syllogism is considered valid in a deductive argument in making its conclusion certain with a degree of logical certainty. Plainly speaking, deductive reasoning is the rationality of reasoning from pure logic. It is considered sound and pure logic.

Deductive reasoning is a basic form of valid reasoning. Deductive reasoning starts out with a general statement, or hypothesis, and examines the possibilities to reach a specific, logical conclusion. The scientific method uses deduction to test hypotheses and theories. In deductive inference, we hold a theory, and based on it, we make a prediction of its consequences. That is, we predict what the observations should be if the theory were correct.

For example, “All animals are mortal (Major Premise). Tiger is an animal (Minor Premise). Therefore, tiger will die (Conclusion).” For deductive reasoning to be sound, the hypothesis must be correct. It is assumed that the premises, “All animals are mortal” and “Tiger is an animal” are true. Therefore, the conclusion is logical and true. In deductive reasoning, if something is true of a class of things in general, it is also true for all members of that class.

According to the University of California, deductive inference conclusions are certain provided the premises are true. It is possible to come to a logical conclusion even if the generalization is not true. If the generalization is wrong, the conclusion may be logical, but it may also be untrue. For example, the argument, “All bald men are grandfathers. He is bald. Therefore, he is a grandfather,” is valid logically, but it is untrue because the original statement is false. The deductive statement is a perfectly logical statement, but does rely upon the initial premise being correct. Deductive reasoning is then used to construct a logical and rigorous proof.

Deductive reasoning is considered by many to be the standard for scientific research. Using this method, one begins with theory and hypotheses, and then conducts research in order to test whether the theories and hypotheses can be proven true with specific cases. As such, this form of research begins at a general, abstract level, and then works its way down to a more specific and concrete level. With this form of reasoning, if something is found to be true for a category of things, then it is considered to be true for all things in that category in general.

- **Inductive Reasoning:** Inductive methodologies as part of the scientific inquiry was established and popularized by Francis Bacon's "Novum Organum". Inductive reasoning is the opposite of deductive reasoning. Inductive reasoning makes broad generalizations from specific observations. Basically, there is data, and then conclusions are drawn from the data. This is called inductive logic, according to Utah State University. Induction means determining the rule. It is learning the rule after numerous examples of the conclusion following the precondition. Example: "The grass has been wet every time it has rained. Thus, when it rains, the grass gets wet." Scientists are commonly associated with this style of reasoning.

  "In inductive inference, we go from the specific to the general. We make many observations, discern a pattern, make a generalization, and infer an explanation or a theory. An example of inductive logic is, "The coin I pulled from the bag is a penny. That coin is a penny. A third coin from the bag is a penny. Therefore, all the coins in the bag are pennies."

  Even if all of the premises are true in a statement, inductive reasoning allows for the conclusion to be false. Here's an example: "Madan is a grandfather. Madan is bald. Therefore, all grandfathers are bald." The conclusion does not follow logically from the statements.

  Inductive reasoning has its place in the scientific method. Scientists use it to form hypotheses and theories. Deductive reasoning allows them to apply the theories to specific situations.

  Inductive Reasoning is a form of reasoning that uses analogies, examples, observations and experiences to form conclusive propositions. Inductive logic also uses experiences to formulate statements based on general observations of the recurring patterns in nature, science, and everyday occurrences pulling from such things samples, cases, experiments and natural eye observations. It is used mostly to explain the properties and relations to objects or types based on previous observations. It must be understood that

inductive arguments do not try to establish their conclusions through absolute certainty, but through observable and predictive certainty.

In addition, Analogical Reasoning and Matrix Reasoning are both the sub-methods of inductive reasoning that correlates information and that compares the similarities between new and understood thoughts. And then, it uses the similarities to gain an understanding of the new concepts. These two forms of reasoning are considered both inductive reasoning because it strives to provide understanding of what is perceived to be true, rather than deductively proving something as fact.

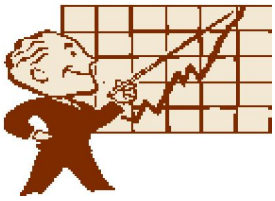
Inductive reasoning begins with specific observations or real examples of events, trends, or social processes, and progresses analytically to broader generalizations and theories based on those observed cases. This is sometimes called a "bottom up" approach because it starts with specific cases on the ground and works its way up to the abstract level of theory. With this method, once a researcher has identified patterns and trends amongst a set of data, he or she can then formulate some hypotheses to test, and finally, develop some general conclusions or theories.

- **Abductive Reasoning:** Abduction was first coined by Charles Sanders Peirce as 'process of thought capable of producing no conclusion more definite than a conjecture'. It is the process of explaining something that is experienced or observed in some way and where there is no existing knowledge to explain the phenomenon. In a laymen's term, abductive reasoning is an argument to the best explanations. It is a form of reasoning that can be concluded in an abductive argument of what is plausible or most possibly true. Abduction means determining the precondition. It is using the conclusion and the rule to assume that the precondition could explain the conclusion. For example, "When it rains, the grass gets wet. The grass is wet, it must have rained." Abductive reasoning usually starts with an incomplete set of observations and proceeds to the likeliest possible explanation for the group of observations. It

is based on making and testing hypotheses using the best information available. Abductive reasoning is useful for forming hypotheses to be tested.

- **Reductive Reasoning:** Reductive Reasoning is a subset of argumentative reasoning which seeks to demonstrate that a statement is true by showing that a false or absurd result/ circumstance follow from its denial. It is proving a statement true by reducing to the opposite of it, and showing the absurdity of the opposite result. Reductive Reasoning is also considered a mixture of deductive and inductive reasoning. Inductive because it strives to provide understanding of what is likely to be true; and deductive because it does resemble traits of critically and rationally of deductively reducing down to a conclusive or non-conclusive argument.
- **Fallacious Reasoning:** Fallacious Reasoning is not real reasoning; it is the faulty premises for critical thinking and logic. One of the tall tale signs of fallacious reasoning is a logical fallacy. A fallacy is usually an error in reasoning and argumentation often due to a misconception, false premises, or presumptuous conclusions.
- **Analogical Reasoning:** Analogical reasoning is suggested as a useful new mechanism for the manipulation and derivation of some kinds of deep knowledge. The starting-point for the suggestion is the observation that the experts often express parts of their non-shallow knowledge in terms of cases, and reason by trying to identify relevant similarities between past cases and the current problem.

  In analogical reasoning, an analogy for a given thing or situation is found, where the analogy is like the given thing in some way. In the everyday life, we face analogy when we are compared to someone else, or if we compare something to another thing. For e.g., “You are just like your father, always sitting in front of the television.” or “This is like I am in the heaven.”



CHECK YOUR PROGRESS

Q.1: What do you mean by Reasoning?

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Q.2: Mention the different types of Reasoning.

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Q.3: Write some characteristics of Reasoning.

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9.7 MEANING OF PROBLEM SOLVING

Problem-solving is a mental process that involves discovering, analyzing, and solving problems. It is closely related to learning. It is a specific and complicated form of classical condition. This is known as a creative form of learning. The ultimate goal of problem-solving is to overcome the obstacles and find a solution that best resolves the issue. A problem arises when we need to overcome some obstacles in order to get to a desired state from our current state. Problem solving is the process that an organism implements in order to try to get from the current state to the desired state.

The Concise Oxford Dictionary (1995) defines a problem as: “A doubtful or difficult matter requiring a solution” and “Something hard to understand or accomplish or deal with.” Problem-solving can be defined as a mental process comprising the discovery, analysis and resolution of problems. This process is primarily aimed at tackling obstacles and discovering a resolution that best solves the issue.

According to J. R. Anderson, any goal-directed sequence of cognitive operations can be defined as problem solving.

According to Eysenck and his associates (1972), problem solving is that process, in which, starting from cognitive situation, the desired goal is achieved.

D. M. Johnson (1972) describes six problems related to problem solving which are as follows:

a) Behaviour is goal directed and continuity is found in behaviour.
b) The continuity in behaviour and actions ends when the aim is achieved.
c) Individual gives various types of responses and trials in problem solving.
d) People of one sect respond to the problem situation in different manner, therefore individual differences are found in problem solving.
e) Organism takes more time when he faces the problem situation for the first time but the time of solving the problem decreases in his later trails for that situation.
f) Problem solving is a specific form of thinking.

In the field of Psychology, “problem solving” refers to a way of reaching a goal from a present condition, where the present condition is either not directly moving toward the goal, is far from it, or it needs more complex logic in order to find the steps toward the goal. It is considered the most complex of all intellectual functions, since it is a higher-order cognitive process that requires the modulation and control of basic skills.

In Cognitive Psychology, the term problem solving refers to the mental process that people go through to discover, analyze, and solve problems. This involves all of the steps in the problem process, including the discovery of the problem, the decision to tackle the issue, understanding the problem, researching the available options, and taking actions to achieve your goals.

Before problem-solving can occur, it is important to first understand the exact nature of the problem itself. If your understanding of the issue is faulty, your attempts to resolve it will also be incorrect or flawed. There are a number of mental processes at work during problem-solving. These include:

- Perceptually recognizing a problem.
- Representing the problem in memory.

- Considering relevant information that applies to the current problem.
- Identifying different aspects of the problem.
- Labeling and describing the problem.

9.8 APPROACHES TO PROBLEM SOLVING

- **The Behaviourist Approach:** Behaviourist researchers argued that problem solving was a *reproductive* process; that is, organisms faced with a problem of applied behaviour that had been successful on a previous occasion. Successful behaviour was itself believed to have been arrived at through a process of trial-and-error. In 1911, Edward Thorndike had developed his law of effect after observing cats discover how to escape from the cage into which he had been placed. This greatly influenced the behaviourist view of problem solving.
- **The Gestalt Approach:** In contrast, Gestalt psychologists argued that problem solving was a *productive* process. In particular, in the process of thinking about a problem, individuals sometimes "restructured" their representation of the problem, leading to a flash of insight that enabled them to reach a solution.

  In 1972, Allen Newell and Herbert Simon published the book *Human Problem Solving*, in which they outlined their *problem space theory* of problem solving. In this theory, people solve problems by searching in a *problem space*. The problem space consists of the initial (current) state, the goal state, and all possible states in between. The actions that people take in order to move from one state to another are known as *operators*.

  However, for novel problems, Newell and Simon proposed that operator selection is guided by cognitive short-cuts, known as Heuristics. The simplest heuristic is *repeat-state avoidance* or *backup avoidance*, whereby individuals prefer not to take an action that would take them back to a previous problem state. This is unhelpful when a person has taken an inappropriate action, and actually needs to go back a step or more.

Under the influence of cognitive learning theories, problem solving is shifted to represent a complex mental activity consisting of a variety of cognitive skills and actions. Problem solving included higher order thinking skills such as "visualization, association, abstraction, comprehension, manipulation, reasoning, analysis, synthesis, generalization– each needing to be 'managed' and 'coordinated'" (Garofalo & Lester, 1985, p. 169).

- **General Problem Solving Models of the 1960's:** During the 1960s and 70s, researchers developed general problem solving models to explain the problem solving processes (Newell & Simon, 1972; Polya, 1957; Bransford & Stein, 1984). The assumption was made that by learning abstract (decontextualized) problem solving skills, one could transfer these skills to any situation (context). One example of this general problem-solving model is Bransford's IDEAL model:
  - Identify the problem.
  - Define the problem through thinking about it and sorting out the relevant information.
  - Explore solutions through looking at alternatives, involving in brainstorming, and checking out different points of view.
  - Act on the strategies.
  - Look back and evaluate the effects of your activity.

9.9 THE PROBLEM-SOLVING CYCLE

In order to solve a problem, it is important to follow a few steps, which have also been referred to as the 'Problem-Solving Cycle'. These are stated below:

- **Problem Identification:** First, a problem should be identified and defined. There are many questions to ask– such as what makes one think that there is a problem? Where is it happening? How is it happening? When is it happening? With whom is it happening? Why is it happening?
- **Problem Definition and Representation:** After the problem has been identified, the next step is to appropriately and fully define the problem so that it can be solved.

- **Strategy Formulation:** The next step is to form a strategy to solve the problem. The chosen strategy will depend on the nature of the problem, the situation and the individual characteristics of the problem-solver. It is always suitable to look for alternative ways for a solution.
- **Organization of Information:** When choosing the best strategy, problem-solvers may need to consider a number of factors– long term benefit, realistic, availability of resources, risks involved, etc.
- **Resource Allocation:** Before problem solving begins, it is important to decide how high in the priority list the problem is, so that appropriate amount of resources can be allocated to it.
- **Monitoring:** Monitoring the progress while working towards a solution is important, as the strategies and approaches employed presently can be reevaluated if a good progress is not being made in the problem solving process.
- **Evaluation:** At this final stage of the problem-solving cycle, when a solution is reached, problem-solvers should assess what has been accomplished and decide whether they have come to the best possible solution to a given problem.

9.10 FACTORS AFFECTING PROBLEM SOLVING

Problems emerge from internal and external causes, and their solution is influenced by some factors, as you can find in the following:

- **Knowledge:** Knowledge of the full variety of tactical steps in solving a problem influences the ways and pace of problem solving. If the person knows and understands how to solve the problem, he can solve it properly and in less time compared to the person who does not have knowledge of the same.
- **Experience:** If a person has the experience of solving a problem in the past, it is obvious that in the present situation, he will be able to solve the same kind of problem more effectively.
- **Problem difficulty:** Existing factors in the problems can also constrain problem solving. All problems are not of the same difficulty

level. The difficulty level of the problem is another factor affecting problem solving.

- **Structure of problem:** The structure of the problem—whether well-structured or ill-structured, also influences problem solving.
- **Transfer of learning:** In case of solving a problem, if we apply right learning in right place, then the attainment of solution becomes easy. Inability of transferring learning hampers problem solving.
- **Intelligence of problem solver:** Intelligence is the aggregate general potentiality of an individual to think and act rationally. A genius will solve a problem more precisely in less time than an average student.
- **Other Mental dispositions:** Research studies have proved that mental dispositions like attention, interest, logical understanding influence problem solving behaviour.
- **Motivation:** Motivation is the cause for which we wish to solve a problem. Until and unless we feel motivated, trials for finding a solution will continue. In the absence of motivation, problem solving may not be possible.
- **Creativity:** Problem solving calls for creativity. It calls for the generation of ideas that are novel (at least for the individual). Creative people can look into the issues from diverse point of view.
- **Memory:** We engage in problem solving when we need to overcome obstacles in order to answer a question or to achieve a goal. If we can quickly retrieve an answer from memory, we can solve a problem. If we cannot retrieve an immediate answer, then finding solution becomes difficult.
- **Social factors:** Social factors like leadership factors, egocentrism, accountability, and social collaboration play important role in solving problems in group situation.

9.11 STRATEGIES FOR EFFECTIVE PROBLEM SOLVING

A strategy can be understood as a plan, a heuristic, a rule of thumb, a possible way to approach the solving of some type of problem. Some

strategies may be adopted for effective problem solving. Every problem-solving domain has its own strategies. There are relatively few strategies that are powerful and applicable across all domains. For example, **breaking a big problem into smaller problems** is one of these general purpose strategies and doing library research is another general purpose strategy. Each subject matter (each domain) has its own set of problem solving strategies. The typical person has few explicit strategies in any particular area. Different strategies for effective problem solving are:

- Problem solving is a creative process, and we can distinguish three main sorts of strategies for solving problem effectively (Johnson-Laird, 1993).
  - ***Neo-Darwinian algorithm*** that consists of a stage in which ideas are generated and then they are evaluated. Generation and evaluation depends on the use of knowledge. Any idea that survives can be recycled and repeated till getting a solution.
  - ***Neo-Lamarckian algorithm***, in which all knowledge acquired from experience constrains the generation of ideas. If alternatives are created, then the choice amongst them can be made. When individuals have the requisite knowledge, the algorithm is highly efficient, because there is no need for repetition.
  - ***Multi-stage algorithm***, in which some knowledge are used to constrain the creation of ideas and some are used to evaluate the results, with the option of repetition. In sum, according to this account, constraints govern the evaluation of ideas, or their generation, or both.
- Behaviorist psychologists suggest that problems can be solved by trial and error, and reproducing past responses. In trial and error, first we make random movements to solve a problem. Consequently, the error rate decreases and we attain a solution.
- Cognitive psychologists believe that problem-solving strategy involves a series of mental processes and is not random. Problem solving strategy involves mentally working to overcome obstacles that stand in the way of reaching a goal.

- Another strategy is shaping of problem. Here, individuals shape problems depending on their experience. As they try out the various possible tactical steps, they learn their consequences.
- One can solve a problem by bringing change in the environment, for example in a puzzle game, removing a new piece, replacing a piece removed earlier, or moving a piece from one position in the shape to fill the position of a piece that had been removed.
- Using new strategy or developing novel idea is another strategy, which is useful when past strategies do not work with a new problem. A greater use of the exploratory stage of strategies is helpful in this regard.
- Problem solving calls for creativity, because it calls for the generation of ideas that are novel (at least for the individual).
- In general, the problem solving strategy involves cognitive action like identifying the problem, planning the solution, execute the plan, evaluate the plan and evaluate the solution (Hayes, 1998).
- Problem solving strategies include representation of the problem in one's mind. There are many different ways to represent a problem. A problem can be represented mentally or orally.
- Breaking big problem into smaller ones is called the top-down strategy. The idea is that it may be far easier to deal with a number of small problems than it is to deal with one large problem.
- Another pair of strategies involve divergent and convergent thinking. Once we have considered a variety of possibilities through divergent thinking, we must engage in convergent thinking, to narrow down the multiple possibilities to converge on a single best answer, which we will try first.
- Another strategy of problem solving is abstraction. It involves solving the problem in the model of the system before applying it to the real system.
- Analogy can also be used for problem solving. It refers to using a solution for a similar problem.
- Brainstorming can also be used as a strategy for problem solving. In this strategy, a large number of spontaneous solutions are identified and developed until the best is found.

- Problems may also be solved through root-cause analysis. It means identifying the cause of a problem.

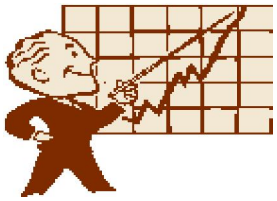
There is no single ideal strategy for addressing every problem. Instead, the optimal strategy depends on both the problem and the problem-solvers personal. There are many other ways of solving a problem. The most effective depends on the type of problem and the resources at hand.

9.12 PRINCIPLES FOR TEACHING PROBLEM SOLVING

Understanding problem solving as a process involving a state of desire for reaching a goal from a condition that is far from it leads to a number of important principles for teaching problem solving. These are:

- For any "real-world" job or work skill, identify both the declarative and procedural knowledge components. Give each appropriate instructional emphasis.
- First introduce a problem solving context, then either alternate between teaching declarative and procedural knowledge, or integrate the two.
- When teaching declarative knowledge, emphasize mental models appropriate to the problem solving by explaining knowledge structures and asking the learners to predict what will happen or explaining why something happened.
- Teach problem solving skills in the context in which they will be used. Use authentic problems in explanations, practice and assessments, with scenario-based simulations, games and projects.
- Use direct (deductive) teaching strategies for declarative knowledge and well structured problem solving.
- Use inductive teaching strategies to encourage synthesis of mental models and for moderately and ill-structured problem solving.
- Within a problem exercise, help the learners understand (or define) the goal, then help them to break it down into intermediate goals.
- Ask questions and make suggestions about the strategy to encourage the learners to reflect on the problem solving strategies they use.

- Give practice of similar problem solving strategies across multiple contexts to encourage generalization.
- Use contexts, problems and teaching styles which will build interest, motivation, confidence, persistence and knowledge about the self, and reduce anxiety.
- When teaching well-structured problem solving, allow the learners to retrieve it (e.g., from a reference card). If the procedure is frequently used, encourage memorization of the procedure and practice until it is automatic.
- When teaching moderately-structured problem solving, encourage the learners to use their declarative (context) knowledge to invent a strategy which suits the context and the problem.
- When teaching ill-structured problem solving, encourage the learners to use their declarative (context) knowledge to define the goal (properties of an acceptable solution), then invent a solution.



CHECK YOUR PROGRESS

Q.4: What do you mean by problem solving?

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Q.5: What is strategy?

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Q.6: Mention some strategies of problem solving.

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9.13 LET US SUM UP

- Reasoning is a cognitive process.
- Reasoning is a highly specialized thinking which helps an individual to mentally explore the cause and effect relationship of an event or

solution of a problem by adopting some well-organized systematic steps based on previous experience combined with present observation.

- All reasoning has a purpose. All reasoning is based on assumptions. The main types of reasoning are– deductive, inductive, abduction, reductive reasoning, fallacious reasoning and analogical reasoning.
- The theory of deductive reasoning was set by Aristotle. Deductive reasoning is the form of reasoning in which the conclusion follows logically and coherently from the factual premises and proposition.
- Inductive reasoning was popularized by the Francis Bacon's Novum Organum. It is the opposite of deductive reasoning. Inductive reasoning makes broad generalizations from specific observations.
- Abductive reasoning is the process of explaining something that is experienced or observed in some way, and where there is no existing knowledge to explain the phenomenon.
- Reductive reasoning is a subset of argumentative reasoning which seeks to demonstrate that a statement is true by showing that a false or absurd result/ circumstance follow from its denial.
- Fallacious Reasoning is not real reasoning. It is the faulty premises for critical thinking and logic.
- Analogical reasoning is suggested as a useful new mechanism for the manipulation and derivation of some kinds of deep knowledge.
- In order to solve a problem correctly, it is important to follow a few steps, which have also been referred to as the 'Problem-Solving Cycle'. This cycle includes some basic steps that can be followed in order to solve a problem. These are stated in below:
  - Problem Identification
  - Problem Definition and Representation
  - Strategy Formulation
  - Organization of Information
  - Resource Allocation
  - Monitoring
  - Evaluation

- Various factors influence problem solving– knowledge, experience, problem difficulty, structure of problem, transfer of learning, intelligence of the problem solver, motivation, creativity, memory, social factors and communication.
- Teaching of problem solving is based on certain principles which include giving instructional emphasis on both declarative and procedural knowledge components, emphasizing problem solving context, emphasizing mental models appropriate to the problem solving, helping learners to understand (or define) the goal, encouraging practice, etc.



9.14 FURTHER READING

1) Carlson, E. R. (1995). Evaluating the credibility of sources. A missing link in the teaching of critical thinking. *Teaching of Psychology*, 22(1), 39-41.
2) Facione, P. A., Sanchez, C. A., Facione, N. C., & Gainen, J. (1995). The disposition toward critical thinking. *The Journal of General Education*, 44(1), 1-25.
3) Halpern, D. F., & Nummedal, S. G. (1995). Closing thoughts about helping students improve how they think. *Teaching of Psychology*, 22(1), 82-83.
4) Mangal, S. K. (2007). *Advanced Educational Psychology*. New Delhi: Prentice-Hall of India.
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9.15 ANSWERS TO CHECK YOUR PROGRESS

Ans. to Q. No. 1: Reasoning is broadly defined as the process of drawing conclusions.

