

**F-2.2**  
**UNDERSTANDING THE LEARNER**

**Course Content**

**Unit- I:**

- (a) Nature of Learning- learning as a process and as an outcome, characteristics and factors affecting learning.
- (b) Theories of learning: Stimulus Response theories of learning- Trial and Error theory, Pavlov's classical conditioning theory, Operant Conditioning theory and Insight learning.
- (c) Transfer of learning- types, theories and educational implications of transfer of training.

**Unit –II:**

- (a) Intelligence- Meaning, theories of intelligence (Unitary, Spearman, Thurston and Guilford's), measurement of intelligence, uses and limitations of intelligence tests.
- (b) Emotional intelligence- concept, dimensions, role of teacher in promoting emotional intelligence.
- (c) Creativity- concept, difference between creativity and intelligence, identification of creative child and methods of fostering creativity.

**Unit –III:**

- (a) Personality- concept, determinants of personality and Assessment.
- (b) Mental health- meaning, importance, causes of mental illness and improvement of mental health of children.
- (c) Motivation- meaning, types, techniques and educational implications.

**Unit- IV:**

- (a) Education of the Children with special needs- Meaning, Types, Identification and intervention: Gifted, Delinquents and Educationally Backward Children.

## Unit- I:

### (a) Nature of Learning- learning as a process and as an outcome, characteristics and factors affecting learning.

#### **Introduction**

Man is a learning creature, and learning process begins not only since his birth but also in the womb of his mother. In Mahabharata brave Abhimanyu obtained the knowledge, of breaking the ring shaped formation of troops, in the womb of his mother. This is the direct instance of learning. Learning is a life long process. Man learns throughout his whole life. In the beginning, infant is helpless and dependent on others, but slowly he tries to adjust himself according to the atmosphere. In this adjustment, he tries to take the advantages by the experiences of the process, which is called learning by the Psychologists. Learning is an important subject in the study of Educational Psychology. First the word 'Know' was used for learning.

#### **Nature of Learning**

Learning is an extensive word. Learning depends on the inborn responses. Being inspired by the inborn instinct, a man does whatever activities there are for the adjustment of his situation. According to the Psychologists- Learning is a mental process. A mental process is expressed by the behavior. A man is changed and refined on the basis of the experiences in his behavior. Two factors are included in the process of learning—maturity and ability to take the advantage from the earlier experiences. For example, if a burning stove is kept in front of a baby, he touches it because of his curiosity, as soon as he touches it, his hand burns; he draws away his hand rapidly. Then he does not go by the side of it any

time, because he has learnt by his experience that fire will burn him. Thus, Learning is the progressive change in the behavior by the earlier experiences. On the basis of this, we can say that learning is an education. Learning and Education, the both indicate the same process. Both activities go on forever and every where in life. Child, growing towards the maturity, taking the advantage of his experiences, does whatever proper responses, that is called learning. As Blair Jones and Simpson have said- "any change of behavior which is a result of experience and which causes people to face later situation differently may be called learning." It is necessary to study the given definitions by the Psychologists to clear the meaning and nature of learning.

### **Definition of Learning**

- (1) **According to Morgan and Gilliland**—"Learning is the behavior of the organism as a result of experience which is retained for at least a certain period of time."
- (2) **Gates and Others**—"Learning is the modification of behavior through experience and training."
- (3) **Woodbirth**—"the process of acquiring new knowledge and new responses is the process of learning."
- (4) **Skinner**—"Learning is process of progressive behavior adaption."
- (5) **Crown bank**—"Learning is shown by a change in the behavior as a result of experience."
- (6) **Crow & Crow**—"Learning is the acquisition of habits, knowledge and attitudes."
- (7) **Thorn dike**—"Learning is selecting the appropriate responses and connecting it with the stimulus."
- (8) **Kuppuswami**—"Learning is a process by which an organism, as a result of its interaction in a situation, acquires a new mode of behavior, which tends to persist and affect the general behavior pattern of the organism, to some degree."
- (9) **Parik**—"Learning is the process of acquiring assimilating and internalizing cognitive, motor or

behavior inputs for their effective and varied use when required and leading to enhanced capability of further self-mentioned learning.”