Ans. to Q. No. 2: The types of reasoning are– deductive, inductive, abduction, reductive, fallacious and analogical.

Ans. to Q. No. 3: Some characteristics of reasoning are–

i) All reasoning has a purpose.

ii) All reasoning is an attempt to figure something out, to settle some question, to solve some problem.

iii) All reasoning is based on assumptions.

Ans. to Q. No. 4: Problem-solving is a cognitive process that involves discovering, analyzing, and solving problems.

Ans. to Q. No. 5: A strategy can be thought of as a plan, a heuristic, a rule of thumb, a possible way to approach the solving of some type of problem.

Ans. to Q. No. 6: There are many strategies of solving a problem like abstraction, brainstorming, breaking down a large and complex problem into smaller, solvable problems.



9.16 POSSIBLE QUESTIONS

A) Very Short Questions (Answer each question in about 50 words)

Q.1: Who defined reasoning as “Step-wise thinking with a purpose or goal in mind.”?

Q.2: Who set the theory of deductive reasoning?

B) Short Questions (Answer each question in about 150 words)

Q.1: What is fallacious reasoning?

Q.2: Define problem solving.

Q.3: What do you mean by IDEAL Model?

Q.4: Mention two factors of problem solving.

B) Long Questions (Answer each question in about 300-500 words)

Q.1: Discuss the types of reasoning.

Q.2: Explain the nature of problematic situation.

Q.3: Write a note on problem solving cycle.

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UNIT 10: PERSONALITY

UNIT STRUCTURE

10.1 Learning Objectives

10.2 Introduction

10.3 Concept of Personality

10.3.1 Definitions of Personality

10.3.2 Characteristics of Personality

10.4 Theories of Personality

10.5 Measurement of Personality

10.6 Personality Adjustment

10.7 Defense Mechanism

10.8 Let Us Sum Up

10.9 Further Reading

10.10 Answers to Check Your Progress

10.11 Possible Questions

10.1 LEARNING OBJECTIVES

After going through this unit, you will able to–

- explain the concept, definition and characteristics of personality;
- discuss the theories of personality; and
- explain the different methods of measurement of personality.

10.2 INTRODUCTION

Personality is the most fascinating topic in the field of psychology. Many researches have been conducted on this topic, but no conclusion has been drawn with regard to the nature of personality. In simple language, by personality we mean the totality of everything about an individual—his emotional, ethical, mental, physical, social, and spiritual make-up. It includes an individual's appearance, emotionality, sociability, intelligence, character, and moral traits. In fact, personality is the mirror or one's total behaviour. A person's behaviour inevitably influences his personality. Personality has its

existence, which is like that of a sound. We can hear a sound, but can neither see nor touch it. Similarly, we cannot touch, see and hear personality. We can only understand it. Personality is dynamic and its dynamism can be noted only in society. Personality is very important in our social behaviour and because of this importance; a common man describes it in two words-attractive and repulsive. However, in psychology, the word personality means a lot. Each person has own peculiarities. Because of these peculiarities, he shows specific behaviour in different situations. This behaviour is intimately related to his personality. In fact, this behaviour is the mirror of his personality.

10.3 CONCEPT OF PERSONALITY

To arrive at a meaning of the word personality, we have to trace the historical root of the word. The word 'Personality' has been derived from the Latin word 'Persona', which means 'to sound through'. The term was used to describe the voice of an actor speaking through a mask. The word 'Persona' was associated with Greek theatre in ancient times. Persona meant a mask, which the Greek actors commonly used to wear on their faces when they worked on the stage. According to the concept of mask, personality was thought to be the effect and influence which the individual wearing a mask left on the audience. Even today, for the general people, personality means the effect, which an individual leaves on other people.

10.3.1 Definitions of Personality

The following are some of the definitions of personality:

- According to R. B. Cattell, "Personality is that which permits a prediction of what a person will do in given situation."
- J. P. Guildford stated, "An individual's personality is his unique pattern of traits."
- According to G. W. Allport, "Personality is the dynamic organization within the individual of those psycho-physical systems that determine his unique adjustment to the environment."
- According to Eysenck, "Personality is the more or less stable and enduring organization of a person's character, temperament,

intellect and physique, which determine his unique adjustment to the environment."

- Kart Lewin, considers personality to be "a dynamic totality of systems."
- According to Harman, "Personality is integrated organization of all pervasive characteristics of an individual as it manifests itself in focal distinctiveness to others."
- Fredenburgh said, "Personality is a stable system of complex characteristics by which the life pattern of the individual may be identified."
- Mark Sherman defined personality as, "The characteristic pattern of behaviours, cognitions and emotions which may be experienced by the individual and or manifest to others."

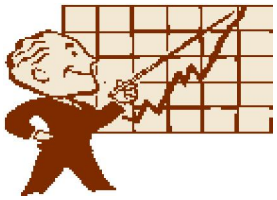
From these definitions, it may be said that personality is what makes an individual unique. Some people may have personality that is more impressive, some have less. Under personality come the social stimulus, values, traits of character, object of behaviour, mode of speech and other actions of a particular person. Personality is a dynamic and moving force. It consists of more than what we see on the surface.

10.3.2 Characteristics of Personality

The following are some characteristics of personality:

- Personality is something unique and specific. Every one of us is a unique person in oneself.
- Personality is not just a collection of so many traits or characteristics.
- Personality includes everything about a person.
- Every personality is the joint product of heredity and environment.
- Learning and acquisition of experiences contribute towards the growth and development of personality.
- The personality of an individual can be described as well as measured.

- It functions as a unified whole.
- Personality is self consciousness.
- Personality is what one is.
- Personality is dynamic and not static. With the change of environment, one's personality may undergo certain changes.



CHECK YOUR PROGRESS

Q.1: What do you mean by personality?

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Q.2: Give the definition of personality by Allport.

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10.4 THEORIES OF PERSONALITY

In order to understand the meaning and nature of personality properly, we should discuss the theories of personality. The theories of personality can be classified into the following broad categories–

a) Type Theory-Hippocrates, Kretschmer, Sheldon and Jung belong to type theory.

b) Trait Theory-Allport's Theory and Cattell's Theory of personality are based on the trait approach.

c) Psycho-analytical Theory-Freud, Adler, Horney, and Erickson's Theory may be included in this category.

d) Humanistic Theory-Carl Roger's Theory and Maslow's Theory belong to this category.

Now we shall discuss the various theories of personality in the following:

a) Type Theory of Personality: From the ancient times, the psychologists had tried to classify human being into different categories called types. The old system of typology continues, and

in the present times, psychologists have developed various typologies. Many scholars and psychologists tried to divide the people into types depending upon their own specific criteria. Three broad personality types have been usually referred to, they are–

- Body types based on the features of physique.
- Body chemistry based on the features of physiology.
- Psychological types based on the features of behaviour.

We will discuss some of the more common types of personality.

Hippocrate's classification: One of Aristotle's pupils Hippocrate theorized that the human body consists of four fluids– blood, yellow bile, phlegm (mucus) and black bile. The predominance of one of these four of fluids in one's body gives unique characteristics.

Table 10.1: Hippocrate's classification of Personality Types

Dominance of the fluid type in the body	Personality type	Temperamental Charcteristics
Blood	Sanguine	Light-hearted, optimistic, happy, hopeful and accommodating
Yellow bile	Chloeric	Irritable, angry but passionate, and strong with active imagination
Phelgm (mucus)	Phelgmatic	Cold, calm, slow, or sluggish and indifferent.
Black bile	Melancholic	Bad Tempered, dejected, sad, depressed, pessimistic, deplorable and self-involved.

Kretschemer's classification: German psychologist, Kretschmer classified human beings on the basis of physical constitution. He attempted to establish relationship between personality characteristics and body build.

Table 10.2: Kretschemer's classification of Personality Types

Personality types	Personality characteristics
Pyknic (having fat bodies)	Sociable, jolly, easy-going, and good natured
Athletic (Balanced body)	Energetic, optimistic, and adjustable
Leptosomatic (lean and thin)	Unsociable, reserved, shy, sensitive and pessimistic

Sheldon's classification: Sheldon classified human beings into three broad categories of physical dimensions and their corresponding temperamental characteristics. According to him, physical structure of the body is the determinant of personality characteristics.

Table 10.3: Sheldon's classification of Personality Types

Personality types	Somatic description	Personality characteristics
Endomorphic	Person having highly developed viscera but weak somatic structure	Easy-going, sociable and affectionate.
Mesomorphic	Balanced development of viscera and somatic structure.	Craving for muscular activity, self-assertive, loves risk and adventure
Ectomorhic	Weak somatic structure as well as undeveloped viscera.	Pessimistic, unsociable and reserved.

Spranger's classification: German philosopher, Spranger classified human beings on the basis of interests, they are as follows:

- Theoretical: Persons who are theoretical in nature, neglect social and political participation.
- Economic: Those persons who are interested in money hoarding.
- Aesthetic: Those persons who are the lovers of beauty and are busy in sensuous gratification.
- Social: Persons who are interested in social activities.

- Political: Persons who are dominating.
- Religious: Persons who devote themselves to religious activities.

Jung's classification: The Swiss psychiatrist, Jung classified human beings into two distinct types– Introvert and Extrovert. The introvert is generally shy and in times of emotional stress, he shows a preference for working alone rather than among people. The extrovert is sociable, like public dealings, well dressed and outgoing.

Limitations of Type Theory of Personality: The idea of dividing human beings into distinct categories goes against the general laws of individual difference. The types are discontinuous and immeasurable. It is not possible to place human beings in a specific category. Our general observation also proves that it is not fair to classify human personality on a specific category. Another criticism raised against type theory is that it creates misunderstanding between the cause and the effect. Placing a person in a specific category does not indicate his behaviour.

b) **Trait Theory of Personality:** A trait is a dimension of personality, which can be measured and must describe the consistent behaviour of an individual. Traits are relatively stable. They are not entirely static in nature. G. W. Allport, R. B. Cattle and Eysenck are the chief exponent of the trait theory of personality.

Allport's classification: Allport (1897-1967) was the first theorist who rejects personality types adopted the trait approach. According to him, traits are the basic units of personality. He classified traits into three categories: (i) cardinal traits (ii) central traits and (iii) secondary traits.

- Cardinal traits: These are dominant traits and are limited in number. They pervade the whole life of an individual. For example, if a person has simplicity as a cardinal trait, he will be simple in all thoughts and activities in every situation in life.
- Central traits: These traits are generalized dispositions which may be used to describe a Person's cooperation, honesty etc.

- Secondary traits: These traits are less dominant than central or cardinal traits. They are specific narrow traits and are not integral parts of one's personality.

According to Allport, traits differ in intensity and magnitude in general population from individual to individual. No two individuals are alike in their behaviour. The central point in Allport's theory is that patterned individuality constitutes the subject matter of a science of personality. Cardinal, central and secondary traits can be treated as personal dispositions in describing individual uniqueness. To him, traits have a real and vital existence. Allport gave a new dimension to the explanation of human behaviour, personality, evolution of the behaviour and aspects of personality by taking traits as the basic unit of behaviour.

Cattell's classification: R.B. Cattell is one of the propounders of trait theory of personality. According to him, a trait is structure of the personality inferred from behaviour in different situations. He classified traits into four categories.

- Common traits: These traits are widely distributed in general population or among all groups. Honesty, aggression, and cooperation can be called common traits.
- Unique traits: These traits are unique to a person, e.g., emotional reactions, temperamental traits.
- Surface traits: These traits are known from overt behaviour, such as curiosity, tactfulness. The method used for finding out surface traits is usually that of cluster analysis.
- Source traits: These are the underlying structures or sources, which determine the behaviour of an individual. Dominance and emotionality are source traits.

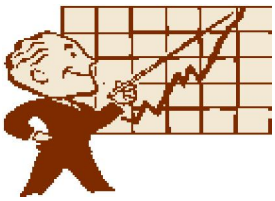
Cattell emphasized the importance of both hereditary and environmental factors in the development of individual traits. He used his sixteen factors in the measurement of personality by devising a personality inventory.

Eysenck's Classification: British psychologist Eysenck, tried to synthesize the type and trait approaches. He found three basic dimensions of personality– Introversion-Extroversion, Normality-Neuroticism, and Psychoticism-Realism.

- Eysenck believed that purely extrovert and introvert people were rarely found and he, therefore, preferred to use a dimension–a continuum ranging from introversion to extroversion instead of naming types as introverts and extroverts.
- At one end of the second dimension, are the persons who are stable, calm and carefree. At the other end, are the people who are moody, touchy, and anxious.
- At the end of the third dimension, psychoticism-realism, are those people who are unrealistic, solitary, insensitive, egocentric, impulsive etc. while the other end of the dimension includes people who are less adventurous and bold.

Limitations of Trait Theory of Personality: Psychologists have criticized trait theory of personality in different ways. Some of them are mentioned below.

- There is no agreement among the psychologists with regard to the use of the terms.
- There is a view that a trait is a behavioural disposition, which is consistent and does not vary from situation to situation.
- Individual's behaviour cannot be predicted on the basis of scores on trait inventory.



CHECK YOUR PROGRESS

Q.3: Name some psychologists related with type theory of personality.

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Q.4: Write the categories of traits given by Cattell.

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c) **Psycho-analytic theory of personality:** The psychoanalytic theory of personality was developed by Sigmund Freud (1856-1939). His theory of psychoanalysis is dynamic and based on the assumption that personality and personality development are determined by conflicts and events that are largely unconscious in nature. According to Freud, personality is a three-tier system of Id, Ego, and Super-ego. The Id is totally unconscious, Ego is partly conscious, and Super ego is totally conscious.

The Id is the primary aspect of personality. It cannot distinguish between good and evil. It is dominated by the pleasure principle. It is instinctive in nature. The Id consists of everything that is inherited psychologically.

The Ego follows the principle of reality and acts with intelligence to control, select, and decide what appetites have to be satisfied and in which way they may be satisfied.

The Super ego is the ethical or moral arm of personality. It is idealistic and does not care for realities. It emphasized on perfection rather than pleasure. In a general way, the Super Ego is thought to be the social development of the personality.

Freud's theory of personality is a comprehensive theory and includes almost all aspects of personality and its complexities. It is a holistic approach to understand personality. This theory is very helpful to understand personality.

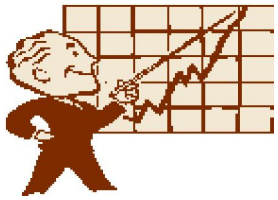
Adler's individual approach to personality: According to Adler, human beings cannot be divided into different types. He believed that each man creates a self-structure out of his heredity endowment, and the impression that he receives from the environment. If we want to understand the nature of personality of a person, we have to study his specific life style. Adler initiated the individual approach to the study of personality patterns, and maintained that there are no distinct personality types or classes. Each individual is unique in himself because everybody has definite goals and style of his life. Adler is criticized for giving much importance to organic factors and interpreting superiority in negative terms.

d) **Humanistic theory of personality:** The humanistic approach reflects a humanistic trend in dealing with and understanding human behaviour. Humanistic psychology is advocated by Abraham Maslow and Carl Rogers.

The self-actualization theory of Maslow: The American psychologist Maslow adopted the humanistic approach for studying personality. According to this theory, human beings are basically good or neutral rather than evil. The basic assumption of the theory is that there is a hierarchy of human motives or needs. At the base are the biological needs and above them, in their order, are the safety needs, the belonging and love needs, the esteems needs, and the needs for self- actualization. The behaviour or personality of a person depends upon his style of striving towards the ultimate goal of self-actualization. Man craving for the actualization of his inner potential continues until he reaches his ultimate goal of attaining humanistic values.

Carl Roger's self-theory of personality: Carl Roger, an American psychologist stresses on two basic systems–the organism and the self. The organism is an individual's entire frame of reference. It represents the totality of a person's experience-both conscious and unconscious. The self is the accepted, aware part of experience. Human beings have inherited the tendency to develop their self in the process of interpersonal and social experiences, which they acquire in the environment. Once a concept of self is formed, the individual strives to maintain it by regulating his behaviour.

Conclusions about various theories of personality: We have discussed various theories of personality in the present unit. The type approach classifies people into definite types based on distinct personality; the trait approach emphasized certain basic personality traits. The psychoanalytical approach stresses on unconscious motives. The humanistic approach underlines the finer values of the human beings. The study of personality theories thus helps us to understand the nature, mechanism and dynamics of personality.



CHECK YOUR PROGRESS

Q.5: Write the self-theory of personality by Carl Roger.

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10.5 MEASUREMENT OF PERSONALITY

There are different techniques of personality measurement based on different kinds of observation about individuals. There are situational tests, rating scales, and many other devices to assess personality. Psychologists have developed many reliable and scientific methods for the measurement of personality. Some of the important methods are described below:

- **Observation:** Observation is the objective method of studying the behaviour of a person. There are two processes of observation. In open observation, the observer does not hide himself from the subject, and in second method, he observes the behaviour of his subject from behind the screen. The data which are obtained from observation can be carefully analyzed, classified and interpreted. However, the Observation method has certain limitations, which are mentioned below.
  a) There is a tendency in the human mind to read its own thoughts, feelings, and tendencies into other mind.
  b) Bias and prejudice affect our observation and interpretation of other's behaviour. We do not usually find fault with our friends, but we always find fault with our enemies.

- **Situational tests:** May and Hartshome developed many situational tests to assess such traits as honesty, shyness etc. In situational tests, the behaviour of an individual is assessed in an artificial situation. For instance, honesty of a student may be evaluated in the examination hall without invigilators. In the selection of Military personnel, many situational tests are used. Again, by using the technique of psychodrama, the personality of an individual can be assessed. However, it is difficult to use situational test technique because it needs trained psychologists to observe and interpret the behaviour of the subjects.
- **Interview:** Interview is an important technique to elicit personal information from the subject in face-to-face contacts. On the basis of the interview results, most of the selection for different jobs and admission in various courses are made. Interview is of two types- structured and unstructured. In a structured interview, a systematic predetermined approach is adopted, and all the subjects are uniformly asked similar questions. In an unstructured interview, the interviewer is free to ask the subject any question relevant to the situation. The limitations of the interview methods are:
  a) It needs well-trained interviewer.
  b) It is not free from the subjective bias of the interviewer.
- **Questionnaire:** This method is used to assess personality traits. The individual is asked a large number of crucial questions, which he has to answer by saying yes or no. In this method, no conversation with the subject is undertaken as it is done in the interview method. This also saves time, because many persons can be examined at a time. This method was first practised during World War I in order to examine the personality of recruits who were unstable from emotional point of view. This is the most popular method, and is quite useful in collecting both qualitative as well as quantitative information. This method has certain drawbacks.
  - ➢ It lacks validity.
  - ➢ The subject can sense his answers in either direction he wishes.

- **Personality Inventory:** Personality inventory is specifically developed to seek answers about the person and his personality. It requires self-description of feelings, preferences, thought or actions with the help of a standard set of questions. R.S. Woodworth developed the first inventory consisting of 116 questions about common physical and mental traits.

  The best-known personality inventory is the Minnesota Multiphasic Personality Inventory (MMPI) developed by J. C. McKinley and S. R. Hathaway. The items of MMPI cover the total personality. The inventory consists of 550 items. Some of the items are as follows:

  - I sweat very easily even on cool days.
  - I like to talk about sex.
  - There is something wrong with my sex organs.

  The items are printed on separate cards. After reading the questions, the subject responds, yes, no or doubtful. This inventory was devised to detect pathological cases.

  The California personality inventory, the Eysenck personality inventory and Sixteen personality factor inventory (16 PF) developed by Cattell are some of the other well-known inventories. The Personality inventory technique has some drawbacks, they are:

  - The subject may give selective responses rather than genuine ones.
  - He may be ignorant of his/her own traits or qualities, which he/she may possess.

- **Rating Scale:** Rating scales are devised to evaluate a single trait. Teachers may use rating scales to classify their students on a particular trait like persistence, leadership, or cooperation. There can be three, five, seven, or even more points in the scale. The more the number of points, the greater the discrimination in judgment is required. There are three basic factors involved in this technique.

  - The specific trait or traits to be rated.
  - The scale on which the degree of possession or absence of the trait has to be shown.

- The appropriate persons or judges for rating.

There are some drawbacks of the rating scale. They are as follows:

- The rating is affected by 'Halo Effect'. This means that when we form a favourable impression of a child because of certain qualities which we admire, we tend to rate him high on all the traits which we consider desirable. Thus, if we admire a child for his manners and politeness, we also tend to rate him high in emotional stability and honesty etc.
- In some cases the dimension in the scale are ambiguous to the rater, and he can interpret in his own way.

- **Sociometry:** This technique is the contribution of social psychology and concentrates on studying the relationship among the members of a group. In doing so, it reveals some important characteristics about an individual's personality. The technique was devised and expounded by Moreno, and it seeks to obtain social preferences with references to a specified criterion. Sociometric studies have been made of many types of social groups including classroom groups. For example, students may be asked to give their preference in response to such questions:
  - Who would you like to sit with in the class?
  - Who would you like to share your book with?
- **Projective Techniques:** In Psychology, the term 'projection' suggests the tendency of an individual to see his own unwanted traits, ideas, and motives in other people or objects. The use of projective techniques for personality assessment is based on the importance of unconscious as suggested by Freud in his concept of personality. The technique of projection is applied to personality assessment through the use of projective tests. The projective test attempts to identify a person's motives and mechanism by introducing an ambiguous stimulus for interpretation as he can. These tests are very useful with young children, illiterate people and persons with language handicaps or speech defects. There are some widely used projective tests, they are:

- Rorschach's Ink Blot Test
- Thematic Apperception Test (TAT)
- Children's Apperception Test (CAT)
- Word Association Test
- Sentence Completion Test

Rorschach's Ink Blot Test and Thematic Apperception Test are very popular and widely used projective tests.

- **Rorschach's Ink Blot Test:** This test was developed by the Swiss psychologist Herman Rorschach. Perceptual approach is the basis of this test. The perception of an individual is influenced by the emotional and social make-up when he is asked to perceive a figure, which is not well defined. In this test, an individual projects himself into the test situation and reveals certain depth factors in his personality. The subject is shown 10 inkblot cards. Each card is given to the subject. In turn, he is asked to tell what he sees in the inkblots. The counselor notes whatever the subject says. These inkblots are highly ambiguous and do not carry any specific meaning. The subject is allowed to look at the cards from different angles. Different subjects see different things in these inkblot cards. Following the presentation of all the 10 cards, the counselor makes enquiry from the subject systematically in an effort to determine exactly what the subject saw. Responses to the test are scored in terms of location, determinants, contents, and the popularity or originality. This test helps to distinguish between normal persons and persons in need of psychiatric treatment.

  There is greater complexity in the technique of interpretation of Rorschach test. The interpretation requires a deep insight in the dynamics of human personality, thorough training and experience.

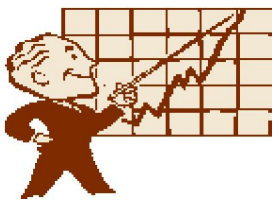
- **Thematic Apperception Test (TAT):** This test was developed by Morgan and Murry in 1935. This test consists of perception of certain pictures in a thematic manner. The test material comprises thirty pictures of human figures in some situations

with definite outlines. Ten of these pictures are meant for males, ten for female, and ten are common to both sexes. The pictures are presented one at a time. The subject is told to make-up a story for each of the pictures presented to him and describes: what is going on in the picture, what would likely to happen in such a situation etc. The subject identifies with one of the figures, indulges in the fantasy, and interprets the picture according to his dominant motives and outlook on life.

10.6 PERSONALITY ADJUSTMENT

Every human being seeks adjustment to various situations. He constantly makes efforts to adjust himself to his surroundings because wholesome adjustment is essential for leading a happy life and gaining satisfaction. The process of adjustment is continuous. This process starts right from the birth of an individual and continues until his death.

The individual always tries to bring about changes to overcome various difficulties in his environment. He tries to maintain a balance between his needs and his capacity of realizing the needs. Therefore, as long as this balance is maintained, the individual remains adjusted. The mechanism of adjustment involves a successful interaction between two kinds of forces, they are-the environmental and innate. Generally, we use the adjustment mechanisms in our everyday life. These are protective devices against frustration and they reduce our emotional strain. An adjusted and normal person, who attacks problems directly, tolerates some amount of frustration, acts rationally, makes efforts to reach own goal, enjoys the company of others, is cheerful and energetic, and possesses an optimistic view of life.



CHECK YOUR PROGRESS

Q.6: Mention the various techniques of personality measurement.

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Q.7: What is projective test?

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10.7 DEFENSE MECHANISMS

There are many situations in which we are not able to find out solution to our problems. This causes frustration and conflict in the mind. In such a situation, we adopt various adjustment mechanisms, which are known as defense mechanisms to save ourselves from unwanted situations. These adjustment mechanisms are psychological devices, which a person employs to protect himself from frustrations. There are two methods of adjustment for maintaining harmony between the individual and the environment. One is direct and the other is indirect. ***The direct methods are as follows–***

- **Renewed effort:** A person who considers that failures are the pillars of success is never disheartened because of his failure. He works against a barrier of personal deficiency.
- **Adoption of substitute:** An individual considers a substitute goal when attempts to reach the original goal when attempts to reach the original goal fails.
- **Submission:** When an individual finds it difficult to cope with his environment, he accepts the defeat and surrenders himself to the forces of environment.

The ***indirect methods*** of adjustment are as the following:

- **Repression:** It is denying oneself all forms of need gratification in order to escape the pains of a frustrating situation. Repression does not solve the real problem. It often leads to mental disorder. It results in complexes which play a great role in the determination of behaviour and development of personality.
- **Sublimation:** It plays a major role in moulding personality and in the development of traits. It is the mechanism in which all divisions of the psyche, the Id, Ego and Superego work in connection with each

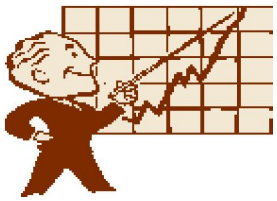
other. Repression is the process by which unconscious and unsocial desires are channeled into socially accepted activity.

- **Withdrawal:** In this mechanism, a person withdraws himself from the circumstances that cause frustration. An individual may learn to cope with one's environment by accepting defeat and surrounding oneself to the powerful forces of environment.
- **Negativism:** An individual draws the attention of other persons by a mechanism. It is purely a defense and partly an escape mechanism. Negativism is a tendency to do just the opposite of what is required.
- **Compensation:** It is the tendency of every person to make-up deficiency of one area of development in another area. When a person feels weak and fails in one area, he compensates in another field. He works hard to become successful. For example, a physically handicapped person may strive hard to excel in studies.
- **Identification:** In identification, a person feels one with another person. It may be a conscious process; the person seems to be aware of his attempts to make himself similar to a model who has the characteristics that are supposed to reduce his anxiety.
- **Rationalisation:** It is the most popular adjustment mechanism, which is used by almost all people in day-to-day life. Through this, an individual justifies his beliefs and actions by giving reasons. In this mechanism, a person tries to convince himself that he has got exactly what he wanted. The fox of the fables that could not get the grapes said the grapes are sour.
- **Projection:** By projection, a person tries to hold others for his undesirable behaviour. It is a mechanism, which relieves frustration of the person. In order to reduce his feeling of guilt, the individual may ascribe his own weakness to other people. When projection is used too frequently, it indicates the symptoms of mental ill health.
- **Aggression:** Aggression is a mechanism of reducing tension. It is caused by frustration and humiliation. Aggression may be of two types– direct and indirect. For example, a boy may attack his brother who prevents him from playing with fire. This is direct aggression.

However, if a wife annoyed with her husband, starts striking her baby, then it shall be considered indirect aggression.

- **Regression:** It is the mechanism whereby an individual returns to infantile behaviour after reaching the maturity level. For example, schizophrenic patients are often found to regress from the adult world to infancy.

From the above discussion, it is revealed that adjustment mechanisms are mostly unconscious. They are not acquired deliberately. However, their use gives us relief from tension and anxiety. When treated as symptoms of abnormality.



CHECK YOUR PROGRESS

Q.8: What is defense mechanism?

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10.8 LET US SUM UP

- At the beginning of this unit, we discussed the concept of personality.
- From the various definitions of personality, we came to know that personality is something unique and specific. Every one of us is a unique person in oneself.
- Psychologists have classified personality theory into some broad categories, such as type theory, trait theory, psychoanalytical theory, and humanistic theory etc.
- There are various kinds of techniques for the assessment of personality.
- Every human being seeks adjustment to various situations in life.
- Defense mechanisms help us to solve ourselves from unwanted situations.



10.9 FURTHER READING

1) Aggarwal, G. C. (1996). *Essential of Educational Psychology*. New Delhi: Vikas Publishing House.

2) Chauhan, S. S. (1977). *Advanced Educational Psychology* (6th Ed). New Delhi: Vikash Publishing House Pvt. Ltd.

3) Sarma, M. (2008). *Educational Psychology*. Dibrugarh: Tushar Publishing House.



10.10 ANSWERS TO CHECK YOUR PROGRESS

Ans. to Q. No. 1: Personality is the totality of everything about an individual– his emotional, physical, ethical, mental, social, and spiritual make-up.

Ans. to Q. No. 2: According to G. W. Allport, "Personality is the dynamic organization within the individual of those psycho-physical systems that determine his unique adjustment to the environment.'

Ans. to Q. No. 3: Hippocrates, Kretschmer Sheldon and Jung belong to type theory.

Ans. to Q. No. 4: Common traits, unique traits, surface traits and source traits.

Ans. to Q. No. 5: Carl Roger, an American psychologist stresses two basic systems– the organism and the self. The organism is an individual's entire frame of reference. It represents the totality of person's experience– both conscious and unconscious. The self is the accepted, aware part of experience. Human beings have inherited the tendency to develop their self in the process of interpersonal and social experiences, which they acquire in the environment. Once a concept of self is formed, the individual strives to maintain it by regulating his behaviour.

Ans. to Q. No. 6: Observation, situational test, Interview, Questionnaire, Personality Inventory, Rating scale, Sociometry and Projective techniques.

Ans. to Q. No. 7: The projective test attempts to identify a person's motives and mechanism by introducing an ambiguous stimulus for interpretation as he can.

Ans. to Q. No. 8: There are many situations in which we are not able to find out solution to our problems. This causes frustration and conflict. In such a situation, we adopt various adjustment mechanisms, which are known as defense mechanisms, to save ourselves from unwanted situations.



10.11 POSSIBLE QUESTIONS

A) Very Short Questions (Answer each question in about 50 words)

Q.1: Define the term personality.

Q.2: Give a definition of personality.

Q.3: What do you mean by traits of personality?

B) Short Questions (Answer each question in about 150 words)

Q.1: Write about the trait theory of personality.

Q.2: Discuss the various techniques of measuring personality.

Q.3: What are the methods of defense mechanism?

C) Long Questions (Answer each question in about 300-500 words)

Q.1: Discuss the various theories of personality.

Q.2: Discuss the psychoanalytic theory of personality.

Q.3: What is projective technique? Explain Rorschach's inkblot test.

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UNIT 11: EDUCATION FOR EXCEPTIONAL CHILDREN

UNIT STRUCTURE

11.1 Learning Objectives

11.2 Introduction

11.3 Meaning of Exceptional Children

- 11.3.1 Objectives of Special Education for Exceptional Children
- 11.3.2 Principles of Education for Exceptional Children

11.4 Gifted Children–Meaning

- 11.4.1 Identification of the Gifted Children
- 11.4.2 Characteristics of the Gifted
- 11.4.3 Education of the Gifted

11.5 Mentally Retarded Children – Meaning

- 11.5.1 Classification of the Mentally Retarded
- 11.5.2 Education of the Mentally Retarded

11.6 Backward Children– Meaning

- 11.6.1 Characteristics of the Children
- 11.6.2 Education of the Backward Children

11.7 Let Us Sum Up

11.8 Further Reading

11.9 Answers to Check Your Progress

11.10 Possible Questions

11.1 LEARNING OBJECTIVES

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

- discuss the meaning of 'exceptional children';
- identify the objectives and principles of special education for exceptional children;
- design educational programmes for the gifted children;
- identify the different steps for educating the mentally retarded children; and
- describe the methods of educating the backward children.

11.2 INTRODUCTION

Educating exceptional children is quite a stimulating and interesting field of education. We are familiar with the process of educating normal children and its related aspects. Exceptional children are a special category of children who deviate from normal children in different ways. They need typical teaching approaches to suit their exceptionality as a learner. Exceptional children require special education and related services to realize their full human potential. In India, it is a new field of education, which was totally neglected before Independence. It attracted the attention of educationists and parents after 1947. In 1964, the Kothari Commission was the first education commission to bring up the issue of children with special needs, and it gave strong recommendations for including such children into ordinary schools. Recently, stress has been laid on special education programmes and the development for exceptional children as a part of the general education. The World Health Organisation (1999) has estimated that between 7 and 10 percent of the world's population has some type of disability, and that 80 percent of these live in the developing countries, out of which one third are in India. This unit will introduce you to this special category of children, which includes meaning of exceptional children, objectives and principles of special education, educational programmes for the gifted, mentally retarded, and backward children.

11.3 MEANING AND DEFINITION OF EXCEPTIONAL CHILDREN

Let us first discuss the meaning of exceptional children. As mentioned above, exceptional children are a special category of children who deviate from normal children in different ways. However, it is not very easy to define the term "exceptional children" because each child is unique and exceptional in itself and is different from one another. They differ physically, mentally, socially and emotionally. Generally, such differences are of little importance when a child grows and develops according to certain yardsticks of medical and psychological experts. They are classified as

'normal'. However, when there is some deviation in degree, with regard to physical, intellectual, social, and emotional aspects, these children are classified as "exceptional children". The Psychologists have attempted to define the term exceptional child, but no single definition has been agreed upon by them. Kirk has given a comprehensive definition of exceptional child, which is as follows:

"An exceptional child is he who deviates from the normal or average child in mental, physical and social characteristics to such an extent that he requires a modification of school practices or special educational services or supplementary instruction in order to develop to his maximum capacity."

According to W. M. Cruchshank, "An exceptional child is he who deviates physically, intellectually, emotionally and socially so markedly from normal growth and development that he cannot be benefited from a regular classroom programme and needs special treatment in schools."

Crow and Crow state that, "the term typical or exceptional is applied to a trait or to a person possessing the trait if the extent of deviation from normal possession of that trait is so great that because of it the individual warrants and receives special attention from the behavior responses and activities are thereby affected."

The Committee for the National Society for the Study of Education (Kar. C. 1992, P 1) has described exceptional children as "those who deviate from what is supposed to be average in physical, mental, emotional, or social characteristics to such an extent that they require educational services in order to develop their maximum capacity."

An analysis of the above definitions reveals the following points:

- Exceptional children represent the children who deviate from the normal growth in different dimensions of development.
- These children are far enough below or far enough above the average range.
- They need specialized attention, which is not provided in regular classrooms.
- The difference lies in learning or behaviour of the child. The word "exceptional" is used to obtain better understanding about the child.

11.3.1 Objectives of Special Education for Exceptional Children

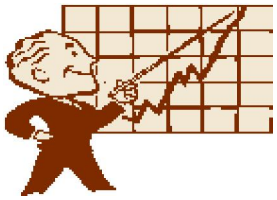
Now you know that exceptional children are called so because they deviate from the normal ones with regard to physical, intellectual, and emotional capabilities. Hence, their needs are different from the normal children. Some may have very high IQ, while others may have very low intelligence or some others may be emotionally disturbed. Therefore, their development depends upon the educational programmes designed for them. The UNO Declaration of the Rights of the Child (1959) states, "The child who is physically, mentally or emotionally handicapped shall be given special treatment, education and care required by his particular condition." The objectives of special education for exceptional children are:

- To identify the needs of the exceptional children.
- To prepare effective curricular matters that strategically determine effective living for a particular type of exceptional children.
- To develop proper teaching methodology and techniques to make teaching effective for exceptional children.
- To provide proper equipments necessary for teaching learning process.
- To develop motivational patterns in the exceptional children which produces achievement in the school.
- To encourage such children to participate in the activities of the schools.
- To educate them in such a manner that they gain self-confidence and become self-reliant.
- To conduct continuous re assessment of exceptional children to ensure progress.
- To promote research activities, training programmes and coordination between centre, state and local agencies to carry out different programmes successfully for exceptional children.

11.3.2 Principles of Education for Exceptional Children

There are certain principles of the education for exceptional children. These are given below:

- The basic guiding principle of education for exceptional children is equality, not identity. Education should reach all children. Everybody should get equal opportunity to develop his or her personality irrespective of his/her exceptionality.
- There exists wide range of individual differences among the children in each domain of exceptionality. Early screening, identification and placement in special educational programmes are essential because exceptional children make optimal progress in educational institutions.
- Team of trained personnel like psychologists, educational specialists, psychiatrists and medical personnel are necessary for proper placement.
- A special curriculum should be prepared to match the need of exceptional children. Education for exceptional children should form an integral part of a total educational programme. To ensure progress there should be continuous reassessment of exceptional children. Reevaluation of institutional programmes is also necessary.
- The school must take the responsibility of placement assistance for each student. For promotion of research activities, selection of teachers, organizing training programmes etc. the central; state and local agencies should take joint responsibility.



CHECK YOUR PROGRESS

Q.1: What do you mean by exceptional children?

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Q.2: Explain the objectives of special education.

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Q.3: What are the principles of education for exceptional children?

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11.4 GIFTED CHILDREN– MEANING

The term 'gifted' is used to refer to children who are intellectually, creatively, academically or otherwise superior to others, and shows consistently remarkable performance in any worthwhile line of endeavour. These children are also referred to as genius, because their strengths are far beyond than their peers who perceived as smart, bright, and artistic. They demonstrate consistently high performance in areas requiring considerable mental ability. These children are considered exceptional because of the contributions they make, and the performances they demonstrate.

The definition of giftedness has been given from different angles. Some psychologists emphasise the importance of superior endowment, while some others emphasise the exceptional performance of the individual in different walks of life. We can broadly classify all these definitions into three classes on the basis of IQ, social potentiality, and statistical terms. (Chauhan, 2006, P 484). Let us briefly examine these three types of definitions.

- **Intelligence Quotient (IQ):** Generally, the term gifted is defined in terms of IQ. Different psychologists have set different range of IQ for gifted children. In 1925, L. M. Terman after conducting his famous longitudinal study on the gifted children set IQ 140 as the lower limit

of giftedness. Other authorities in psychology set the lower limit of IQ from 110 to 140 and upwards.

- **Social Potentiality:** The second type of definitions of giftedness is in relation to social potentiality of the child. According to Witty, "gifted children are those whose performance is consistently remarkable in music, art, social leadership, and other forms of expression." Tyler states that the gifted child is he who is exceptional in the amount of his production, rate and quality of his production.
- **Statistical:** The third type of definitions is related to the concept of percentage. According to some educators, the gifted children are those who fall in the top 2 per cent to 4 per cent of intelligence. Magnifice categorised gifted children into two classes: (a) A child whose ability as indicated by an intelligence test is within the range of the upper 2 per cent to 3 per cent of the population, (b) A child having outstanding ability in a specific area of knowledge as art and science.

Now we can say that gifted children are those children whose cognitive abilities place them in the upper level of population distribution. They constitute only 3 to 4 per cent of the population. The intellectually gifted has an IQ of 140 and above. They have superior cognitive ability, creativeness in thinking and production, and superior talent in special areas. According to Guildford, "the gifted are those students whose potential intellectual powers are at such a high ideational level in both productive and evaluative thinking that it can reasonably assumed that they could be the future problem solvers, innovators, and evaluators of the culture if adequate educational experiences are provided."

11.4.1 Identification of the Gifted

Identification of the gifted children is a collective effort of parents, teachers, psychologists, and social workers. Identification usually involves a combination of procedures such as:

- Group test of intelligence: As a preliminary screening device, these tests are very useful. After screening the gifted children on

the basis of group test, individual intelligence test may be administered.

- Achievement tests: A standardized achievement test may be used to identify gifted children.
- Creativity measurements: Creativity tests are aimed at assessing the qualities and abilities that constitute creativity. These tests evaluate mental abilities in ways that are different from conventional intelligence tests. These tests may also be used to identify the gifted children.
- School marks: School marks and cumulative records of pupils' achievement may give some indication of giftedness.
- Teacher nomination: On the basis of the observation both inside and outside the classroom, the teacher may pick up the gifted children.

11.4.2 Characteristics of Gifted Children

There is no doubt about the fact that the gifted children show their talent by their remarkable performance in different fields. Generally, such children are identified by their teachers who are able to do this by observing their performances. The characteristics of gifted children are:

- Cognitive: The children who are gifted can quickly understand abstract symbols and manipulate them, which is a significant indicator of intellectual giftedness. These children possess excellent memory and can learn concepts easily when compared to other children. They demonstrate fluency, flexibility, originality and foresight, which are components of divergent thinking. They also exhibit high level of reasoning ability and unusual retentive capacity.
- Academic: High academic aptitude is another characteristic of gifted children. They are often recognized for superior achievement in different school subjects such as mathematics, language, arts, science, social studies, or other academic

contents. Learning even complex content becomes easier to these children and exhibit high problem solving ability.

- Physical: Different studies on the gifted children reveal that they are physically slightly better than the children of average intelligence. Terman obtained the following details of the gifted children (Kar, C. 2006, p. 28):
  - Gifted children have greater weight at birth.
  - They walk and talk earlier.
  - They have early pubescence.
  - They are precocious.
  - They have better than average nutrition.
- The gifted children have more height, weight, strength of grip, shoulders, superior motoring ability, less defective hearing, mouth breathing, less stuttering etc.
- Personality: Research works confirmed that there is positive and intimate relationship between giftedness and personality. Usually, they have a strong desire to explore and create. They are ambitious and hardworking. Some psychologists have found that gifted children are impulsive and self confident and are interested in aesthetic expression and reflective thinking. Normally they are sensitive and have a high degree of motivation and enthusiastic. However, they are very resourceful and interested in abstract subjects.
- Sociability: Gifted children are socially popular and enjoy relatively high social status. They are less inclined to boast or overstate their knowledge. They were found to be more trustworthy and sincere. Their character preferences and social attitude are more wholesome.
- However, it should be remembered that all gifted children are not much better than the average child in their physiological characteristics, emotional stability, or social adjustments. In fact, the gifted children differ from each other very much in these respects. As a rule, all that can be said is that good qualities

generate better qualities, although this cannot be accepted as a universal rule. For this reason, it is desirable that each gifted child should be studied individually.

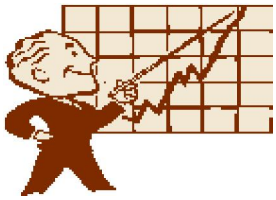
11.4.3 Education of the Gifted Children

Educating the gifted children is not an easy task because it raises many important questions such as, what should be the nature of curriculum for the gifted children. What method will be more effective? What kind of teachers they need? Whether gifted children should be taught in a regular class or a special class? etc. However, authorities agree that the gifted children when allowed to attend regular classes face many problems of their own. An average class and its programmes are planned for children of average ability. Therefore, they need special help. Educational provisions for gifted children can be put under the following categories i.e. Acceleration, Segregation and Enrichment

- Acceleration: The term 'acceleration' refers to various provisions in a school that help the gifted children to move at a faster rate according to their ability and complete their formal education earlier than convention dictates. Various forms of acceleration are: early entrance in the school, which will accelerate their efficiency in schoolwork and subjects, quick promotion, i.e., students are promoted to an advanced grade, at the end of half year, which help them to make rapid progress and provides a challenge to their genius. Again, organising non-graded classes provide the facilities to cover various areas of work and extra courses or additional courses that create opportunities to go through varieties of experiences etc.
- Segregation: Segregation means creating separate facilities of teachers and equipments. Arrangement for separate special classes can be made by segregation in the general schools. The arrangement of a more extensive curriculum, extra-curricular activities, laboratory work etc. is made for gifted children. After

identification, coaching classes may be arranged to appear in various scholarship examinations and competitions. Various hobby clubs like science club, language club, arts club etc. may be introduced. Besides these, special schools with special curriculum, expert teachers, and extensive study facilities may be created.

- Enrichment: The major purpose of enriching a school programme for the gifted is to stimulate and foster optimum development. The enrichment of the curriculum must be both qualitative and quantitative. Qualitative enrichment of the curriculum means that gifted children should have greater opportunity to study more deeply into the subtle and abstract aspects of the topic. Quantitative enrichment means the breath of work, an addition of units of work or topic, participation in activity, projects, production of school magazine, community service etc.



CHECK YOUR PROGRESS

Q.4: Mention the methods of identifying the gifted children.

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Q.5: What are the cognitive characteristics of gifted children?

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Q.6: What is segregation?

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11.5 MENTALLY RETARDED CHILDREN– MEANING

Different persons perceive mental retardation differently, and many terms are used to define it. In 1955, the British psychologist Cyril Burt used the term "Subnormal mind". The American Psychiatric Association (APA) uses the term "mental deficiency". The World Health Organisation (WHO) has preferred to use the term "retardation". Professionals working in this area use terms like "exceptional individuals", "typical individuals", "feeblemindedness" etc. The contemporary psychiatrists and psychologists used the term "mentally retarded" or "mental deficiency".

A mentally retarded child is slow, or lacking in the development of mental functioning when compared to those of his age level. For example, a 10-year-old mentally retarded child may exhibit behaviour like that of a three or 4-year-old child depending on the level of mental retardation. It is because of this, such a child is perceived as different from others. It is a condition of arrested or incomplete development of the mind for which the individual is not capable of adapting himself to the normal environment and needs supervision, control, or external support. The WHO (1954) referred to it as "incomplete or insufficient general development of mental capacities."

The American Psychiatric Association (1968) has defined mental retardation as "subnormal general intellectual functioning, which originates during the developmental period and is associated with impairment of either learning and social adjustment or maturation or both."