**(10) Gagne**—“Learning is a change in human disposition or capability which can be retained and which is not simply ascribed to the process of growth. The kinds of change called learning exhibits itself as a change in behavior and in the interference of learning is made by comparing what behavior was possible before the individual was placed in a learning situation.”

**(11) Browne and Extend**—“Learning is intimately related to the basis behavior characteristics of knowledge.”

Psychologists have given many definitions of learning to make clear the conception of learning. For example, some definitions have been presented above. In fact the collection of the above definitions have been done on the basis of this, which could make clear the opinion of learning from the multi angle point of view. In spite of being completely independent, the above definitions are complementary to each other. The following things of learning factor are explained with the combination of many definitions—

- 1) There is change in the behavior by the process of learning as having been burnt in the fire, an infant **Notes** does not go close to fire.
- (2) Whatever changes happen in the behavior, keep on till sometime, as he does not forget it soon that there is a lot of pain, after having a burn from the fire.
- (3) The change in the behavior is based on the earlier experiences, if a child has burn from fire, then he works in such a fashion while working with fire that he does not get a burn again.
- (4) The change that happens in the behavior could be externally visible, invisible or partially visible.
- (5) There are permanent changes in the behavior or doing work in the learning related way. The changes happening in the behavior in the form of doing work, cannot include those changes, which are originated from the main instincts, maturity, addiction, and tiredness.

(6) Learning is the refinement of behavior. Once the changes take place in the behavior, that changed behavior can be improved in a new situation.

(7) The learner obtains growth again and again in cognitive, affective and conative fields by the learning, which helps him with the progressive change in his behavior.

### **Process of Learning**

The process of learning has been cleared with the help of above definitions. The process of learning moves on throughout the life consciously or unconsciously. Developing by individual learning process.

Its basis is maturity. Inspiration is necessary in the process of learning.

**According to Guthrie**—“Ability to learn is to respond differently to situation because of the past experiences to a situation.”

**According to the Peel**—“Learning is a change, in a person which, happens according to the changes in his environment.” Peel has explained the process of learning in brief—

(1) By learning, permanent and temporary, both types of changes come in a person.

(2) Learning is different from the easy, natural activities of person as blinking the eye and to draw the hand etc.

(3) Learning is possible by the social and biological adjustments or conscious purposes.

(4) Learning can originate both types of behaviors as social, unsocial in a person.

(5) Education can be faultless and faulty.

**Psychologist Boaz has said**—“Learning is the process which the individual acquires various habits, knowledge and attitudes that are necessary to meet the demand of life in general.”

**According to Woodbirth**—“Learning consists in doing something new provide the new activity is reinforced and reappears in latter activities.”

This definition is revealed by doing **Skinner's** experiment on the mice.

### **Features of Learning Process**

In the definitions of learning, Psychologists have given a specific type of nature to the process of

learning. If the specific process of learning is analyzed, the following characteristics of learning process

are highlighted:

**(1) Learning is universal**—Learning is such a process, which happens in the living beings in all the times and all the places. Wherever there is a being, place and time, the process of learning will take place. Human being keeps on engaging in doing something every time.

**2) Learning is change**—The change that happens in the behavior of child is learning. Learning is that process, by which the change will appear in the child. By the learning, the sequence of changes and rechanges move on, by which child becomes the outcome of the changes.

**(3) Learning is development**—The development of child is possible by the process of learning. The contribution of learning in the whole development of child is so much important, that learning becomes the synonym of development. The Psychologists have considered that the personality of child is developed in form of progressive changes and refinement, which is possible by the process of learning. Learning is seen in the form of development.