The American Association of Mental Deficiency (AAMD), which is now known as American Association of Mental Retardation, after few revisions offer the following definition:

"Mental retardation refers to significantly sub average general intellectual functioning resulting in or associated with concurrent impairment in adaptive behavior, manifested during the developmental period."

An analysis of these definitions reveals three components to call a person mentally retarded–

- Significantly sub average general intellectual functioning.

- Impairment in adaptive behaviour, such as learning, social adjustment etc.
- Manifested during developmental period.

Average general intellectual functioning is considered to be an Intelligent Quotient (IQ) between 90 and 110 on a standardized intelligence test. In India, the two commonly used standardized tests to measure the IQ are the Indian adaptation of Stanford Binet and Wechsler Intelligence Scale for Children. As per the definition, two standard deviations below the average is considered significantly sub average. The second component i.e., adaptive behaviour is the effectiveness with which a person meets the standards of personal independence and social responsibility expected of his or her age. These get reflected in the development of sensory motor skills, communication skills, self-help skills, socialization of early childhood, application of reasoning and judgment, social skills etc. Any deficiency in these aspects is considered as a deficit in adaptive behaviour. The third component, i.e., manifested during the developmental period means not developing according to the stage of development. For example, if a 3 year child cannot walk or a 10-year child does not have toilet control or an 18 year old cannot identify a ten-rupee note, is considered impairment of adaptive behaviour. Thus, a person to be diagnosed as mentally retarded should essentially have his or her intellectual functioning significantly below average, which result in impairment of adaptive behavior and have acquired the condition before the age of 18 years.

11.5.1 Classification of Mentally Retarded Children

As stated above, with the help of intelligence test, we can understand the degree of mental retardation. In the first decade of the twentieth century, the first attempt to classify mental retardation in terms of intelligence tests was made. Alfred Binet (1905) developed some tests to measure intelligence in terms of reasoning and problem solving rather than motor skills. He also devised the concept of "Mental Age" (MA) and "Chronological Age" (CA) on the basis of which he can differentiate between bright children and dull ones. Binet tests

underwent several revisions. The educationists and psychologists are using these to classify mental retardation.

- Idiot IQ– below 24
- Imbecile IQ– 25 to 49
- Moron IQ– 50 to 69
- Borderline IQ– 70 to 79

However, attempts to bring out the levels of mental retardation on the basis of the degree of mental development expressed as equivalent to chronological age in terms of Intelligent Quotient (IQ) continued for a long period. Later on, it was felt that IQ alone cannot provide a measure of an individual's adaptive capacity. Therefore, the person's level of adaptive behaviour in terms of the degree to which he or she meets the standard of personal independence and social responsibility according to age and cultural group were also taken into account. Keeping all these factors in view, a new attempt was made to develop a different type of classification with new terminologies. These are (i) Mild mental retardation (IQ 52 to 68) (ii) Moderate mental retardation (IQ 36 to 51) (iii) Severe mental retardation (IQ 35 to 20) (iv) Profound mental retardation (IQ under 20).

It would be worthwhile to mention here that the classification label should be used only for administrative purposes such as availing social benefits like travel concessions, maintenance allowance, job reservation, and so on. For an educator, the focus should be on the present status or current level of functioning of the child. This will help the educator to develop programmes for training the child towards social competence and to help him remain as independent as possible in the society.

11.5.2 Education of Mentally Retarded Children

Mentally retarded children, whose IQ below 70, no improvement is possible through education in the ordinary schools. They need to be sent to the specialized schools and institutions. Special method of teaching, individualized instruction and learning

by doing should be adopted for teaching such children. The type of education that should be provided to these children according to their classification is discussed below.

- **Education of Mildly Mentally Retarded Children:** About 90% of the mentally retarded children are found to belong to this category. This group of children is considered 'educable'. Intellectually, they are equal to 8 to 11 year old child. With parental assistance and special training, they can be taught to be self-supporting. Special education classes at the primary level can provide oral language and speech development, sensory development, self-awareness, social adjustment, self-care, safety, manipulation of materials, work habits etc. Academic tasks are not emphasized except for beginning instruction in counting and recognition of letters or words. By the elementary level (8 to 13 years) mildly mentally retarded can learn reading, writing, spelling and arithmetic. Special education for mildly mentally retarded children should focus on developing basic academic skills, social competence, personal adjustment, and ability to do practical work.
- **Education of Moderately Mentally Retarded Children:** About 6% of the mentally retarded children belong to this category. They are known as trainable retardates. Intellectually these people are equal to 5 to 8 old year child. Their rate of learning is very slow, and they physically suffer from motor in-coordination. Brain damage and neurological disorders are also found among moderate retardates. With parental help and adequate training and individualized instruction, each child should be allowed to proceed at his or her own pace of learning according to their unique growth pattern. Emphasis should be generally on developing self-help skills, social adjustment through group activities and some vocational experiences and practice in home living.
- **Education of Severely Mentally Retarded:** Severely retarded people represent more than 3% of the retarded individual. They

suffer from severe mental retardation in motor and speech development. Sensory defects are also common and face difficulty in learning simple tasks. School activities include practice in listening, following directions, communicating with others, recognizing common signs and labels, counting and telling time. Besides these, lessons in self help activities like dressing, grooming, eating, toileting, and safety should be given.

- **Education of Profoundly Mentally Retarded Children:** This group represents 1% of the mentally retarded people. They are severely deficient in adaptive behavior and unable to do simple tasks. The question of education or training does not arise. They are unable to look after themselves and cannot attend to their basic physical needs. These people require constant supervision throughout their life.

11.6 BACKWARD CHILDREN– MEANING

In the preceding section of the unit, we have discussed mentally retarded children. You must have understood that mentally retarded means intellectually backward children. However, there is another group of children who are educationally backward. They lag behind the normal or average children in their educational capabilities. These pupils have IQ between 76 to 89, and they constitute 10% to 15% of the total school population. Their ability to deal with language, number and concepts are very limited and their reasoning in practical situations is inferior to that of average students. Research work reveals that the attention span of these learners is relatively short. In school, such children remain in the same class for several years, and fail to progress upward. The term ‘backward’ or ‘slow learner’ is used for these children. The teacher can identify them by their facial features, inattention, and failure to respond to simple questions in the class.

Burton Hall defined “backwardness in general, is applied to case where their educational attainment falls below the level of their natural abilities.”

Cyril Burt has defined a backward child "as one who in mid- school career is unable to do the work of the class below that which is normal for his age."

Kirk took "rate of learning" as the basis for identifying slow learners. The rate of learning by a backward child is slow, and it finds difficulty to keep pace with the normal child in his schoolwork. Previously, the psychologists held that slow learning is directly related to heredity. However, recent studies in this regard has revealed that heredity alone is not responsible, as the environment also contributes significantly to the scholastic achievement of the child.

11.6.1 Characteristics of Backward Children

- The meaning and nature of backward children will be clearer if we discuss the characteristics of backward children, which are as the following:
- The backward children cannot learn speedily like the normal children. They have limited cognitive capacity.
- The ability of critical thinking and logical analysis is lacking in the backward children.
- One of the pertinent characteristics of the backward children is poor memory. It occurs due to the lack of concentration.
- Inability to express ideas through language is another significant characteristic. A backward learner also lacks imagination and foresight.
- In the backward children, it is usually found that there is lack of physical and mental coordination.
- They also lack motivation to learn and become worried at trivial matters.
- The backward children may sometimes become aggressive as they suffer from feelings of insecurity and inferiority.

Education for Backward Children: Before any education programme is designed, the backwardness of a child must be ascertained. There are different types of psychological tests such

as intelligence tests, achievement tests, personality tests etc. to examine and observe the levels of backwardness. After determining the level, the education programme should be designed accordingly. In our regular classroom, they are unable to cope satisfactorily the usual educational standards. However, with proper guidance and care they are capable of being educated. In adulthood, they become self supporting, independent and socially adjusted. The following are some of the means by which the backward children in our schools can be helped:

Individual Attention: Each individual backward child has his or her own academic problems. Therefore, the teacher should pay individual attention to these children. The curriculum should be as flexible as possible to suit the requirements and the needs of the individual student. The teacher should allow the student to proceed at his or her own rate of learning.

Special Methods of Teaching: Backward children require short and simple methods of instruction based on concrete experiences. Verbal instructions should be limited. The use of pictures, models, charts, films and other audio-visual aids will be profitable. Application of project method is also helpful in instruction.

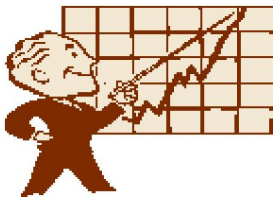
Application of Learning Theory: The teacher should follow the recognized principles of learning. The backward child must be taught in simple steps so that he can master at his own pace. The child must receive immediate reinforcement for any success. The material should be made meaningful to him to insure retention. The child must be given the opportunity to practice his knowledge and skills through distributed repetition and a variety of appropriate tasks.

Provision for Remedial Teaching:

- Remedial teaching is helpful for the backward learners. However, the experts must determine deficiencies. The following points should be taken into consideration (Kar, C. 2006 P.75):
- Gradation of teaching materials may be carefully done taking the capacity and requirements of children into consideration.

- Short frequent lessons should be introduced instead of long lessons every week.
- A friendly approach in remedial teaching is highly conducive.
- To generate interest, social skills and confidence in slow learners, priority should be given to art music and drama.
- Practice, drill and review should be given importance.

Framing Special Curriculum: There should be simpler curriculum for backward children with less abstract concepts but with more facts and information. Again, with less scholastic material and more non-scholastic components, the curriculum should be so fashioned that when the backward child completes his course, he should be fitted to adopt some particular profession.



CHECK YOUR PROGRESS

Q.7: What is mental retardation? Mention the type of mental retardation.

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Q.8: Whom do you call a backward child? What are the characteristics of a backward child?

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11.7 LET US SUM UP

- Exceptional children are a special category of children who deviate from normal children in different ways. They need typical teaching approaches to suit their exceptionality as a learner. These children are far enough below or far enough above the average range. They need special attention, which is not provided in the regular classroom. They need special education.
- The objectives of special education are to identify the needs of exceptional children, preparation of effective curricular matters, developing special methodology for teaching and to encourage such children to participate in the activities of the school.
- Gifted children are those who are intellectually superior and show consistently remarkable performance. The IQ range of the gifted is 110 to 140 upwards. They constitute 3 to 4 per cent of the population. Gifted children possess high cognitive abilities. They have excellent memory and can learn difficult concepts easily. Gifted children are often recognized for super academic achievement. They have a strong desire to explore and create.
- The education of the gifted can be put under the following categories: Acceleration means providing opportunity to move faster than others do. Segregation means arranging special classes, extra-curricular activities, laboratory facilities etc. Enrichment means to stimulate and foster optimum development by creating opportunities for study deeply, improvement of length and breadth of work etc.
- Mentally retarded child means the child is slow, lacking in development of mental functioning when compared to those of his age level. It is a condition of arrested mental development for which the child is not capable of adapting himself to the normal environment and need external supervision, control and support. They are significantly sub-average in general mental functioning, impairment of adaptive behavior manifested during developmental period.

- Mildly mentally retarded and moderately mentally retarded children are 'educable' to some extent but it is very difficult to teach severely mentally retarded. Profoundly mental retarded are severely deficient in adaptive behaviour, unable to look after themselves and require constant supervision throughout their life.
- There is another group of exceptional children whose IQ range is between 76 to 89. They constitute 10% to 15% of the school population. However, their ability to deal with language, number and concepts are very limited and are inferior to average students. The rate of learning of these students is very slow. The term 'backward' or 'slow learner' is used to identify them.
- To design any programme of education for these children, firstly the level of backwardness should be determined. Accordingly, education should be provided. The steps for educating these children include individual attention, adopting special method of teaching, application of the principles of the learning theories, remedial teaching, and adopting special curriculum with vocational subjects etc.



11.8 FURTHER READING

1) Bhatia, B. D. (1958). *Remedial Teaching in Reading Retardation*. Delhi: Educational Form, III, C.I.E.
2) Curtis, K., & Shaver, J. P. (1980). Slow Learners and the Study of Contemporary Problems. *Social Education*. 44, 4, pp. 302-38, April.
3) Kar, C. (2006). *Exceptional Children: Their Psychology and Education*. New Delhi: Sterling Publishers Pvt. Ltd.



11.9 ANSWERS TO CHECK YOUR PROGRESS

Ans. to Q. No. 1: Exceptional children are those who deviate from normal children in different ways. Some may have very high IQ while others may have low intelligence and some others may be emotionally

disturbed. They need typical teaching approaches to suit their exceptionality as a learner.

Ans. to Q. No. 2: The objectives of special education are to identify the needs of exceptional children, to motivate such children to learn, to encourage them to participate in the activities of the school, to educate them to be self reliant and self-confident.

Ans. to Q. No. 3: The basic guiding principles of education for exceptional children is equality not identity, recognition of individual differences in each domain of exceptionality, developing special curriculum, continuous assessment to ensure progress etc.

Ans. to Q. No. 4: Group and individual tests of intelligence, achievement tests, creativity tests, school marks and teachers' opinion.

Ans. to Q. No. 5: The cognitive characteristics of gifted children are outstanding memory, ability for abstract thinking, high level of language development, high level of verbal ability, flexible thought process, ability generate original ideas and solutions etc.

Ans. to Q. No. 6: Segregation means creating separate facilities for gifted children, such as, arranging special classes, coaching, special curriculum, expert teachers and extensive study facilities etc.

Ans. to Q. No. 7: Mental retardation means intellectual backwardness. It refers to significantly sub average general intellectual functioning, impairment of adaptive behavior, manifested during developmental period. The types are– mildly mentally retarded, moderately mentally retarded, severely mentally retarded and profoundly mentally retarded.

Ans. to Q. No. 8: Backward children are those who lag behind the normal children in their educational capacities. Their educational attainment falls below the average children. The characteristics of these children are– they cannot learn speedily as normal children, the ability of critical thinking and logical analysis is lacking in backward children, lack of physical and mental coordination, lack of motivation to learn and become.



11.10 POSSIBLE QUESTIONS

A) Short Questions (Answer each question in about 150 words)

Q.1: What do exceptional children mean? What are their characteristics?

Q.2: What are the needs of exceptional children?

Q.3: What are the objectives of education for exceptional children?

Q.4: What type of education is needed for the slow learners and backward children?

Q.5: Mention the methods of identifying the gifted children.

Q.6: What types of education is needed for the mentally retarded children?

Q.7: Mention the methods of identifying the mentally retarded children.

B) Long Questions (Answer each question in about 300-500 words)

Q.1: How can you identify the gifted children? How should be the suitable education programme for gifted children?

Q.2: What are the characteristics of backward children? What are the objectives of education for backward children?

Q.3: What are the characteristics of slow learners? What types of education should be designed for these learners?

Q.4: What are the characteristics of mentally retarded children? What types of education should be designed for these learners? Discuss.

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UNIT 12: MENTAL HEALTH AND HYGIENE

UNIT STRUCTURE

12.1 Learning Objectives

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- 12.3.1 Definitions of Mental Health
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12.4 Concept of Mental Hygiene

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- 12.6.1 Role of Home
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12.7 Let Us Sum Up

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12.10 Possible Questions

12.1 LEARNING OBJECTIVES

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

- explain the concept, definition and nature of mental health;
- describe the nature of mentally healthy individuals and various factors of mental health;
- explain the concept and purposes of mental hygiene;
- discuss the relationship of mental hygiene with different aspects of education;

- suggest ways and means for maintaining health and hygiene at schools; and
- identify the role of parents, school and society for promoting health and hygiene.

12.2 INTRODUCTION

This unit introduces you to the concept of Mental Health and Hygiene as well as the various factors that influence the mental health of individuals. When we talk about mental health, it generally means an important and essential part of personality. Mental health and physical health are the two indispensable parts of personality, which directly influence the overall development of an individual. The quality living of an individual manifests when his physical health and mental health work together in the same direction in a balanced way. When a person's thinking, feeling and doing work together for a common goal, then we can call him a person with a balanced personality. A physically healthy person is one who has no abnormalities in physical health and his body functions harmoniously in the absence of any physical ailments or disorders. Likewise, a mentally healthy person is one who is free from mental illness, tensions, and maladjustments. Mental health is the ability to face the challenges or the realities of life, to feel happy and hopeful, and to remain optimistic in any situation of daily living.

Mental health has two important aspects, the first one is individual and the other one is social. The individual aspect of Mental Health indicates that the individual is well adjusted internally and is free from internal tensions, stress and conflicts. He/she is self-confident in his/her actions and decisions. Social aspects indicate that the individual is not only well adjusted internally, but is also able to adjust to any social situation and maintain good social relationships with others. Thus, mental health indicates a harmonious relationship of an individual's physical, mental, social, and moral values. A person with good mental health radiates a happy, hopeful and a balanced personality. In this unit, we shall try to discuss mental health and hygiene in some detail.

12.3 CONCEPT OF MENTAL HEALTH

It is very difficult to define the concept of mental health in simple terms. Psychologists show disagreement in coining a single definition of mental health. Due to the changes in the social, economic, scientific arena following the Industrial Revolution, various new situations and problems have emerged in the life of an individual. All these situations appear as challenges to the individuals. The ability to face challenges courageously without any sign of stress, strain, and conflict but with a happy mindset can be rightfully termed a good mental health. Thus, mental health is the ability to make a perfect balance in an individual's thinking, feeling, and doing.

When we talk about health, it not only means physical health but also encompasses mental health. The ability to control emotions with a healthy mind is the perfect example of a sound health. We can also infer that human beings are psychosomatic units with a balanced physical and mental entity. Both physical and mental health influence the total behaviour of an individual. The personality of an individual is the byproduct of both physical and mental health.

Mental health also indicates satisfactory adjustment of an individual with his environment, his needs and desires as well as his concern for other people's needs and desires. It also indicates a cordial relationship of an individual with the society at large. Thus, mental health is the ability of an individual to undertake any work with proper and right decisions besides assuming responsibilities of his own as well as that of others, and living life with a happy and positive mental attitude. To understand the concept more easily, we have to go through the various definitions put forward by the famous psychologists of different era. In the following sub section, we shall read some of the definitions of mental health.

12.3.1 Definitions of Mental Health

Different thinkers, psychologists, and philosophers have provided various definitions of mental health. The following are some of them.

- According to Oxford dictionary meaning, “Mental Health is the ability to cope with one’s environment and secure some degree of satisfaction from working and living accompanied by the promise of hope for the future.”
- According to World Health Organization, “Mental Health is a state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity.”
- According to the White House Conference Preliminary Report (1930), “Mental Health may be defined as the adjustment of individuals to themselves and the world at large with a maximum of effectiveness, satisfaction, cheerfulness and socially considerate behavior and the ability of facing and accepting the realities of life.”
- According to J. A. Hadfield, “Mental Health is the full and harmonious functioning of the whole personality.”
- According to Norma E Cutts and Nicholas Mosely, “Mental health is the various strains of the environment we meet in life and mental hygiene as the means we take to assure the adjustment.”
- According to H. W. Bernard, “Mental Health involves continuous adjusting rather than a static condition and is therefore a progressive goal. It is an ability to cope with the present and in all likelihood to adjust satisfactorily in the future.”
- According to Meninger, “Mental Health is the adjustment of human beings to the world and to each other, with a maximum of effectiveness and happiness.”

Thus from the above definitions, we observe that mental health is the ability to adjust satisfactorily with the changing situations of life. It is the ability through which the individual makes a perfect balance between his bodily and mental activities to achieve a common goal. It is a state of harmonious functioning of individual personality. Mental health indicates some qualities of an individual like happiness, hopefulness, ambition, ability to make independent decisions, self-confidence, adaptability, taking responsibility and so

on. The mentally healthy individual can develop a balanced personality through which he can control his own emotions like anger, jealousy, tensions, fear etc. and live a fully harmonious life with happiness, satisfaction and success, besides easily adjusting with his/her personal and social life.

12.3.2 Nature of Mental Health

The nature of mental health can be discussed as the following:

- Mental Health is considered an important aspect of a person's total health status, which consists of a balance between physical and mental health.
- Mental Health refers to the capacity of an individual to interact with one another in a way that promotes the feeling of well being.
- Mental Health is an active, positive quality of an individual's daily living. The quality of life is manifested in the behaviour of an individual whose body and mind are working together in the same direction. His thoughts, feelings, and actions are harmoniously associated with achieving the common end.
- Mental Health also means the ability for balanced feelings, desires, ambitions and ideals in one's daily living. It also means the ability to face and accept the realities of life.
- Mental Health has two important aspects. It is both individual and social. The individual aspect defines that the individual is internally adjusted and able to control his emotions. He is self-confident, adaptable, and free from internal conflicts, tensions, and inconsistencies. He is not only internally adjusted but is also able to adjust with new situations, make relationships with the other member of the society, and is able to adapt himself with any kind of social circumstances.
- Mental Health also means being free from mental illness, stress, strains and tensions of life. It also refers to the state of tranquility, calmness and peace of mind.

- Mental health refers to such abilities which help the individuals to make decisions, such as– assuming responsibilities according to his/her capacity and having a state of mind of happiness; satisfaction and success in all his/her daily tasks; and living effectively with the other members of the society with socially desirable behaviour.

Thus, mental health is an important aspect of the personality, which is a very much essential quality for living a peaceful and successful life in the society. The society is changing in a rapid pace, and it is only through good mental health, an individual can easily adapt to the various dynamic circumstances and live a cherished life.

12.3.3 Characteristics of Mentally Healthy Individuals

By observing the nature of Mental Health, we can identify some of the characteristics of the mentally healthy individuals. These characteristics are as the following:

- Strong Personality: A mentally healthy individual has strong personality. He or she has a sound mind and body coordination, which reflects his or her behaviour.
- Adaptable and Resilient Mind: A mentally healthy person can adjust with any circumstances of life. He/she has a resilient mind through which he understands his own motives, needs, weaknesses, and strong points, and can easily adapt himself to his/her own merits and demerits.
- Well Regulated Emotions: A mentally healthy individual can perfectly control his emotions, feelings, fear, anger etc. He shows emotional maturity in his behaviour.
- Definite Philosophy of Life: A mentally healthy individual has his own ideals of life, as he/she tries to live a life according to his own philosophy of life.
- Ability to take decisions: A mentally healthy individual can take right decisions at the right time. He has the ability to make clear and constructive decisions whenever required.

- Variety of Interest and Creativity: A mentally healthy individual shows variety of interests in different fields and produce creative ideas, thoughts, and objects with the help of his creative thinking. He does not want to accept the regular and conventional thinking and ideas but shows some unique talents in his behaviour.
- Self Confidence: Mentally healthy individual is self confident in his actions. Whatever work he/she is assigned with, he/she does it with confidence.
- Good Interpersonal Relationship: A mentally healthy individual has good interpersonal relationship with the other members of the society. The person shows a sign of maturity in his or her behaviour.
- Insight into his/her own conduct: The mentally healthy individual has deep insight into his/her thinking, feeling, and actions. He knows his capacity or ability, and work accordingly.
- Positive and Optimistic: A mentally healthy individual shows a good sign of positivity in his behaviour. The person is more optimistic towards life, and he lives a satisfying, successful and happy life.

12.3.4 Components / Factors of Mental Health

Mental Health is influenced by a variety of factors. Due to various factors, different persons show variety of mental health. If some people are normal, others are aggressive, and some are fearful etc. To study the good mental health condition of an individual, we have to study some of the important factors on which a person's mental health depends. These are as follows:

- Hereditary Factors: Hereditary factors are the founding stones for personality development. The hereditary traits are quite prominent in each individual, and mental strength or illnesses can be rightfully traced from hereditary sources like intelligence, appearance, growth and certain physical and mental diseases. Though environment plays a prominent role in the growth and shaping of an individual, heredity shows a profound impact on

each individual's personality and outlook. In addition, heredity shows a direct influence on various mental illnesses running from generation to generation in a family. In some severe situations with a very stressful life, various mental illnesses with genetic background shows up in particular individuals and these issues should be tackled with a thorough research on the hereditary background of particular families. As such, to understand the mental health of a person, apart from the environmental factors, hereditary factors should also be taken into consideration.

- Physical Factors: Physical health and mental health are the two sides of the same coin. These are the two attributes of a personality. Research studies prove that good and robust physical health has got a direct influence on the mental health of a person. A good physical condition assists in more mental alertness, and the person becomes enthusiastic towards life. Good physical condition increases motivation to learn new things and adaptability to new situations. Likewise, poor physical condition affects mental health adversely by giving rise to inadaptability to new situations, personality difficulties apart from mood swings, depression and anxieties. To rightfully assess the mental health of an individual, we can clearly express that physical factors play a very crucial role in any individual.
- Social Factors: Apart from hereditary and physical factors, social factors also influence an individual from his birth till death. Society is the most important agency of socialization of a child. The child learns various behaviours, manners and values while living in the society. Society directly influences the personality or the total behaviour of the individual. It is the social environment, which shapes the knowledge, skills, attitudes, values etc. of an individual. The society also fulfils the various needs of a person in his different developing stages. It affects the physical and mental health of the child. It has been observed that the society, which provides conducive environment to the child's growth,

produces children with sound mental health. The society, which cannot fulfill the needs and desires of the pupils, show children with higher maladjustments and mental illnesses.

- Satisfaction of basic childhood needs: It has been observed from the above discussion that the needs and desires of children play an important role in the development of mental health of an individual. When the basic needs of children like love, affection, security etc. are given in an effective manner, their mental conditions seems to be normal and healthy. Likewise, when the basic needs are not satisfied during childhood, the personality becomes timid, fearful, aggressive, tense, anxious, and pitiful. Therefore, a great role have to be played by the parents, the school, and the society to fulfill the basic psycho-physical needs of the children so that they become well adjusted and balanced personality in the future.



LET US KNOW

- Mental Health has four components. They are hereditary factors, physical factors, social factors, and satisfaction of basic childhood needs.
- Some of the characteristics of a mentally healthy individual are strong personality, adaptability, and resiliency of the mind, positive mental attitude and an optimistic mind.
- The nature of mental health include aspects like balance between physical and mental health as well as the capacity of an individual to interact with one another in the way which promotes the feeling of well being etc.

12.4 CONCEPT OF MENTAL HYGIENE

Previously, mental illness was considered a curse, and no one was able to know its root causes. However, due to the developments of scientific knowledge and research, we have come to know the various forms of mental

illness, its symptoms, and its root causes. To lead a happy, satisfying and successful life, we have to maintain certain principles. These principles not only make us happy but also help to prevent the mental disorders or maladjustments. Mental hygiene deals with the principles of living, which promote the development of wholesome and a balanced personality.

The book titled 'A Mind That Found Itself' authored by Clifford Beers in 1908 was the trendsetter of the movement related to mental hygiene. Being under immense stress and tension, Beers tried to commit suicide, but he was subsequently rescued and his mental illness was treated. After recovery, he penned down this book and briefed all his experiences during his mental illness and during his treatment. This book revolutionized the concept of mental hygiene and generated awareness amongst the people towards preserving mental health. The year 1908 saw the establishment of the Society for Mental Hygiene, and eleven years later in the year 1919, the National Society for Mental Hygiene was formed which subsequently grew up into International Committee for Mental Hygiene.

Mental hygiene is the science, which is concerned with preserving good mental health and avoiding mental illness or disorders. Mental hygiene is concerned with the mental phenomena. It is a continuous process as it has a lengthy span from birth till death. Mental hygiene basically aims at providing a sound and good mental health and curing mental disorders. As such, there is an intimate relationship between mental health and mental hygiene. Mental hygiene is considered the means to achieve the end i.e. good or sound mental health. It mainly deals with preventing, curing mental illness, and preserving good mental health.

12.4.1 Definitions of Mental Hygiene

To understand the concept of mental hygiene, we have to go through the various definitions of mental hygiene given by the psychologists from time to time. Some of the definitions are outlined below:

- As per Dictionary of Education by Carter. W. Good, "Mental Hygiene is the establishment of environmental conditions,

emotional attitudes and habits of thinking that will resist an onset of personality maladjustments. It is the study of principles and practices in the promotion of mental health and prevention of mental disorders."

- According to American Psychiatric Association (1971), "Mental Hygiene consists of measures to reduce the incidence of mental illness through prevention and early treatment and to promote mental health."
- According to D. B. Klein, "Mental Hygiene is the study of the ways and means for keeping the mind healthy and developing."
- Encyclopedia of Modern Education states, "The main aim of mental hygiene is to check emotional disintegration and imbalance of the individuals. It also makes a man efficient in discharging his duties."
- According to Crow and Crow, "Mental Hygiene is a science that deals with human welfare. It pervades all fields of human relationship."
- According to Skinner, "Mental Hygiene has to do primarily with the development of more wholesome human relationship."
- According to Drever James, "Mental Hygiene means investigation of the laws of mental health and the taking of measures for its preservation."

Thus, from the above definitions, it has been observed that mental hygiene is the science, which is concerned with the preservation of a good mental health. The main function of mental hygiene is to know the root causes of mental disorders, to suggest precautions to avoid such disorders, and to suggest different measures to cure these disorders and live a healthy life. It deals with the development of a balanced personality of an individual.

12.4.2 Purposes of Mental Hygiene

Mental Hygiene is the science, which mainly aims at preventing mental disorders as well as curing mental illness or

maladjustments so that the mental health of an individual can be preserved. Though the main purposes of mental hygiene are three fold like—preventing, curing, and preserving, but the ultimate aim is to provide mental well-being, satisfaction and assistance to a person so that he/she can lead a peaceful and happy life. The main purposes of mental hygiene are highlighted below:

- To find out the various causes of mental disorders or maladjustments of individuals whether they are personal or social.
- To understand the deep-rooted needs, drives, motives, desires etc. of an individual, which are considered the regulator of variety of behaviours.
- To suggest the ways and means of how to control emotional disturbances.
- To suggest the ways for relieving frustrations and tensions and, to adopt some measures of adjustment mechanism.
- To provide ways for curing mental illness and disorders.
- To suggest means for the rehabilitation and readjustment of the mentally maladjusted persons.
- To provide some measures to maintain a balanced mental health.
- To provide some measures to develop healthy human relationships or to develop inter personal relationships.
- To develop some habits and attitudes to lead a healthy mental and physical life.
- To develop certain skills in an individual to adjust with various circumstances of personal and social life.

12.4.3 Mental Hygiene and Education

All progressive educators or psychologists realized that there is a close relationship between mental hygiene and education. Both mental hygiene and education aim to help the individuals to develop their personalities to the fullest and help them to adjust satisfactorily to various social situations. Mental Hygiene assists in developing a sound mental health which is the first criterion for any type of

education. If a person is not mentally healthy, he/she cannot concentrate on studies, and therefore, we can infer that sound mental health is essential for learning. Mental health aims to develop a perfect mental health and prevent maladjustments. As such, mental health and hygiene are intricately associated and are prime components of education, and without mental hygiene, the goals of education cannot be realized. Mental hygiene is related with various aspects of education, which are enumerated below:

- **Aims of Education:** The aims of education are all round development of human personality so that the person can effectively adjust with various circumstances of personal and social life. The aim of education is to help the child to develop fully his/her physical and mental growth. Similarly the aim of mental hygiene is to provide an opportunity to the individual to develop his/ her potentialities to the maximum and attain full growth of physical and mental health. So, we can rightly say that the basic aim of both mental hygiene and education are the same.
- **Curriculum:** Curriculum is the means through which educational aims are realized. Curriculum is not only the list of subjects taught in school or other educational institutions but it is the total experiences that the child acquires in the school. The curriculum should include those subjects which will broaden the horizon of knowledge of the students. It should develop his potentialities to the maximum and pave him or her to easily adjust with any type of situations. Curriculum should develop the total personality of the students. Mental hygiene also helps to know the potentialities of the individuals, his/ her strength or weaknesses as well as help him/her to develop physically and mentally as a matured human being. Therefore, the knowledge of mental hygiene like principles of keeping good physical and mental health, skill of interpersonal relationships, knowledge of emotional control, adjustment mechanism etc should be a part of the curriculum. The curriculum should be flexible and adjustable to the needs of

the pupils at every stage and should be dynamic with the changing social conditions of the society.

- **Method of Teaching:** Methods of teaching are the tools or devices through which the aims of both i.e. education and mental hygiene are realized. By application of efficient methods, some good habits and attitudes can be developed in children so that he/ she can develop mental and physical growth and attain maturity. Skillful method of teaching also helps in reducing tensions and conflicts among children and thereby helps in adjustment of children in different situations of life. By application of proper methods, the teacher can find out the root causes of various behavioural problems of students and should provide suggestion for eliminating them from their behaviour, which in turn helps in attaining a matured behaviour.
- **Discipline:** Discipline is something which cannot be imposed from outside but it should be inculcated from within, thereby making the person systematic and organized in behaviour and actions. Discipline is necessary to achieve the goals of life. Mental Hygiene assists in self discipline where the child knows to express fuller freedom of his feelings and inner expressions as well as control his/her unacceptable desires, feelings, thoughts etc. Mental Hygiene teaches to live a life of freedom and full expression of his/her personalities to a socially desirable end.
- **Role of Teacher:** Teacher is the person who acts as a friend, philosopher and guide to a child. Teacher plays an important part in the total process of education. Mental hygiene helps a teacher not only to develop a sound mental health of their own but also to assist in developing the total personality of the students. Teacher also facilitate in adequate adjustment of pupils to the problems of life. Mental hygiene aids a teacher to understand the various problems of students and guide them to overcome the problems and lead a balanced life. It is the responsibility of the teacher to emphasize the harmonious

development of children so that they can contribute to the progress of the nation as well as welfare of the society.

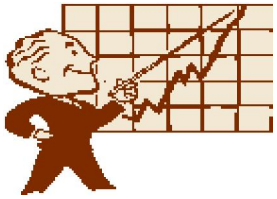
Thus, from the above discussion, it was observed that mental hygiene and education are related with each other in different aspects. Both have a direct impact on each other and assist in the overall development of the personality.

12.5 WAYS FOR MAINTAINING HEALTH AND HYGIENE IN SCHOOL

The school is the second broader society to which the child is introduced after home. It is the most important agency of socialization for the child. The child acquires variety of knowledge in the school to prepare for his/her future life. The child spends six to seven hours a day in school. The school not only provides knowledge of different subjects but also fulfils the various needs of children in different stages of their development. Thus, the school provides numerous experiences to children in order to develop them physically, mentally, socially and emotionally. The school takes various measures to maintain the proper health and hygiene of students. They are discussed below:

- Firstly, the school environment should be conducive and free from fear, tension, and conflicts. It should be democratic and free from caste and creed, religious and socio economic conditions. The school should provide enough freedom so that the students can easily express their feelings and discuss their problems with the teachers.
- The school administration should be conducive to the mental health of the students. The educational policies and practices should encourage happiness and welfare of the students. The administrator can create an emotional climate in the school where a democratic relationship should be established among the administrators, teachers, students, parents and the non-teaching staff. This will help to provide for the all round development of the students in school.

- The school should encourage those activities, which will develop the psychophysical aspects of the personalities of the students. These activities include– meditation, games, sports, debates, essay writing, creative writings, scout and NCC etc. The teacher with various social urges and interest of the students should properly motivate all learning activities.
- The school should encourage active methods of teaching like learning by doing, play way, Dalton plan, project methods etc. This will encourage self-learning, creativity, motivation etc. in the students.
- The school should encourage a variety of subjects in the curriculum according to the varied interest of the students in different developing stages. The students should select the subjects according to their own choice.
- The library of the school should be well equipped with a variety of books. Some books should be related with health and hygiene of the students. The books should be according to the needs and interest of the students in their developing stages.
- The school should be equipped with guidance and counseling centres. The trained counselors must be appointed in these centres to discuss the various problems of the students and they should properly guide them according to their potentialities.
- The efficient, trained, and experienced teachers should be appointed in the schools. They should not be dictators but should act as a friend, philosopher and guide. The teacher should take care of the proper physical and mental health of the students.
- The school should organize remedial and tutorial teaching classes for the students. Student's learning problems and other related problems should be solved in the school itself.
- The school should organize field trips or educational excursions regularly to promote the physical and mental health of the students.
- The school should also give importance to organizing medical camps and to monitor the overall physical and mental health of the students.



CHECK YOUR PROGRESS

Q.1: What are the purposes of mental hygiene?

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Q.2: Elaborate on the concept of mental hygiene.

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Q.3: How is mental hygiene related with education?

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Q.4: Mention some measures to be undertaken by the school to maintain health and hygiene amongst the students.

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Q.5: What are the components of mental health?

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Q.6: Write two definitions of Mental Health.

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Q.7: Who introduced the concept of mental hygiene?

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12.6 PROMOTING MENTAL HEALTH AND HYGIENE

Mental health and Hygiene are interrelated, and they render a direct impact on the personality of an individual. Since birth, the effect of environment on the individual is very much pronounced, and it shapes the overall growth and development, which have an effect on the mental attitudes of each individual. Three of the most important environmental factors i.e. home, school, and society play a crucial role in the promotion of mental health and hygiene of a person. Apart from the hereditary factors, these environmental factors inculcate certain behavioural and emotional attitudes in the individuals.

12.6.1 Role of Home

It has been already mentioned that the home is the first agency of socialization for the child as it moulds its total personality since birth. It plays a crucial role in the formative years of each and every individual. The experiences he or she gathers during childhood leave a lasting effect on his/her mind. In other words, we can rightly state

that these experiences sow the seeds of future development of personality in each individual. For a proper physical and mental growth, the love and affection of the parents and other members of the family for their child is very essential. The environment should be so positive that the child can feel secure and can exchange feelings with the parents quite freely. The parents should deal with their children with love and enthusiasm, and not criticize and compare them with other children. Apart from these, the parents should give the required freedom to the child and should desist from overprotecting them so that their personality grows up without any hindrance. The parents will have to play a more important role by being cautious about not quarreling in front of the children and being too much anxious about their future. They should fulfill the legitimate needs of the children besides giving proper guidance and building up their self-confidence. Thus, a positive relationship between the parents and the child, intra-parental relationship, personality attributes of both the parents and caring attitudes etc. leave an indelible mark on the mental, physical, and academic side of a child's development. A healthy domestic environment provides a sense of emotional security thereby facilitating motivation during various developmental changes of the child.

12.6.2 Role of School

Apart from the family, the educational institutions render the second most important effect on the mental health and hygiene of a child/adolescent. The school with a conducive atmosphere for learning free from fear and tension plays a very important role in inculcating a positive mental attitude amongst the students. The teachers should instill confidence in the mindset of the children, and there should be an inter-personal relationship between the two entities with no biasness. As the mentor, he should instill the rightful attitude in the children so that they can face the realities of life in the future. The team spirit between all the students is quite important, and the

teachers have a large role to play in the growth of these healthy mental attitudes amongst the students. Freedom of expression in the children and inculcating varieties of interest in them are the added responsibilities of the teacher. The school should also organize special classes on human relations, and counseling cells should be organized regularly for proper assessment of each student of the school. Regular medical checkups should be organized by the schools to monitor the physical and mental health of the child. The school should also organize some psychophysical activities like meditation, games, sports, scouts and guides, and other recreational activities, which will develop the all round growth and development of the child. Self-discipline in the students should be inculcated by the schools through which, the students can become responsible citizens in future.

12.6.3 Role of Society

The role of the society on mental health and hygiene is one of the most important topics in the present scenario. With rapid industrialization and urbanization, the family environment is rapidly being fractured. With the emergence of nuclear families, family relationships are showing a downward trend in recent times. Though schools and other educational institutions play a very prominent role in the overall growth and development of the mental health and hygiene of the children, the environment in schools is not so stable with lack of adequate human resources and proper infrastructure.

In this context, the society should play a pivotal role in catering to various needs of the individuals for the proper development of mental health and hygiene of each individual. Apart from catering to various needs, the society should give freedom of expression to each person, and assist the individual so that he/ she can find out the right role he/ she has to play for the betterment and upliftment of the society and the nation. The society should also recognize the various talents of the individuals and provide them opportunities to

bring out their latent talents. It should also recognize the individuals as a member of the society and should entrust some responsibilities to them for the uplift of the society.



12.7 LET US SUM UP

- The ability to face challenges courageously without any sign of stress, strain, and conflicts with a happy mindset can be rightfully termed as a Good Mental Health. It is the ability to make a perfect balance in terms of thinking, feeling and doing.
- Mental health and physical health are the two indispensable parts of personality, which directly influence the overall development of an individual. The quality living of an individual manifests when his physical health and mental health work together in the same direction with a balanced way.
- Mental Health has two important aspects, the first one is individual and the later one is social. The individual aspect of Mental Health indicates that the individual is well adjusted internally and is free from internal tensions, stress and conflicts. He/she is self confident in his/her actions and decisions. Social aspects indicate that the individual is not only well adjusted internally, but he/she is able to adjust to any social situations and make good social relationships with others.
- Mental health is the ability to adjust satisfactorily with the changing situations of life. It is the ability through which the individual makes a perfect balance between his bodily and mental activities to achieve a common goal. It is a state of harmonious functioning of individual personality.
- Mentally healthy individuals have characteristics like strong personality, adaptable and resilient mind, well regulated emotions, definite philosophy of life, ability to take decisions, variety of interest and creativity, self confidence, good interpersonal relationship, insight into their own conduct, positive and optimistic etc.

- To study the good mental health condition of an individual, some of the important factors have to be taken into consideration like Hereditary Factors, Physical Factors, Social Factors and Satisfaction of basic childhood needs.
- Mental hygiene deals with those principles of living, which promote the development of wholesome and a balanced personality. The book titled 'A mind that found itself' authored by Clifford Beers in 1908 was the trendsetter of the movement related to mental hygiene.
- Mental hygiene is the science which is concerned with preserving good mental health and avoiding mental illness or disorders. Mental hygiene basically aims at providing a sound and good mental health and curing mental disorders.
- All progressive educators or psychologists realized that there is a close relationship between mental hygiene and education. Both mental hygiene and education aim to help the individual/s to develop their personalities to the fullest and help the person to adjust satisfactorily in various social situations. Mental Hygiene assists in developing a sound mental health, and a sound mental health is the first criteria for any type of education.
- Mental health and hygiene are intricately associated and without mental hygiene, the goals of education cannot be realized. Mental hygiene is related with various aspects of education like Aims of Education, Curriculum, Method of Teaching, Discipline, Role of Teacher etc.
- The school provides numerous experiences to children in order to develop them physically, mentally, socially, and emotionally. The school takes various measures to maintain the proper health and hygiene of students.
- Three of the most important environmental factors i.e. home, school and society play a crucial role in the promotion of mental health and hygiene of a person. Apart from hereditary factors, these environmental factors inculcate certain behavioural and emotional attitudes on the individuals.



12.8 FURTHER READING

1) Chauhan, S. S. (1992). *Advanced Educational Psychology*. New Delhi: Vikas Publishing House.
2) Fernandes, M. M. (2008). *Advanced Educational Psychology: The Psychology of the Learner*. Mumbai: Himalaya Publishing House.
3) Kuppuswamy, B. (2010). *Advanced Educational Psychology*. New Delhi: Sterling Publishers Pvt. Ltd.
4) Mathur, Dr. S. S. (2000). *Educational Psychology*. Agra: Vinod Pustak Mandir.



12.9 ANSWERS TO CHECK YOUR PROGRESS

Ans. to Q. No. 1: The main purposes/aims of mental hygiene are,

- To find out the various causes of mental disorders or maladjustments of individuals whether it may be personal or social.
- To understand the deep rooted needs, drives, motives, desires etc of an individual which are considered as regulator of variety of behaviours.
- To suggest the ways and means of how to control emotional disturbances.
- To suggest the ways for relieving frustrations and tensions and adopt some measures of adjustment mechanism.
- To provide ways for curing mental illness and disorders.
- To suggest means for the rehabilitation and readjustment of mentally maladjusted persons.
- To provide some measures to maintain a balanced mental health.
- To provide some measures to develop healthy human relationships or to develop inter personal relationships.
- To develop some habits and attitudes to lead a healthy mental and physical life.

- To develop certain skills in an individual to adjust with various circumstances of personal and social life.

Ans. to Q. No. 2: Mental hygiene deals with the development of wholesome and a balanced personality. Mental hygiene is the science which is concerned with preserving good mental health and avoiding mental illness or disorders. It basically aims at providing a sound and good mental health and curing mental disorders. As such, there is an intimate relationship between mental health and mental hygiene. Mental hygiene is considered as means to achieve the end i.e. good or sound mental health. It mainly deals with preventing, curing and preserving good mental health.

Ans. to Q. No. 3: Mental hygiene and education aim to help the individual/s to develop their personalities to the fullest and help the person to adjust satisfactorily in various social situations. Mental Hygiene assists in developing a sound mental health and a sound mental health is the first criteria for any type of education.

Mental hygiene is related with various aspects of education such as Aims of Education, Curriculum, Method of Teaching, Discipline, Role of Teacher etc.

Ans. to Q. No. 4: Some measures to be undertaken by the school to maintain mental health and hygiene amongst the students are school environment should be conducive and free from fear, tension and conflicts, school administration should be conducive to mental health of the students through enforcement of policies and practices which encourage welfare and happiness of students, organizing activities which will develop the psycho-physical aspects of personalities of the students like meditation, games, sports, debates, essay writing, creative writings, scout and NCC etc. Besides schools should encourage active methods of teaching like learning by doing, play way, Dalton plan, project methods etc besides including variety of subjects in the curriculum according to the varied interest of the students in different developing stages. The library of the school should be well equipped with variety of books and school should

open counseling cells as well as organize remedial and tutorial teaching classes for students. The school should organize field trips or educational excursions regularly to promote the physical and mental health of the students and organize medical camps to monitor the overall physical and mental health of the students.

Ans. to Q. No. 5: Components or factors of Mental Health are hereditary factors, Physical factors, Social factors and Satisfaction of Childhood needs.