**(4) Learning is adjustment**—Child establishes adjustment with the society and the environment by the learning process. The process of adjustment is so close to the process of learning that we understand adjustment as learning. In fact Human being has to adjust with the environment to survive. So he has to do the process of learning for his survival. Gates and others have accepted learning as an adjustment.

**(5) Learning is Purposive**—It is necessary to have some purpose for learning. The goal of learning could be attained by purpose only. Purposiveness decides the aim of learning, and provides the direction to the responses.

**(6) Learning is continuous**—Learning is neither limited to any age, or any period. Rather, it continues throughout the life.

**(7) Learning is creative**—It is the tendency of human nature, to do some creative work. Thus, doing

such work is learning, which he manifests in the form of thoughts and actions. Creativity encourages man, by initiative towards learning.

**(8) Learning is response to total situation**—A person establishes adjustment with different kinds of situations after examining them on the basis of completeness. He continues to learn to do the right responses for the adjustment to the situation. So learning is a delivery of right responses to total situation of a person.

**(9) Learning is a relationship between stimuli and responses**—To establish the right and desirable responses with any stimuli is learning. On the basis of this fact, Psychologists have delivered the word 'relational' in the study of learning.

**(10) Learning is related with cognitive, affective and conative domains**—whatever a man learns, its field is cognitive, affective and co-native. And learning is related with cognitive, affective and co-native fields, he collects knowledge, feelings and collects skill to do activities.

**(11) Learning is Transferable**—A person can use the same skills and solutions of the problem in the other similar problems, which he has learnt in any situation. Means, learning transfers. Thus, learning is transferable.

**(12) Learning is a process**—From the psychological point of view learning is a process, which moves on in a living environment. This process is seen, in the fulfillment of the need, under the condition of stimuli- responses, in obtaining the goal, in obtaining the success in the adjustment, and in the stabilization of behavior and practical change. It is cleared that there are four important parts in the process of learning. It can be understood by the following diagram:

There are four phases of learning process—

**(i) Need or Purpose**—In the process of learning, first the need for purpose or motive originates. Need is

that bodily power, which makes power active for its fulfillment.

**(ii) Goal**—Need is goal aspiring, which makes a person act till acquiring the goal.

The process of

learning is not effective in the absence of goal perception.

**(iii) Adjustment**—A person establishes adjustment with the situation to get the goal. He tries many

times to pierce the obstacle. In which the efforts that help in getting the goal after piercing the obstacle,

is called successful efforts and rest are failures.

**(iv) Change**—By the process of learning, change comes in the behavior of a person that differs from

the former behavior or that was not present in the behavior of the person earlier.

Being permanent, this

change becomes a part of a person's acquired behavior. Though, it is possible to make change in this as

well. This is called the process of reinforcement.

Thus, Learning is an extensive word. Learning depends on the inborn responses.

Being inspired by the

inborn instinct, a man does whatever activities there are, for the adjustment of his situation. According

to the Psychologists- Learning is a mental process. A mental process is expressed by the behavior.

A man is changed and refined on the basis of the experiences in his behavior.

□□ In order to explain the meaning of learning, psychologists have given many definitions for it. Like

according to Crow and Crow, "Learning is acquisition of habits, knowledge and attitudes."

□□ Motivation is necessary in the process of learning. Learning can produce social and un-social responses

in a man.

□□ Maturity has great effect on the process of learning. Maturity means the physical development.

Mental ability also develops along with the physical development. There are changes in the behavior

of the human as a result of this development. The change in the behavior happens due to maturity

and learning. The process of learning goes on throughout life. In this way the development of the



human being takes place. Maturity is also a continuous process of development.

□□The physical instrument of learning like spinal chord and nerves help us in learning. As the body

of the child grows towards maturity, he begins to use the powers within, and his behavior keeps on

changing. For this change, physical, motor and mental maturity is needed.