Ans. to Q. No. 6: Two definitions of Mental Health are:

a) According to World Health Organization, "Mental Health is a state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity."

b) According to Meninger, "Mental Health is the adjustment of human beings to the world and to each other, with a maximum of effectiveness and happiness."

Ans. to Q. No. 7: Clifford Beers in 1908 introduced the concept of Mental Hygiene. The book titled '*A mind that found itself*' authored by him was the trendsetter of the movement related to mental hygiene.



12.10 POSSIBLE QUESTIONS

A) Short Questions (Answer each question in about 150 words)

Q.1: What do you mean by mental health?

Q.2: Does any relationship exist between mental health and hygiene?

Q.3: Discuss the nature of mental health.

Q.4: Do you think that satisfaction of basic childhood needs affect the mental health of a person? Discuss briefly.

B) Long Questions (Answer each question in about 300-500 words)

Q.1: Do you think that physical health affects the mental health of a person? If yes, justify your answer.

Q.2: Discuss the characteristics of a mentally healthy individual.

Q.3: Discuss the role of family, school and society for the promotion of mental health and hygiene in children.

Q.4: Discuss the ways and measures undertaken by the school for maintaining good mental health among the students.

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UNIT 13: ADJUSTMENT MECHANISMS

UNIT STRUCTURE

13.1 Learning Objectives

13.2 Introduction

13.3 Meaning of Adjustment

- 13.3.1 Definitions of Adjustment
- 13.3.2 Characteristics of Adjustment

13.4 Characteristics of a Well Adjusted Person

13.5 Methods of Adjustment

13.6 Concept of Maladjustment

- 13.6.1 Causes of Maladjustment
- 13.6.2 Preventive Measures of Maladjustment

13.7 Let Us Sum Up

13.8 Further Readings

13.9 Answers to Check Your Progress

13.10 Possible Questions

13.1 LEARNING OBJECTIVES

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

- explain the meaning of adjustment from psychological point of view;
- describe the adjustment process, characteristics of a well-adjusted person;
- explain the methods of adjustment;
- discuss the concept of maladjustment and explain the causes of maladjustment; and
- provide the preventive measures of maladjustment.

13.2 INTRODUCTION

Adjustment of the organism to the changing environmental conditions is a subject matter of Psychology. Life is nothing but adjustment to thousand different situations. Psychological adjustment has received an increasing

amount of attention with the development of interests among the psychologists in studying human behaviour, personality development, situations producing frustration, conflicts, etc. The nature of adjustment is unique to each individual in terms of his personality, inner needs, strains, and conflicts. This unit will introduce you to the meaning, nature and definition of adjustment, and adjustment mechanism.

13.2 MEANING OF ADJUSMENT

The primary purpose of education is to train children for life's personal, social, and economic problems. If we examine the various activities of an individual's life, then we find that most of them involve adjustment of the individual to his vocational, social, and economic problems. The process of adjustment starts right from the birth of the child and continues until his death. The concept of adjustment is as old as the human race. Systematic emergence of this concept starts from Darwin's theory of evolution. However, in his terms, it is not adjustment but adaptation. The organic adaptation became more and more complicated when physical and organic structure of creature became more and more complex. The species that could not make a good adaptation with the environment disappeared from the Earth. Lower animals only have to adapt with the geographical and climatic environment. However, it is not sufficient with humans. Man's adjustment works in geographical, social, physical, mental, and financial levels. Therefore, the adjustment capability of the human race is much more than that of any other species.

13.3 ADJUSTMENT PROCESS

The physiologists describe adjustment as an interaction between the environment and organic factors. However, in Psychology it is used in a broad sense. Due to stress and pressure of society upon an individual, he shows his own reaction to the environment. Those reactions may be physical or mental but they keep balance between the individual and his surroundings. This is what we call adjustment in psychology. The environment and social

pressure may be external or may come from within a man. For example, if we look into the life of a child, we find that he has to follow certain beliefs and sets of values, which the family follows. His personality develops in the continuous process of interaction with his family environment. There are other demands, which may be termed as internal like hunger, water, oxygen, sleep, etc. If we do not fulfill these internal demands, we feel uncomfortable. With the development of the child, these physiological demands go on increasing and become more complex. These two types of demands sometimes come in conflict with each other, and as a result, adjustment becomes a complicated process.

Again, at the time of birth, a child is fully dependent on others. But, gradually when he become older, he applies his power of perception, sensation and conception and gain better knowledge of his surroundings. Then he starts thinking about each matter he comes across. Development in the thinking process leads him to abstract thinking, because of which he formulates idea on non-existing things.

At times, a child may face a situation when his inner and outer requirements work in opposite directions. Then, problems arise in his life. If the child can solve the problem in a socially approved way, he is termed a well-adjusted child. On the contrary, if he tried to solve it by adopting some anti-social means, then the child is termed unadjusted child.

13.3.1 Definition of Adjustment

The following are some of the definitions of adjustment–

- A. S. Gates and A. T. Jersild observed, “Adjustment is a continual process by which a person varies his behaviour to produce a more harmonious relationship between himself and his environment.’’
- According to James C. Coleman, “Adjustment is the outcome of the individual’s attempts to deal with stress and meet his needs; also, his efforts to maintain harmonious relationships with the environment.’’
- According to H. C. Smith, “A good adjustment is one which is both realistic and satisfying. At least in the long run, it reduces to

a minimum frustration, the tension and anxieties, which a person must endure.''

13.3.2 Characteristics of Adjustment

From the above definitions, we can sum up the characteristics of adjustment as the following:

- Adjustment helps us to keep balance between our needs and capacity to meet these needs.
- Adjustment implies changes in our thinking and the ways of life, in meeting the demands of the situation.
- Adjustment gives us the ability and strength to bring desirable changes in the state of our environment.
- Adjustment is physiological as well as psychological.
- Adjustment is multidimensional.
- Adjustment brings us happiness and contentment.

13.4 ADJUSTMENT MECHANISMS

Now you are familiar with the concept of adjustment. Let us now discuss adjustment mechanism. Every individual adopts some common ways to defend or escape from conflicts and frustrations. Through these ways, the individual maintains the balance of his personality in the society. These ways are known as adjustment mechanisms. Chauhan (1978, p 427) defines adjustment mechanism as “any habitual method of overcoming blocks, reaching goals, satisfying motives, relieving frustration, and maintaining equilibrium.” These mechanisms are used by normal, psychoneurotic and psychotic people and they are also known as ‘Defence mechanism’.

The Defence mechanisms are used to protect the person’s self-esteem against dangers. They defend the person against anxiety and frustration, and increase satisfaction in the process of adjustment. But in using these mechanisms, the individual distorts reality in one way or the other because escaping from anxiety or frustration involve distortion of his impulses and he is deprived of accurate self knowledge. In fact, there is self-deception underlying all defence or adjustment mechanisms.



LET US KNOW

- Systematic emergence of the concept of adjustment starts from Darwin's theory of evolution.
- Adjustment process may be discussed from two points of view. Physiological and psychological.
- From physiological point of view, adjustment is a process of interaction between environment and organic factors.
- From psychological point of view, adjustment is the reaction showed by individual to keep balance between stress and pressure of society upon him.
- Adjustment may be external as well as internal.
- A well-adjusted person accepts normal amount of frustration, acts rationally, and makes sincere effort to reach his goal.

13.5 SOME COMMON ADJUSTMENT MECHANISM

Psychologists have listed certain adjustment mechanisms, which are used by a majority of the people in the constant struggle for their survival in the environment. Some of them are discussed below.

- **Denial:** Denial is the simplest type of adjustment mechanism used by both children and adults. It is simply denying the facts, which create conflict in the mind. For example, if children are busy in playing and parents call them to study, they pretend that they are not listening. Later on if the parents ask why they do not come, they say that they heard nothing. Actually, they did not allow penetrating into their consciousness that had been said by their parents. Adults also use this mechanism when they are not prepared to admit their failures in day-to-day life. In fact, the percentage of denial is higher among the adults than the children.
- **Aggression:** Often the reaction to frustration takes the form of aggression behaviour. It is proverbially stated that the bad worker blames himself for failure. It means that he wants to transfer his

failure to the tools. Commonly it is observed that when people are scolded in office for their inefficiency, they cannot do anything in the office but become angry with the children at home. When in an aggressive mood, sparked off by frustration, an individual can directly or indirectly launch attack on others, but in some cases, this wrath turns in upon themselves rather than on other people or objects. They take to beating their heads with their hands or banging it into the nearest wall, while the more disturbed commits suicide.

- **Compensation:** In compensation, a person attempts to cover his weakness in one are by exhibiting strength in another area. This kind of behaviour is so many in categories that it is very difficult to describe them. Compensatory behaviour is very clearly visible in childhood. Children are very much dependent on others because of their helplessness. Therefore, they take recourse to compensatory behaviour in their adjustment. They fulfill this need by quarrelling, teasing and making noise, and experience the feeling of self-satisfaction.
- **Identification:** Another way to coping with frustration is to identify himself with some successful person. This results in the unconscious taking over and transfer to oneself of various elements of other. Such elements may include thoughts, tasks, behaviour mechanism, or character traits and feelings. Adolescents identify themselves with some political leaders, youth leaders or actors and actresses and attempt to acquire their characteristics. To hide his own failure, a student may identify himself with his father and talk about his success. Thus, the person tries to cover up his own shortcomings and incompetencies in his mind.
- **Rationalization:** When a person fails to achieve success in one work, he feels guilty and becomes shy. In order to do away with this feeling of guilt, to prove the appropriateness of his behaviour, and to describe the cause of his failure, he tries to console himself with logical arguments. There is a story that a jackal could not jump to the height where the grape was and failed to obtain it, then he said to himself that the grapes were sour and not of a good taste, and leaves

it. This is a clear example of rationalization. Many students, who fail in examinations, blame the question paper as very tough or blame the question-setter. Rationalization is the most popular adjustment mechanism, which is used, by both children and adults in their daily life.

- **Projection:** When an object or a situation defeats a person, he tries to hide his weakness – that is his failure. This is a trick by which a person makes another person responsible for the failure he suffered. For example, many times the student who fails in the examination says that it is due to the teacher who was teaching him. If he would have been taught by some other teacher, he would have done better in the exam. In this way, mental tension and frustration can be minimized by making some other person responsible for it. However, carried to the extreme, projection is the mark of the behaviour disorder paranoia. The paranoid project his own hostile feelings about others into a whole system of thinking in which he feels that others are out to get him.
- **Repression:** In Freudian theory of personality, repression is one of the most important defence mechanisms. It is otherwise called 'motivated forgetting'. It is an attempt made by the individual to push into the unconsciousness, those experiences and thoughts which are in conflict with his moral standard or which are painful to consider. When they are repressed into unconscious level, then the person forgets the painful experiences.
- **Daydreaming:** Daydreaming or fantasy is an adjustment mechanism in which a person resolves conflicts by simply fleeing them. If man fails to fulfill his desires in his actual life and if his goals are not reached, he, in order to save himself from frustration, takes the help of absurd imagination. This is called daydreaming. It is a better way to forget the misery, pain, and guilt of practical life. Daydreaming is very frequent and natural with adolescents. Creative thinking may originate from daydreaming. If daydreaming becomes excess, man forgets realities of life and loses his efficiency in work.

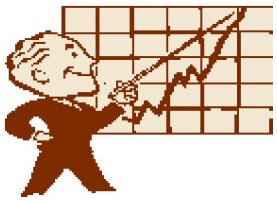
- **Negativism:** Negativism is a mechanism by which an individual draws the attention of other people. It is partly a defence and partly an escape mechanism. The person develops strong and irrational resistance in accepting the suggestions of others. A girl became rebellious because she was always blamed for the mischief caused by her five brothers and sisters. She was punished for the wrongs of others. So, she eventually became negativistic to any authority.
- **Regression:** People sometimes try to cope with a problem by regressing to childish or primitive ways of behaving. Regression is often seen in children 4-5 years old, because at this age, they own increasingly complex set of frustrations. It may happen because the arrival of a new baby or problems involved in making school adjustments. In regression, the child frequently reverts to baby talk and all sorts of 2-year-old behaviour. Adults also sometimes revert to childish behaviour when they are unable to find an 'adult' way of approaching a problem.
- **Malingering-pretending illness:** When a person pretends to be sick and uses it to avoid an embarrassing situation, he is said to be malingering. It is most commonly used by children to stay away from school whenever they have a test for which they were unprepared or they failed to complete a home assignment. To save oneself from humiliation in class in front of the classmates, a boy might develop stomach pain or some such sickness so as to elicit sympathy from mother and avoid going to school. It is a kind of 'psychosomatic' symptom. A wise mother should not encourage this tendency. This tendency is known as motivated sickness as it occurs only when a child a child is faced with an inconvenient situation. If a mother allows her child to stay at home, then this malingering tendency may reoccur frequently.
- **Sublimation:** The term sublimation was first used by Freud to refer to an unconscious process by which a sexual impulse or energy is changed direction, so as to express itself in some non-sexual and socially acceptable way. An individual may make the personality dominant or remove many of his shortcomings through sublimation.

In Psychology, it is a mature type of defence mechanism where the socially unacceptable impulses or idealization is unconsciously transformed into socially acceptable actions or behaviours, possibly resulting in a long-term conversion of the initial impulse. For example, a person with aggressive behaviour may join the army to make his behaviour socially approved.

13.6 CONCEPT OF MALADJUSTMENT

Maladjustment is the inability of individuals, members of a family and community to coordinate with other individuals, family members, and the members of another community on differences and conflicts with socio-political and economic reasons or ideologies.

Maladjustment refers to disharmony between the person and his environment. Contrary to adjustment, maladjustment represents a condition or a state in which one feels that one's needs are not fulfilled, and he has been a failure in establishing harmony with his self and the environment.



CHECK YOUR PROGRESS

Q.1: Define adjustment.

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Q.2: What are the characteristics of adjustment?

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Q.3: What is adjustment mechanism?

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Q.4: Why adjustment mechanisms are called defence mechanisms?

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Q.5: What is sublimation? Why is it known as the best kind of mechanism?

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Q.6: What is maladjustment?

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13.6.1 Causes of Maladjustment

The following are some of the causes of maladjustment.

- Hereditary causes: Because of inherited defective mental set-up, physiological structure, etc.
- Faulty method of teaching: Faulty method of teaching does not motivate students. The lesson becomes dull and the students begin to hate the very process of education. It creates emotional tension, which leads to mental illness.
- Strict discipline: Some schools impose strict discipline. Such schools are just like jails and the teachers are just like jailors. Consequently, the students are always suffering from fear and worry.

- Lack of equipments: In some schools, there is a lack of furniture and proper equipments. Overcrowded classes and poor facilities lead to frustration and mental tension.
- Lack of guidance and counseling: The mastery over the content and subject matter only, without caring for interest of students causes maladjustment. No guidance is provided for various areas at different levels. Students become confused, frustrated, and become maladjusted.
- Mass media: Now a day, children are exposed to mass media, explosion of knowledge, adult issues, etc. through mass media since their childhood. If the child witnesses certain programmes in mass media, which are not meant for them, may lead to maladjustment.
- Social laws and bindings: The social laws and legal bindings are the most common sources of frustration in one's life. Similarly, restrictions imposed by parents, teachers, and other groups are the common sources of maladjustment.
- Lack of recreational facilities: Children who do not get proper recreational facilities after school may get engaged in some anti-social activities.
- Bad company/neighbourhood: Neighbourhood is an important conditioner of child's behaviour. Many of our youngsters develop delinquencies because certain patterns of behaviour such as lying, stealing, obscene talk, promiscuous sex interest, etc. are seen in the neighbourhood.
- Gibbon says that children coming from homes that have been broken due to death, divorce, desertion, separation, etc., are often maladjusted in their behaviour. Such children feel insecure and become maladjusted.
- Poverty: With the tremendous growth in population, it is extremely difficult for parents to provide even the basic needs and necessities like food, clothing, shelter, etc. to their children. It invariably results in greater degree of frustration and hostility amongst them.

- If parents are over-possessive, highly authoritative, unrealistic in their expectations, incompatible and abusive, it will have an adverse effect upon their children. When the psychological needs are not met, children get frustrated and develop problems like nail biting, fear of the dark, lack of self-confidence, etc.
- The individuals who are physically, mentally, and visually handicapped, react abnormally to the situation when they cannot score academically compared to their peers. Therefore, they may develop an inferiority complex. Finally, they isolate themselves from others and indulge in daydreaming.

13.6.2 Preventive Measures of Maladjustment

The following are the preventive measures that can be adopted.

- Proper encouragement: Parents and teachers should speak daily with the child about his daily activities so that the child can begin to learn the principle of socialization.
- Proper appreciation: Parents and teachers should directly praise the child for the good things he has done.
- Delegating responsibility: Parents and teachers should assign some responsibilities to the child. This responsibility should involve tasks, which the child perceives as real and important.
- Provision of entertainment: There should be provision of entertainment facilities like parks, sports clubs, amusement places, theatres, museums, etc, to children. They should be encouraged to play with their peers.
- Testing: Refer the child for special education testing. In some instances, maladjusted children are eligible for special education services.
- Pattern of relaxation: The teachers should set a pattern of calmness. Yoga, meditation, stress management courses play a very important role in preventing maladjustment.

- Informing progress: The teacher should inform the child of the progress he is making.
- Timely help: The teachers should help the child when he needs it, and not only when he asks for it. If the teacher is wise enough to know when the child requires help, he may be able to help him avoid many traumatic experiences related to failure.
- Moral education: School should provide moral education through various methods. Self-confidence, co-operation, sharing and caring, are the values that can be inculcated through co-curriculum programmes.
- Guidance and counseling: If the teacher works as a guide and a counselor for the parents and children, many of the negative situations can be made positive which are beneficial to students.



13.7 LET US SUM UP

- The concept of adjustment is as old as the human race. Systematic emergence of this concept starts from Darwin's theory of evolution.
- Adjustment can be discussed from physiological and psychological point of view.
- Adjustment may be external as well as internal.
- Different psychologists define adjustment from their own point of view.
- From these definitions, we can sum up the characteristics of adjustment as–
  a) Adjustment helps us to keep balance between our needs and the capacity to meet these needs.
  b) Adjustment implies changes in our thinking and way of life to meet the demands of the situation.
  c) Adjustment gives us the ability and strength to bring desirable changes in the state of our environment.
  d) Adjustment is physiological as well as psychological.
  e) Adjustment is multidimensional.
  f) Adjustment brings us happiness and contentment.

- A well-adjusted person has certain characteristics.
- Sometimes, some conditions arise when a man fails to solve his problems. This creates tensions and frustrations in him, which terrifies the ego. When such a situation arises, a man displays adjustment mechanisms and tries to get rid of tension and frustration. These mechanisms are known as the methods of adjustment and are called **'defence mechanisms'.**
- There are various kinds of defence mechanisms.
- Maladjustment refers to disharmony between the person and his environment. Contrary to adjustment, maladjustment represents a condition or a state in which one feels that one's needs are not fulfilled and he has been a failure in establishing harmony with his self and the environment.
- There are various causes of maladjustment.
- Maladjustment can be prevented by taking some measures like proper encouragement, proper appreciation etc.



13.8 FURTHER READING

1) Charles. E. Skinner. (ed). (1964). *Education Psychology*. New Delhi: Practical Hall of India. Ltd.

2) Dandapani, S. (2000). *A Textbook of Advanced Educational Psychology*. New Delhi: Anmol Publication Pvt. Ltd.



13.9 ANSWERS TO CHECK YOUR PROGRESS

Ans. to Q. No. 1: A. S. Gates and A. T. Jersild observed, "Adjustment is a continual process by which a person varies his behaviour to produce a more harmonious relationship between himself and his environment." (students can give any of the other definitions also)

Ans. to Q. No. 2: The characteristics of adjustment are as follows:

- Adjustment helps us to keep balance between our needs and the capacity to meet these needs.

- Adjustment implies changes in our thinking and way of life to the demands of the situation.
- Adjustment gives us the ability and strength to bring desirable changes in the state of our environment.
- Adjustment is physiological as well as psychological.
- Adjustment is multidimensional.
- Adjustment brings us happiness and contentment.

Ans. to Q. No. 3: Sometimes, some conditions may arise when a man fails to solve his problems. This creates tensions and frustrations in him, which terrifies the ego. When such a situation arises, a man displays adjustment mechanisms and tries to get rid of tensions and frustrations. Almost all people use these mechanisms. All mechanisms are used to protect and enhance the person's self-esteem against danger. They increase satisfaction and help in the process of adjustment.

Ans. to Q. No. 4: Adjustment mechanisms are also called defence mechanisms because it defends the ego from missing the balance. These mechanisms do not let the ego and personality to be endangered by frustration.

Ans. to Q. No. 5: Sublimation is the most advanced, highly developed, and a constructive mechanism. Through the use of its operation, the energy of personality or socially intolerable impulses and drives are successfully directed into consciously acceptable channels. Their direction and aim thus become redirected towards substitute goals. It contributes to character and personality development and plays an important role in the prevention and resolution of emotional conflict, anxiety, and in the maintenance of emotional and mental health. Sublimation supplies an outlet for blocked and intolerable drives. Allport defines sublimation as "a device by which an individual's anti-social impulses are made socially acceptable". Sublimation is healthful. All divisions of the psyche, Id, Ego, and the Superego, work in concert with each other in the mechanism. Therefore, it is known as the best adjustment mechanism.

Ans. to Q. No. 6: Inability of an individual to sync with other individual and with the society is known as maladjustment. Maladjustment refers to disharmony between the person and his environment. Contrary to adjustment, maladjustment represents a condition or a state in which one feels that one's needs are not fulfilled and he has been a failure in establishing harmony with his self and the environment.



13.10 POSSIBLE QUESTIONS

A) Short Questions (Answer each question in about 150 words)

Q.1: What is adjustment? Give a comprehensive definition of adjustment.

Q.2: What are the characteristics of a well-adjusted person?

Q.3: Define adjustment mechanism. What are their main features?

Q.4: What is repression? How does it operate?

Q.5: Explain projection, daydreaming and rationalization with examples.

Q.6: Explain the concept of mal-adjustment.

Q.7: Describe any five causes of mal-adjustment.

B) Long Questions (Answer each question in about 300-500 words)

Q.1: What is meant by adjustment mechanism? Explain which measures can be taken by the school to prevent a child form mal-adjustment.

Q.2: "Defence mechanisms are not harmful so long one uses them not very often. Excessive indulgence would make an individual incompetent to time in reality". Explain the statement.

Q.3: Discuss the causes of mal-adjustment of a child in a school.

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UNIT 14: MEANING AND NATURE OF APTITUDE AND ITS MEASUREMENT

UNIT STRUCTURE

14.1 Learning Objectives

14.2 Introduction

14.3 Meaning of Aptitude

14.4 Definitions of Aptitude

14.5 Nature of Aptitude

14.6 Concept of Aptitude Tests

14.7 Types of Aptitude Testing

14.8 Utility of Aptitude Tests in the Field of Education

14.9 Let Us Sum Up

14.10 Further Readings

14.11 Answers to Check Your Progress

14.12 Possible Questions

14.1 LEARNING OBJECTIVES

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

- define aptitude;
- describe the nature of aptitude;
- classify different types of aptitude tests;
- explain different types of aptitude tests; and
- discuss the utility of aptitude tests in the field of education.