□□Learning under immaturity harms the child. It affects the physical health of the child as well. Hence

it hinders his natural development. Hence it is necessary to focus on the level of maturity the process

of learning. They both are dependent on each other.

### **(b) Theories of learning: Stimulus Response theories of learning- Trial and Error theory,**

#### **Theories of Learning**

Different psychologists have presented different theories of learning. Some theories have similar

thoughts, while others have different thoughts. On the basis of similarity and differences, the

classification of the learning theory can be done. In the books of Educational psychology, the

classification of learning theories has been presented on the basis of their variations. Hence it is clear

that the psychologists have different opinion in relation to the classification of theories of learning.

With a point of view to make the study easy and limited, the classification of learning theories has been presented in the following way—

**(A) Contiguity Theory**—Under it the following theories are mainly included—

(1) Pavlov's Conditioned Reflex Theory

(2) Watson's Theory of Learning

(3) Guthrie's Contiguous Conditioning Theory

**(B) Theories of Reinforcement**—Under it, the learning theories of following group are mainly included—

(1) Hull's theory and Theories of Hull's Traditions

(2) Instrumental Reinforcement Theory

Under it, the following theories are included—

(i) Thorndike's S-R Bond Theory

(ii) Woodworth's S-O-R Theory

(iii) Skinner's Operant Conditioning Theory

**(C) Cognitive Theory**—Under it, the important theory of following group is included—

**(1) Sign Learning Theories**—Mainly Tolmen's Sign Learning Theory is in it.

**(2) Gestalt Learning Theories**—Under it mainly Kohler's Insight Theory and Koffka Trace Theory are included.

**(3) Dynamic Theories**—Under it Levin's Field theory and Psycho-analytical theory of Learning are included.

**(4) Bandura's Modelling Theory**

**(5) Piaget's Development of Learning Theory**—Except the above learning theories, the description of many theories are found in the books of psychology. But here, it is not appropriate to give them place.

### **Thorndike's Stimulus- Response Bond Theory**

Edward L. Thorndike, in his book 'Animal Intelligence', in 1898, delivered famous connectionism.

The meaning of connectionism in learning psychology is to make connection between stimulus and response. In the connectionism, connection is established between stimulus and response. So it is known

by the name of stimulus response theory. In this theory along with the inborn factors of a man, there is a connection between the internal and external stimulus response. In the learning psychology 'Stimulus-

Response theory' is an extensive theory whose researchers, **Thorndike,**

**Woodbirth, Pavlov, Waltson,**

**Guthri, Tollman or Hull** are important. According to these psychologists, there is a stimulus behind

each activity, which affects a man. And he does responses according to that. Thus, stimulus is related

with response. The organizer of this opinion Thorndike has forced to establish connection between

stimulus and response for the learning. On account of insisting this bond,

Thorndike's learning theory

is called 'stimulus- Response bond theory'. Thorndike's Learning Theory comes under it. And it is a part

of 'Associate Theory'. According to Thorndike, a bond is established between two or more experiences.

There is a stimulus for the processing of some action, which causes response.

Stimulus affects a man,

according to that he responds. Thus, a peculiar stimulus is connected to response; means there is a bond

between stimulus and response. **Wren** has defined this theory in the following way—

“Connectionism is the doctrine that all mental process consist of the functioning of the native and

acquired connection between situation and responses.”

Thorndike's theory is basis of three factors—

(1) Stimulus or S factor, which includes in the situation of environment.

(2) Response or R Factor which exposes the activity of behavior.

(3) Stimulus, Response and Bond factor, which establish connection between stimulus and response.

Or it binds stimulus with response and the development of bond between stimulus and response is the

important thing of the theory of Thorndike.

According to the **Thorndike**—“Learning, in the nervous system, is a matter of reinforcement and

making connection between stimulus and response.”

According to Thorndike connection is established between stimulus and response.

Symbolically it is

expressed by S→R. Thorndike has presented the rules of learning on the basis of S→R bonds. In his book

'Educational Psychology' he has written widely about this theory in the educational field.