14.2 INTRODUCTION

In your everyday life, you may come across many individuals who excel over others, under similar circumstances, in acquiring certain knowledge or skills in certain specific fields, making them more efficient and capable as compared to others. Such individuals are said to possess certain specific abilities or aptitude in addition to their intellectual abilities, which helps them to achieve success in some specific occupations or

activities of their own interests. In this unit, we will discuss the meaning and nature of aptitude as a psychological attribute, and its testing and utility in the field of education.

14.3 MEANING OF APTITUDE

Aptitude is a special skill or ability in a person to perform a particular task in a better way. It refers to those qualities characterizing a person's way of behaviour, which serves to indicate how well he can learn to meet and solve certain specific problems. It is a part of competency to do certain works at a certain level. It is an inherent or acquired ability of an individual, which helps in learning or understanding. It is the acquired or natural ability (usually measureable with aptitude tests) to learn in a specific area or discipline. Aptitude is expressed in interest, and is reflected in the current performance, which is expected to improve over time with the help of training. Aptitude is not dependent on previous learning.

Therefore, aptitude may be described as a special ability or specific capacity, distinct from the general intellectual ability, which helps an individual to acquire the required degree of proficiency or achievement in a specific field. The knowledge of an individual's aptitude helps us to predict his/her future success in a particular field of activity, with appropriate training and experience. For example, when we say 'X' has an aptitude for music we mean that his/her present condition or ability reveals that there is possibility of showing proficiency in music with proper training to excel in the present as well as in future.

14.4 DEFINITIONS OF APTITUDE

The psychologists have given a number of definitions from time to time. Some of them are given below:

- In *Aptitudes and Aptitude Testing*, Bingham (1942) provides the definition of aptitude given in Warren's Dictionary of Psychology (1934) as, "a condition or set of characteristics regarded as symptomatic of an individual's ability to acquire with training some

(usually specified) knowledge, skill or set of responses such as the ability to speak language, to produce music etc., and bases his theory on it." Bingham further states that aptitude is a measure of probabilities of success of an individual with training in certain type of situations. Therefore, aptitude is something more than ability. It is ability plus suitability for performance. For example, a person may be a good scholar, but not necessarily a good teacher.

- Again Freeman has defined the term aptitude as, "a combination of characteristics indicative of an individual's capacity to acquire (with training) some specific knowledge, skill, or set of organized responses, such as the ability to speak a language, to become a musician, to do mechanical work." (Freeman, 1962).
- Guion believes that "aptitude for any line of work can be considered in terms of three major categories: (1) intellectual abilities, (2) physical traits, including psychomotor abilities, and (3) motivational traits, interest, aptitudes, or temperament needed for persistent and attentive effort." (Guion, 1965).
- Harriman in his *Dictionary of Psychology* defines aptitude as "a capacity in any given skill or field of knowledge, on the basis of which a prediction may be made regarding the amount of improvement which further training might affect" (Harriman, 1952).
- Thorndike and Hagen aptly stated, "Aptitude depends on unknown proportions, on the genetic characteristics of the individual and his whole life history of physical surroundings and previous learning."
- According to Traxler, "Aptitude is a condition, a quality or a set of qualities which is indicative of the probable extent to which an individual may be able to acquire, under suitable training, some knowledge, understanding, or skill."

While summing up these definitions, certain facts regarding the meaning of aptitude have emerged and they are as the following:

- Aptitude is a result of both heredity and environment. The primary mental ability which is a major factor herein is hereditary. The readiness to acquire knowledge or skill, and the satisfaction in the activity is cultivated on the effect on environment.

- Aptitude is symptomatic or indicative of one's potentialities. The understanding of an individual's aptitude helps us to know what he shall do in future.
- Aptitude can be developed by practice and training.
- It is of a specific nature, as it is not common to all the situations where a particular ability is used.
- As it cannot be further analyzed into simpler abilities, it is unitary. It remains, more or less, constant.
- It implies the facility of learning or readiness to acquire a particular job.
- It is considered to be unique or unusual potential of an individual.
- Aptitude opens the ways of interest and satisfaction in life.
- An individual may have many aptitudes or potentialities, but these are not equally strong.

14.5 NATURE OF APTITUDE

Some of the distinguishing aspects of aptitude are given below:

- *It is specific to individuals:* Aptitude is not a general ability but a specific talent needed for performing particular kinds of jobs by human beings.
- *Inborn and innate:* It is an inborn and inherent quality, which finds expression through training in a particular area. It is influenced by both hereditary and environmental factors. Hereditary provides the potential and environment helps to find expression to it.
- *Implies efficiency:* It is indicative of one's ability for a particular job. It implies efficiency and suitability for the activities they engage in.
- *Have future implications:* It is a present condition but with a future reference. It enables us to predict how successful an individual will be in a particular activity with proper training and experience.

14.6 CONCEPT OF APTITUDE TEST

Aptitude tests constitute one of the most widely used psychological tests. Any test designed to measure the probable future performance may

be called an aptitude test. It represents a person's level of competency to perform a certain type of task. Aptitude tests measure the degree or level of one's special ability in the same way as intelligence tests are employed for measuring one's general mental ability. These tests indicate the ability to acquire certain behaviour or skills when given an opportunity. They are chiefly used to estimate the extent to which an individual would profit from a specific course or training, or to predict the quality of his or her achievement in a given situation. For example, a mechanical aptitude test would be able to determine whether an individual would do well as a mechanic after appropriate training and with the right kind of motivation. Aptitude tests are structured systematic ways of evaluating how people perform on task or react to different situations. They have standardized methods of administration and scoring with the results quantified and compared with how others have done at the same tests.

During World War, Walter Van Dyke Bingham, a psychologist developed this test. It was used in the recruitment of Army called Army Alpha. His "*Aptitude and Aptitude Testing*" (1937/1942) is a classic in the field. In the words of Bingham, "Aptitude tests do not directly measure future accomplishments. They do not make such pretense. They measure present performance. Then, in so far as behavior, past and present, is known to be symptomatic of future potentialities, the test data supply a means of estimating those potentialities. The estimate is necessarily in terms of probabilities only." According to Hull, "An aptitude test is a test designed to discover what potentiality a given person has for learning some particular vocation or acquiring some particular skill." Freeman defines aptitude testing as "An aptitude test, therefore, is one designed to measure a person's potential ability in an activity of a specialized kind and within a restricted range".

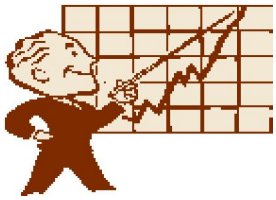
Aptitude tests have a standardized method of administration and scoring, with the results quantified and compared with all other test takers. No prior knowledge is assumed, as the tests seek to determine innate ability at a particular competency. Aptitude tests assume that individuals have inherent strengths and weaknesses, and are naturally inclined toward

success or failure in certain areas based on their innate characteristics. An aptitude test does not test knowledge; it is not a test for which one can study. Thus, an overall assessment instrument or test designed to measure–

a) concrete abilities such as dexterity, visual acuity and clerical performance,

b) abilities related to professional training such as medicine, law, or nursing,

c) a range of basic abilities required for academic or vocational success, for example, verbal comprehension, numerical ability, mechanical knowledge and perceptual reasoning.



CHECK YOUR PROGRESS

Q.1: Is aptitude innate or acquired?

.....

Q.2: Give a definition of aptitude.

.....

.....

.....

14.7 TYPES OF APTITUDE TESTING

Two types of aptitude tests are usually employed in psychological testing. These are—

- Aptitude Test Batteries
- Specialized Aptitude Test

- **Aptitude Test Batteries:** In this category, two test batteries can be included for their superior value. These are the General Aptitude Test Battery (GATB), and Differential Aptitude Tests (DAT).

  a) General Aptitude Test Battery: The General Aptitude Test Battery, also known as the GATB, is a professional career aptitude test, which measures nine different aptitudes and can be used to help assess the likelihood that one will be successful in specific careers or training programmes. It was developed by the U.S.

Employment Service (USES) for use in occupational counseling, primarily by the national agencies, and in state employment offices. The test was published in 1947, revised several times, and discontinued in 2002. The battery assessed multiple cognitive, perceptual, and psychomotor abilities as preferred rather than general mental ability when classifying people into jobs. The primary goal of the GATB was to match employee abilities to specific jobs. USES validated the test against some 66 occupational groups in five job families, only a small percentage of those for which it could be used.

GATB Form A was used operationally in 1947 with Form B, which was used for validation research and retesting. These forms were changed over the years. In 1983, Forms C and D were introduced. The GATB consisted of 12 separately scored and timed subtests that were used to compute nine aptitude scores. Test administration did not require a professional and took 2.5 hours. The test was appropriate for individuals in Grades 9 through 12 or for those in the workforce. Sub-tests included name comparison, computation, three-dimensional space, vocabulary, tool matching, arithmetic reasoning, form matching, mark making, place (a pegboard test), turn (another pegboard test), assemble, and disassemble. The sub-tests involve both verbal and quantitative reasoning and both verbal and performance measures. Some subtests were highly speeded and were appropriate for clerical positions. Aptitude scores are computed; most commonly used are cognitive (including general, verbal, and numerical aptitudes), perceptual (including spatial aptitude, form perception, and clerical perception), and psychomotor (including motor coordination, finger dexterity, and manual dexterity) composites. The meaningfulness of the tests comprising the measure was thoroughly considered; it was found that the cognitive subtests demonstrated reasonable construct validity in terms of convergent validity, the perceptual

measures were substandard in this regard, and there had been too little research on the psychomotor measures to make an overall judgment. Some criticized the test because the aptitude composites are too highly inter-correlated. That is, some believed that the separate cognitive subtests of the GATB all measured the same thing or qualities that were so highly correlated as to be lacking discriminate validity.

Its use was both widespread and controversial. The primary issue was related to group differences. Also, concern had been raised over the use of the GATB's requiring relatively high levels of reading and arithmetic calculations with educationally and culturally disadvantaged persons. Furthermore, the original norm groups were limited by being both quite small and entirely male.

For example, if you took at the GATB and discover you had a strong numerical aptitude, it means you have the potential to do well at mathematics. You may not have taken many mathematics courses in school, but that doesn't matter when we're talking about aptitudes. An aptitude test seeks to measure what you have the potential to do well at; not what you already know. So, even if you haven't studied mathematics in many, many years, if the General Aptitude Test Battery shows that that you have a strong aptitude for mathematics, then you can feel quite confident choosing a profession or training programme that requires mathematical aptitude. You may need to brush up on your actual math skills before you will be successful in a specific course or career, but if your aptitude for mathematics is strong, you will not likely encounter any problems in learning the skills you need. The aptitudes that are measured by the General Aptitude Test Battery are as follows:

- **G– General Learning Ability:** The ability to "catch on" or understand instructions and underlying principles; the ability to reason, and make judgments. Closely related to doing well in school.

- **V– Verbal Aptitude:** The ability to understand the meaning of words and to use them effectively. The ability to understand relationships between words and to understand the meaning of whole sentences and paragraphs.
- **N– Numerical Aptitude:** The ability to perform arithmetic operations quickly and accurately.
- **S– Spatial Aptitude:** The ability to think visually of geometric forms and to comprehend the two-dimensional representation of three-dimensional objects. The ability to recognize the relationships resulting from the movement of objects in space.
- **P– Form Perception:** The ability to perceive pertinent detail in objects or in pictorial or graphic material. Ability to make visual comparisons and discriminations and see slight differences in shapes and shading of figures and widths and lengths of lines.
- **Q– Clerical Perception:** The ability to perceive detail in verbal or tabular material. Ability to observe differences in copy, to proofread words and numbers, and to avoid perceptual errors in arithmetic computation.
- **K– Motor Co-ordination:** The ability to coordinate eyes and hands or fingers rapidly and accurately in making precise movements with speed. Ability to make movement response accurately and swiftly.
- **F– Finger Dexterity:** The ability to move fingers, and manipulate small objects with fingers, rapidly or accurately.
- **M– Manual Dexterity:** The ability to move hands easily and skillfully. Ability to work with hands in placing and turning motions.

b) **Differential Aptitude Test Battery:** It is an integrated battery of guidance battery. It was developed by George K. Bennett, Harold G. Seashore, Alexander G. Westman in 1947 to provide an integrated, scientific and well standardized procedure for

measuring the abilities of boys and girls in grades eight the twelve for purposes of educational and vocational guidance. The tests were updated in 1963 to meet new demands of large and small guidance programmes. The battery includes seven tests that are described below briefly—

- **Verbal Reasoning Test:** It is aimed at the evaluation of the student's ability to abstract or generalize and to think constructively. It may be expected to predict with reasonable accuracy success in fields where complex verbal relationship and concepts are important. The item type is versatile. The works used in it may be varied i.e. from history, geography, literature, science or any other contact area. The verbal reasoning test may be expected to predict with reasonable accuracy success in fields where complex verbal relationship and concepts are important. Verbal reasoning test scores deserve considerable. Weightage vocationally since the test also indicates something of the appropriately aspire. The test consists of 50 questions.
- **Numerical Ability Test:** It is a measure of the students' ability to reason with numbers, to manipulate numeric relationship and to deal intelligently with quantitative materials. It is important for prediction in such fields as mathematics, physics, chemistry, quantitative thinking. The numerical ability items are designed to test understanding of numerical relations and facility in handling numerical concept in which reading ability play a significant role.
- **Abstracts Reasoning Test:** It is intended as a non-verbal measure of the students reasoning ability. The series presented in each problem requires the perception of an operating principle in the changing diagrams. In each instance, the student must discover the principle governing the change of figures and give evidence of his understanding by designing the diagram, which should logically follow.

It involves the ability to perceive the relationship among abstract figures, patterns, generalization, and education of principles from non-language designs under ordinary conditions. The abstract score is relevant when the curriculum, profession, or vocation requires perception of relationship among things rather than among wards as numbers.

- **Clerical Speed and Accuracy:** It is intended to measure the speed of response in a simple perceptual task. The main objective of this test is to measure speed of perception, momentary retention, and speed of response. The ability to do routine work of the kind which this test exemplifies is important in filling, coding, stock room work, and the similar occupation. It is of relatively little importance for most educational purposes, although the pupils whose scores are very low may find it difficult to meet classroom standards of neatness sped and precision. The questions are 100 for each part.
- **Mechanical Reasoning Test:** It is a measure of one's ability to apply mechanical or scientific principles. The test is useful in those curriculum and occupations where an appreciation of the principles of common physical forces is required. It is important to realize that mechanical reasoning scores are of less educational and vocational significance for girls' than for boys'. Occupations such as those of the carpenters, mechanics, maintenance men, assemblers and hundreds of others in plants and factories, require the kind of understanding and measures.
- **Space Relation Test:** It measures the ability to deal with the concrete materials through visualizations. The items require mental manipulation of objects in three dimensional spaces.
- **Language Usages-Spelling and Sentences Test:** Its chief virtue, as distinguished from similar item types, is its adoptability to machine scoring. The words themselves however were chosen with care. All words were selected

from the lists in Gate's spelling difficulties in 3876 words (1937). The words were further selected editorially from their prominence in everyday vocabulary.

The sentences section of the language usage test in intended to measure the student's ability to find the errors, if any, in spelling punctuation, grammatical constructions etc. in full sentences given. The chief reason for their inclusion among the differential aptitude tests is that they represent basic skills which are necessary in so many academic and vocational pursuits.

- **Specialized Aptitude Tests:** These tests are used to measure the aptitudes of individuals in various specific fields or activities. Generally, these tests can be divided into the following sub-types according to their specific aptitude tested by them:

  a) **Mechanical Aptitude Tests:** Mechanical aptitude tests, or mechanical reasoning tests, are commonly administered for technical and engineering positions. The mechanical aptitude test measures the ability to understand and apply mechanical concepts and rinciples to solve problems. It is the ability involved in manipulating concrete objects, such as tools and dealing mentally with mechanical movements. It is a comprehensive form of sensory and motor capacities plus abilities such as manual dexterity, perception of spatial relations, capacity to get mechanical knowledge, comprehension of mechanical relation, mechanical reasoning and problem solving. Mechanical aptitude is not a unitary trait, but a combination of many traits, e.g., special perception and imagination; manual dexterity involving precision of muscular coordination; and motor abilities of strength, speed of movement and endurance. Mechanical occupations require all the three components but not in equal degrees. Mechanical aptitude may be measured either by an apparatus assembly test or by paper-pencil test. Some of the well-known mechanical aptitude tests are:

- Minnesota Mechanical Assembly Test
- Minnesota Spatial Relation Test
- The Revised Minnesota Power Form Board (1948)
- Stenguist Mechanical Aptitude Tests (Part I & II)
- Bennet Tests of Mechanical Comprehension
- L.J.O' Rourke's Mechanical Aptitude Tests

b) **Musical Aptitude Test:** Musical aptitude refers to a person's innate ability to acquire skills and knowledge required for musical activity, and may influence the speed at which learning can take place and the level that may be achieved. These tests have been devised for discovering musical and artistic talents. Musical ability has three aspects:

- **Motor aspect:** It requires the mastery of patterns of actions needed while playing on an instrument.
- **Perceptive aspect:** It means perceiving the various types of sensory discriminations and complex musical relationship. The sensory discrimination includes discrimination in loudness, pitch etc. The complex musical relationships include such things as the composition of a chord, pattern of a melody and its relation to harmony etc.
- **Interpretive aspect:** It involves aesthetic judgment about a melody or harmony. Whether a melody is suitable and pleasing to the ears or not? Whether the harmony has a rhythmic pattern? and so on.

Some of the popular musical aptitude tests are Seashore's Measures of Musical Talents whose primary purpose is to measure the simple sensory discriminations.

c) **Artistic Aptitude Tests:** These tests are devised to discover the talent for graphic art.

Two important tests of this nature are: The Meier Art Judgment Test and Horne Art Aptitude Inventory.

d) **Clerical Aptitude Tests:** Clerical aptitude, like the mechanical aptitude, is a combination of many traits. Although different

clerical jobs require different kinds of traits, yet the differences are more or less of magnitude rather than of kind. For example, speed and accuracy is one of the essentials for all clerical jobs, but a bank clerk needs it more than a general clerk than a typist. Similarly, speed in discrimination is also needed more by a bank clerk than a typist. According to Bingham, clerical aptitude involves several specific abilities like—Perceptual ability (ability to perceive words and numbers with speed and accuracy), intellectual ability (ability to grasp the meaning of words and symbols), motor ability (ability to use various types of machines and tools like typewriter, duplicator, cyclostyle machine, punching machine etc.). Some important clerical aptitude tests are—

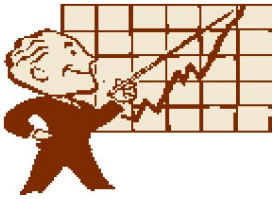
- **Minnesota Vocational Test for Clerical Workers:** It was arranged by Dorothy M. Andrew. This test differentiates not only between clerical workers and other people, but also to some degree between classes and grades of clerical workers. The first part of the test consists of 200 pairs of numbers and the second of 200 pairs of names. The subject is required to match them.
- **Number Checking and Word Checking:** This test indicates the ability to notice slight differences between pairs of numbers and words. This ability is very useful in many clerical jobs.
- **General Test for Stenographers and Typist:** It was developed by the Research Division, US Civil Service Commission. This test is designed to measure the adaptability, mental alertness, and knowledge which typist and stenographer should have, besides their specific skills. Questions involve practical judgment, vocabulary, and English usage, spelling and reading comprehension.
- **The Clerical ability test:** It was prepared by the Department of Psychology, University of Mysore, Mysore.
- **Clerical Aptitude Test Battery:** Developed by Bureau of Educational and Vocational Guidance, Patna.

- **Test of Clerical Aptitude:** Prepared by the Panchayat Guidance Bureau, 209, Hornby Road, Bombay-1.

e) **Professional Aptitude tests:** These tests are designed to measure the aptitude for professions like teaching, clerical duties, medicines, law, engineering, salesmanship, research, etc.

f) **Scholastic Aptitude Tests:** These tests are employed to select the students for admission to specific courses or professions like engineering, law, medicine, business management, etc. Some of these aptitude tests are:

- The American Council of Education Scholastic Aptitude Test (ACE).
- Scholastic Aptitude Test (SAT) developed in U.S.A.
- Stanford Scientific Aptitude Test by D.L. Zyve
- Science Aptitude Test (after higher secondary stage); N.I.E. Delhi.
- Moss Scholastic Aptitude Test for medical students.



CHECK YOUR PROGRESS

Q.3: What are the factors involved in clerical aptitude tests?

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.....

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Q.4: Mention any one scholastic aptitude test.

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.....

Q.5: Enlist the seven tests included in the Differential Aptitude Test Battery.

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14.8 UTILITY OF APTITUDE TEST IN THE FIELD OF EDUCATION

Aptitude tests have been observed to be a highly accurate tool for the selection of the right candidate as compared to interview, group discussion, written tests, and so on. Based on this assumption, today an increasing number of organizations, including educational organizations, use this tool. The need and prospects of such tests have been increasing in the field of education day by day. The following are the uses of aptitude tests in the field of education:

- **To enhance manpower resources:** There lies individual differences among individuals, and because of that, not every individual is fitted for any kind of job. Their innate and inherent abilities and aptitudes have to be identified so that right training can be provided for the efficient utilization of manpower resources in today's world of industrialization and specialization.
- **Useful in providing educational guidance:** Students have to take the right decisions in choosing the right choice of subjects in the high school, as various courses need specific nature of abilities and aptitudes. In such cases, we can use aptitude test battery for identifying the strengths and weaknesses of children. The results of such tests will enable us to identify in which field or activity the child is more likely to be successful and make progress in future.
- **Helpful in providing vocational guidance:** Many students are found to be lacking in the academic aptitude for which formal education becomes a big burden to them. However, they may have other form of manual and motor aptitude needed for different kinds of vocations. Therefore, aptitude tests can be very effective in identifying the nature of their traits in specific vocational courses to which they will be best fitted particularly at the secondary level.
- **Proper selection of trainees:** There are certain specialized courses where selection of the trainees may be considered very essential before training is given to them. Hence, aptitude tests may prove be

very effective in selecting students for admission to technical and professional courses. Thus, these tests serve as a screening device at the time of recruitment process.

- **Vocational selection:** An employer can take up these tests for vocational selection too. With these tests, he can reduce the number of probable failures among those who take up that job.
- **Administrative uses:** An administrator can use aptitude test scores for selection, classification and placement decisions. Besides, aptitude tests may be used for relevant supplementary information in curriculum planning and evaluation.
- **Research uses:** Aptitude test scores can be used in many ways in research. The scores are used as independent variables in a research design.

Thus, it is clear that any purposeful guidance and counseling programme or entrance examination to specialized academic and professional courses or selection procedures for specialized jobs should give due importance to aptitude testing. Aptitude testing combined with the other information received through interest inventory, personality tests, intelligence tests, and cumulative records etc. can help to a greater extent in avoiding considerable waste of human as well as material resources by placing the individuals in places and lines of work where they are most likely to be productive.

The aptitude tests thus are specifically designed tests to measure the ability to acquire/apply skills and/or knowledge to a specific type of job. Various aptitude tests are designed to test certain skills or abilities to apply the skill to the job in question by the candidate. The types of aptitude tests that are taken depend on what purpose the results are intended to serve. Thus, aptitude tests are used for a variety of purposes and are administered by assorted sources. The teachers use these tests to measure their students' performances, the schools may use them to determine an individual's knowledge within certain fields, and the employers often use them to identify the candidate who is most capable or best suited for a job. In addition, aptitude based tests are regarded as one of the most useful varieties of career tests.



14.9 LET US SUM UP

- Aptitude is a special ability or specific capacity, distinct from the general intellectual ability, which helps an individual to acquire the required degree of proficiency or achievement in a specific field.
- It is an inherent or acquired ability of an individual, which ease the process of learning or understanding.
- Aptitude is symptomatic or indicative of one's potentialities.
- It is of a specific nature.
- It is a present condition but with a future reference. It enables us to predict how successful an individual will be in a particular activity with proper training and experience.
- Aptitude tests measure the degree or level of one's special ability in the same way as intelligence tests are employed for measuring one's general mental ability.
- Aptitude tests have a standardized method of administration and scoring, with the results quantified and compared with all other test takers.
- There are two types of aptitude tests– Aptitude Test Batteries and Specialized Aptitude Test
- Examples of Aptitude Test Batteries are General Aptitude Test Battery and Differential Aptitude Test Battery
- Examples of Specialized Aptitude Tests areMechanical Aptitude Tests, Musical Aptitude Test, Clerical Aptitude Tests, etc.
- Aptitude tests are increasingly being used in different fields, including the field of education. It is used for enhancing manpower resources, providing educational and vocational guidance, proper selection of trainees, appropriate placement and for research purposes.



14.10 FURTHER READING

1) American Educational Research Association, American Psychological Association, and National Council on Measurement in Education.

(1999). *The Standards for Educational and Psychological Testing*. Washington, DC: American Educational Research Association.

2) Bhatia, K. K. (1989). *Measurement and Evaluation in Education*. Ludhiana: Prakash Brothers.

3) Freeman, F. S. (1975). *Theory and Practice of Psychological Testing*. New York: Holt, Rinehart and Winston.

4) Walsh, W. B., & Betz, N. E. (1995). *Tests and Assessment* (4th ed.). Upper Saddle River, NJ: Prentice Hall.



14.11 ANSWERS TO CHECK YOUR PROGRESS

Ans. to Q. No. 1: Both innate and acquired.

Ans. to Q. No. 2: According to Freeman, aptitude is "a combination of characteristics indicative of an individual's capacity to acquire (with training) some specific knowledge, skill, or set of organized responses."

Ans. to Q. No. 3: The factors involved in clerical aptitude testsarespeed and accuracy in simple clerical task, speed in simple discrimination, spatial ability, speed in motor ability and ability to observe and compare.

Ans. to Q. No. 4: The American Council of Education Scholastic Aptitude Test (ACE).

Ans. to Q. No. 5: The tests included in Differential Aptitude Test Battery are verbal reasoning test, numerical ability test, abstracts reasoning test, clerical speed and accuracy, mechanical reasoning test, space relation test and language usages-spelling and sentences test.



14.12 POSSIBLE QUESTIONS

A) Very Short Questions (Answer each question in about 50 words)

Q.1: Who said that "Aptitude depends on unknown proportions"?

Q.2: State whether true or false: Aptitude can be developed through training.

Q.3: Who developed the General Aptitude Test Battery?

B) Short Questions (Answer each question in about 150 words)

Q.1: Define aptitude in your own words on the basis of the definitions provided by various scholars.

Q.2: State Bingham's views on aptitude.

Q.3: Write a short note on Musical Aptitude Test.

Q.4: How are aptitude tests used in the field of education?

C) Long Questions (Answer each question in about 300-500 words)

Q.1: Describe the nature of aptitude.

Q.2: Explain with examples, how is aptitude different from achievement.

Q.3: Describe the Differential Aptitude Tests in detail.

*** ***** ***

UNIT 15: JUVENILE DELINQUENCY

UNIT STRUCTURE

15.1 Learning Objectives

15.2 Introduction

15.3 Meaning of Delinquency

- 15.3.1 Definitions of Delinquency
- 15.3.2 Characteristics of Delinquents
- 15.3.3 Activities of Delinquents

15.4 Causes of Delinquency

15.5 Prevention of Delinquency

15.6 Let Us Sum Up

15.7 Further Reading

15.8 Answers to Check Your Progress

15.9 Possible Questions

15.1 LEARNING OBJECTIVES

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

- explain the meaning of delinquency;
- identify the characteristics and activities of delinquents; and
- analyse the causes and treatment for Juvenile delinquency.

15.2 INTRODUCTION

In the present society, we often find many crimes committed by teenagers almost every day. These incidents are on increase due to the negative role played by mass media especially TV or Internet. The offence or crime committed by these teenagers is termed as delinquency. Delinquency at present is a major social issue. It is a violating tendency of children towards accepted social rules and norms. In this unit, we are going to learn about the meaning of delinquency and how they act in society and how we can treat this problem by means of education.

15.3 MEANING OF JUVENILE DELINQUENCY

Delinquent children are those children who belong to the category of exceptional children and exhibit considerable deviation in terms of social adjustment. They are therefore law breaking and possess criminal tendencies. Therefore, their attitude and behaviour are not acceptable by the society. They basically indulge in antisocial activities. In delinquents, the instinctive and biological urges appear to be over active whereas their conscience remains weak. As such, they are easily prone to violence. A delinquent child derives the sense of compensation or revenge through his activities. Delinquency is, therefore, a revelation of the emotionally disturbed and troubled mind.

We can find this tendency of delinquents generally among the adolescent boys and girls. These adolescent boys and girls are of those categories of persons who actually possess a sense of frustration in their personal and social life. The criminal act of their immature mind below the age of 18 years is known as ***Juvenile Delinquency.*** The cases of their criminality are judged separately in a court of law called Juvenile Court. In simple words, the term '***Juvenile Delinquent'*** or '***Young Delinquent'*** means a child or minor who deviates seriously from the norms of his culture or society and commits murder and robbery or other offences that are strictly age related.

From the legal standpoint, delinquency consists of those behaviours that are prohibited by the family or juvenile code of the state and that subject minors (i.e., persons not legally adults) to the jurisdiction of the juvenile court. Behaviours prohibited by juvenile codes can be grouped into two categories: (1) Behaviours that would be defined as criminal offenses if committed by adults (malicious destruction of property, larceny, robbery, motor vehicle theft, etc.), and (2) Behaviours that are prohibited only for minors, which are called status offenses (school truancy, running away from home, incorrigibility, etc.).

The nature of their act of crime and offence are also quite significant. They indulge in activities like theft, robbery, assault, sex offences, narcotics,

smoking, gambling, pick-pocketing etc. In school, the nature of their violating tendency finds expression through irregularity, inattention, indiscipline, disobedience, obstinacy, truancy and assault.

According to the data released by the government for 2014, juveniles continue to constitute 1.2 per cent of the total cognizable crime rate in the country, a trend that has remained unchanged since 2012. In that year, 33,526 cases (under IPC) were registered against minors, as against an overall total number of 28, 51,563 cases registered in the country. When cases that were filed under Special Local Law were added to the IPC data, the total number of cases against juveniles shot up to 48,230. About 75 per cent of those accused in these cases were in the age group of 16-18 years. (Source for statistical data: *https://www.ojjdp.gov/ojstatbb/nr2014/downloads/NR2014.pdf)*

15.3.1 Definitions of Delinquency

The following are some of the definitions of Delinquency.

- According to Johnson and Szurek, "Delinquency is actually a deficiency in the formation of superego. Delinquent child fails to internalize the primitive taboos and code of conduct set by the family and the society and works on either pleasure principle or he is guided by his ego. Delinquency is actually holes in the superego of man."
- Bandura and Walters are of the view that delinquency is the manifestation of frustrated needs of the child, which lead him to behave aggressively.
- According to New Meyer, a delinquent is a person under age who is guilty of anti social act and whose misconduct is an infraction of the law.
- Richard A Cloward has defined delinquency in the following words, "Delinquent act is a behaviour that violates norms of the society and when officially known it evokes a judgment by agent of criminal justice that such norms have been violated.

- Herbert Quay in his book 'Juvenile Delinquency' has defined the concept in the following words, "Delinquent would be a person whose misbehaviour is relatively a serious legal offence which is inappropriate to his level of development and is alien to the culture in which he has been reared."
- According to C. Burt, "A child is to be regarded as technically delinquent when his antisocial tendencies appear so grave that he becomes or ought to become the subject of official action."
- Ohio code of the USA defines the term in the following ways, "A Juvenile Delinquent is one who breaks the law, is a vagrant, persists in disobeying orders, whose behaviour endangers his own moral life as well as the moral life of others."
- Delinquency in the view of the Coleman (1981) refers to "behaviour of youths under 18 years of age which is not acceptable to society and is generally regarded as calling for some kind of admonishment punishment or corrective actions".

It is clear from the above definitions that unless a young man is brought to the court and his delinquency is not proved, he is not delinquent. As far as the age for delinquency is concerned, it varies from country-to-country ranging from 16-20. According to Juvenile Justice (Care and Protection of Children) Act 2015 passed by Parliament of India, which came into force from 15 January 2016, the age group for Juvenile Delinquents include from 16-18 so that juveniles in conflict with law and involved in Heinous Offences can be tried as adults.

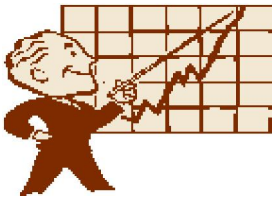


LET US KNOW

Though delinquent activities are termed as crime or criminal activities, yet there is a difference between crime and delinquency. These are as follows:

- Difference in age: Both of them indulge in antisocial activities, but a delinquent is one who is in the age group of 15-20 while a criminal is above this age level.

- Difference in activities: Many activities of delinquents do not require legal action such as cruelty; obstinacy etc. but activities of criminals always require legal action.



CHECK YOUR PROGRESS

Q.1: Who is a Juvenile Delinquent?

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Q.2: Mention the age group of Juvenile Delinquents according to Juvenile Justice (Care and Protection of Children) Act 2015.

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Q.3: Define Delinquency.

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15.3.2 Characteristics of Delinquents

Some of the typical characteristics that may be observed in the delinquent children may be seen as the following:

- The IQ for the delinquent children is below average in general.
- Not almost all delinquent children prefer reading, writing and other school activities.
- Delinquent children are mostly weak in using their verbal and visual form of symbols.
- Socially, these children are undemocratic, destructive and they possess a sense of violence from very early stage of life.
- They are emotionally mal-adjusted, frustrated, rejected, unloved and guilty.

- Delinquent children always suffer from the lack of sense of emotional security.
- Their personality traits appear to be suspicious, sadistic and revengeful.
- Their hobbies and leisure time activities seem to be very unhealthy like smoking, drinking, drug related activities etc.
- They are by nature thoughtless, desperate and obstinate in their behaviour.
- Their Id remains more powerful, whereas Super-ego or spiritual sense is very weak.

Besides the above-mentioned characteristics, we can also highlight some important characteristics of Juvenile Delinquents identified by Sheldon and Gluecks. They are as follows:

- **Physical:** Mesomorphic in constitution, muscular, energetic and bold.
- **Temperamental:** Restless, impulsive, extroverted, aggressive and destructive.
- **Attitudinal:** Hostile, defiant, resentful, suspicious, unconventional and non-submissive to authority.
- **Psychological:** Direct and concrete intellectual expression, less methodical in their approach to the problem, and disregard to elders.
- **Socio-cultural:** Lack of affection and stability and low moral standard of parents and elders.



LET US KNOW

Many psychologists hold the view that crime or delinquency is inherited from parents and ancestors. These are examples of some of the studies done by some eminent psychologists in this regard:

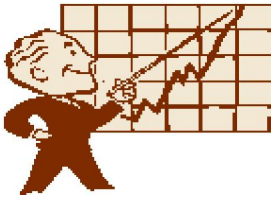
- Studies of family trees of **Kallikak and Edward** families have shown that crimes as well as intelligence are inherited from generation to generation.

- **Goring** established the facts that intelligence was more associated with criminal tendencies as compared to physical characteristics of the subject. Low intellectual ability of the person may be an important cause of delinquency.
- **Goddard** in his book, "Mental efficiency and levels of intelligence" has stated that the greatest single cause of delinquency is mental weakness.
- **Smith** found that the thief and murderers suffered from the disturbance of gland cells and central nervous system.

15.3.3 Activities of Delinquents

Types of delinquents' acts are many because of socio-economic and cultural variations. Some common delinquent acts are listed below:

- Delinquents always want to satisfy their immediate social and biological needs as a result they indulge in activities like stealing, sexual harassment, and so on.
- Another activity found to be common among delinquents is the act of forgery. They may forge the signature of parents and teachers and indulge in illegal activities.
- They behave very aggressively. They show aggression against animate and inanimate objects of the environment.
- Sexual crimes are very commonly created by the delinquents.
- One of the extreme forms of delinquency is murder or robbery. They involved in these kinds of activities when others irritate them.
- Delinquents mostly become truants and escape from the place. Some such acts are truancy from the school, running from home, leaving the place immediately after committing crime.



CHECK YOUR PROGRESS

Q.4: Mention some activities of delinquents.

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Q.5: List out the characteristics of delinquents identified by Sheldon and Glueks.

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15.4 CAUSES OF DELINQUENCY

The mal-adjusted and defective growth of child's personality in the early years may result in delinquency. Cyril Burt who made an objective study of delinquency had observed that parental criminality is not dominating factor for children's crime. There are typical environmental situations that give incentive to criminal senses in mind. Inappropriate home, school and social environment are largely responsible for delinquency. The causes of and conditions for juvenile crime are usually found at each level of the social structure, including the society as a whole, social institutions, social groups and organizations, and interpersonal relations. A wide range of factors, the most important of which are described below, fosters juveniles' choice of delinquent careers and the consequent perpetuation of delinquency.

- One of the vital causes of delinquency in children is the lack of parental love.
- Lack of discipline at home, lack of parental control, broken family are the contributory factors to delinquency.

- Another factor responsible for delinquency of children is the lack of planned family system, and also the lack of family prestige.
- Unfavourable school environment may also lead to delinquency of children. Ineffective academic and theoretical nature of school programme, lack of co-curricular facility, and the teacher insisting too much on educational activity may lead to such situation in school.
- Moreover, the teachers' unfriendly and hostile attitude towards children may also worsen the situation to make delinquency in school.
- Due to poverty, children are prone to be delinquent as their parents are unable to fulfill their legitimate needs.
- Media is also one of the reasons behind growing delinquent activities. Adult crime, prostitution, drug trafficking, black marketing etc. shown in movies are responsible to create delinquents.
- At the present situation, educated unemployment, craze for earning easy money, abundance of black money and degradation of moral values are the reasons for the growth of delinquency.
- Absence of healthy recreational facilities may also lead to delinquency among children.
- Political unrest, communal violence, social injustice, misuse of power are some of the adverse effects of our society, which cause delinquency.

Thus, these are some of the causes of delinquency, but delinquency is the result of cumulative factors of social problems.

15.5 PREVENTION OF DELINQUENCY

While treating a juvenile delinquent, the welfare of the child is given foremost importance. The purpose should not be only to punish the delinquent, but to correct his criminal tendencies and to make him a productive citizen of the country. The Children's Act of 1960 passed by our parliament seeks to provide for the care, protection, maintenance, welfare training, trial and rehabilitation of delinquents and neglected children.

The home is the natural environment of any child, and all efforts should be made to help him to continue at home as far as possible. When

a delinquent child is taken under custody, he is brought to a remand home. His parents/guardians are contacted, and he is discharged with a warning. He is kept in the institution only when he is a destitute. A juvenile offender's case is tried in a juvenile court, which is not a regular court, but an informal place of trial set up occasionally to decide about such cases. The entire procedure is very informal and only those people who are directly associated with the child are allowed to be present in the juvenile court. If the child needs institutionalisation, he is sent to special correctional institutions like reformatories, certified schools. In all these institutions, the child is provided with proper lodging, boarding, facilities for education and vocational training, recreation and moral training. The problem of juvenile delinquency can be controlled or remedied by creating better social institutions and healthy environment in our society. Better homes, better economic conditions, better education, recreation and better political situation can go a long way in this connection. Thus, with regard to this, we can highlight some preventative measures, which may be effective to handle the problem of delinquency among children. These are as follows:

- **Congenial home environment:** A favourable and suitable home environment should be created so that the children can feel emotionally secure and can gain trust and confidence of the family members. The parents should develop positive attitude towards their children.
- **Child's Company:** Every child should be given the maximum company by their parents at home. Parents and even school authorities should keep a close watch on the activities and social environment in which they are being reared so that they do not fall into the bad company in their mere future.
- **Teach Social rules and norms:** It is the duty of the parents as well as teachers to teach or to train children to be loyal, faithful, and to abide by the rules and norms of the society.
- **Proper school environment:** The teachers in schools should be sympathetic and appreciative of the students' problems. A teacher should be competent enough to guide the children appropriately.

- **Flexibility of school curriculum:** The children should not be burdened with heavy educational workload in schools. Their interest should be directed to co-curricular activities.
- **Inclusion of Special Courses:** Provision should be made for sex education and moral education besides the regular course of study. Moreover, vocationalisation of secondary education should be emphasized so that children can engage themselves in fruitful activities.
- **Healthy Recreational Facilities:** Provision should be made for organizing healthy recreational facilities at home and school. Besides, the government should also take special initiatives in this regard. Steps should be taken to train children in good taste and aptitude.
- **Scope for employability:** The government should create enough employment and self-employment avenues for children. A sense of work-culture should be developed in society.
- **Effective legalization:** Effective legalization should be undertaken by the government to stop delinquent tendency of a certain section of people in society such as gambling, drinking, black marketing etc.
- **Removal of socio-economic and political problems:** Political leaders, administrators and the social workers should come forward to solve socio-economic and political problems of the society, which often lead to delinquency tendency among children.
- **Establishment of special schools:** In order to rectify the behaviour of the delinquents, they are admitted in special schools meant for them. Special teachers teach them special curriculum and they are evaluated in special manners.

Besides, the above mentioned preventive measures, ***The Children's Young Person's Act of Britain*** has also suggested some curative measures with some modifications for India for the removal of Juvenile Delinquency in India. These are as follows:

- Establishment of special Juvenile courts with trained magistrates to deal with Juvenile Delinquents.

- Appointment of trained social workers or probation officers for taking charge of delinquent cases.
- Taking the help of clinical psychologists and psychiatrists for understanding the delinquent behaviour of children.
- Establishment of special schools where special education, correction, and rehabilitation is possible.
- Provision of keeping the children in the custody of responsible persons or social agencies.
- Establishment of remand homes where delinquent children may be lodged while awaiting trial or placement in an approved school or in the custody of a responsible person, or if so directed by a probation officer prior to employment or on discharge from an approved school.

It has been observed that at present, children and their problems are receiving attention from the government as well as the members of our society. However, still it has been found that these problems seem to be never ending which results in the degradation of moral values and rise of conflict and crimes in society. The social, economic and other factors, which have been the root causes of juvenile delinquency, need to be dealt with at the initial stage. Every society must, therefore, devote full attention to ensure that children are properly cared for and brought up in a proper atmosphere, where they could receive adequate training, education, and guidance in order that they may be able to have their rightful place in the society when they grow up.



ACTIVITY 15.1

Narrate an incident you have come across in your life, which you feel is an activity of a delinquent.

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15.6 LET US SUM UP

- Delinquent children are those children who belong to the category of exceptional children and exhibit considerable deviation in terms of social adjustment. They are therefore law breaking and possess criminal tendencies whose attitude and behaviour are not acceptable by the society.
- The criminal act of their immature mind below the age of 18 years is known as ***Juvenile Delinquency.***
- In simple words, the term ***Juvenile Delinquent*** or ***Young Delinquent*** means a child or minor who deviates seriously from the norms of his culture or society and commits murder and robbery or other offences that are strictly age related.
- The nature of the act of crime and offence of delinquents are also quite significant. They indulge in activities like theft, robbery, assault, sex offences, narcotics, smoking, gambling, pick-pocketing etc. In schools, the nature of their violating tendency finds expression through irregularity, inattention, indiscipline, disobedience, obstinacy, truancy and assault.
- Some of the important causes of delinquency are broken families, poverty, lack of discipline, lack of recreational facilities, lack of moral code, lack of discipline in school, ineffective curriculum etc.
- Some of the preventive measures for delinquency are- congenial home and school environment, providing maximum time to child, training on social rules and norms, flexibility of school curriculum, inclusion of special courses, establishment of special schools, effective legalization, scope for employment etc.



15.7 FURTHER READING

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15.8 ANSWERS TO CHECK YOUR PROGRESS

Ans. to Q. No. 1: ***Juvenile Delinquent*** or ***Young Delinquent*** means a child or minor who deviates seriously from the norms of his culture or society and commits murder and robbery or other offences that are strictly age related.

Ans. to Q. No. 2: According to Juvenile Justice (Care and Protection of Children) Act 2015 passed by Parliament of India, which came into force from 15 January 2016, the age group for Juvenile Delinquents include from 16-18.

Ans. to Q. No. 3: Ohio code of the USA defines the term in the following ways, "A Juvenile Delinquent is one who breaks the law, is a vagrant, persists in disobeying orders, whose behaviour endangers his own moral life as well as the moral life of others."

Ans. to Q. No. 4: Delinquents indulge in activities like theft, robbery, assault, sex offences, narcotics, smoking, gambling, pick-pocketing etc. In schools, the nature of their violating tendency finds expression through irregularity, inattention, indiscipline, disobedience, obstinacy, truancy and assault.

Ans. to Q. No. 5: Some important characteristics of Juvenile Delinquents identified by **Sheldon and Gluecks** are as follows:

- ***Physical:*** Mesomorphic in constitution, muscular, energetic and bold.
- ***Temperamental:*** Restless, impulsive, extroverted, aggressive and destructive.
- ***Attitudinal:*** Hostile, defiant, resentful, suspicious, unconventional and non-submissive to authority.

- ***Psychological:*** Direct and concrete intellectual expression, less methodical in their approach to the problem, and disregard to elders.
- ***Socio-cultural:*** Lack of affection and stability and low moral standard of parents and elders.



15.9 POSSIBLE QUESTIONS

A) Short Questions (Answer each question in about 150 words)

Q.1: Write a short note on Juvenile Delinquency.

Q.2: How can you identify the delinquents?

Q.3: Mention the characteristics of Juvenile Delinquents.

B) Long Questions (Answer each question in about 300-500 words)

Q.1: Discuss in brief the activities of the delinquents.

Q.2: Elaborate the main causes of delinquency. Discuss its preventive and curative measures.

*** ***** ***



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