### **The chief characteristics of Stimulus-Response Bond Theory Notes**

(1) Bonding between stimulus and response is learning.

(2) The process of bond between stimulus and response is happened by trial and error. Learner tries and

mistakes many times for learning the right process, but in many trials depriving mistakes and doing

errorless trial he learns the right process.

(3) By trial and response learner becomes expert in doing definite response for definite stimulus. For this

he selects right response among other possible responses, so Thorndike's this theory is also called '**The**

**Theory of Selecting and Connectionism**'. According to **Thorndike**—

“Learning is the consequence of selecting the right responses and connecting them with stimulus.”

(4) This process of learning is mechanistic, because the selection of right responses is possible after removing the mistakes.

(5) There is response according to stimulus, and according to that human behavior is decided. Thus this theory says that only stimulus decides and controls the behavior, and along with a peculiar stimulus is needed for a peculiar response.

(6) Thorndike’s theory has given a scientific base to the learning process in the field of education psychology.

(7) This theory is a form of associate theory.

### **Limitations of Stimulus-Response Bond Theory**

In spite of having many qualities, stimulus response bond theory has many limitations, which can be described in the following way-

(1) Stimulus and response have not been explained properly in this theory.

(2) Mr. Miller has said ironically that it will not be wrong to call this theory, hyphen theory, because as the connection between stimulus and response have been expounded in it, but stimulus and response have not been.

(3) The structure of personality has not been specially described in it; this is the reason why the followers of this theory have considered psychoanalysis theory useful in their opinions and researches.

(4) All the psychologists have called this theory atomic and fragment.

(5) In this theory, useless efforts are forced to learn any activities.

(6) Criticizing the effect and result of the rule, the Practitioner have said that the process of learning has been incompletely explained in it.

(7) According to the followers of Gestalt, the connection happens itself between experiences and we find it in entirety, so there is no need for any kind of connection.

After throwing light on the qualities and limitations of **Thorndike’s** theory, it will be appropriate to

throw light on the important experiments done by him, learning method by trial and error and the rules

of learning for expounding Thorndike's learning related explanation.

**Thorndike's Laws of Learning**—Different psychologists have discovered the laws of learning, after experimenting on the animals by laboratory method. But Thorndike has got the credit of making series of laws of learning. Thorndike's laws of learning are basis on the stimulus- response bond theory or connectionism. According to this law when there is a stimulus in front of a man, he is motivated for doing a peculiar type of response. In it, a special stimulus is connected to a special response. Process of learning includes in this response. According to Thorndike, learning establishes connection between stimulus and response. Brain does the work of establishing connection. It is necessary to have a relation between body and mind in the process of learning.

He studied the bond of stimulus and response and created the primarily and secondary laws of learning—

**(A) Primary Laws of Learning—**

- (1) Law of Readiness
- (2) Law of exercise
- (3) Law of Effect

**(B) Secondary Laws of Learning—**

- (1) Law of Multiple Responses
- (2) Law of Mental set or Attitude
- (3) Law of Prepatency of Elements
- (4) Law of Response by Analogy
- (5) Law of Associative Shifting

**(A) Primary Laws of Learning—**

Thorndike has said the following three laws of learning—

**(1) Law of readiness**—This law means that when learner is ready for learning, he can learn, otherwise

he can't. He gets ready for learning. In order to give education to a child firstly a teacher should develop such conditions which originate interest and curiosity in a child and he will be prepared for learning.

For this, a teacher can motivate a child for learning by many methods. Skillful teacher, asking questions

related to lesson or earlier knowledge can originate interest in a child for the lesson by the new methods of learning. Teacher often says to the student to come after reading the lesson. Thus he gets mentally prepared for learning many things. And his preparations for learning help him in concentrating. Thus, child learns things easily, and gets satisfaction in learning.

**(2) Law of Exercise**—Law of exercise says that under a situation, in order to determine a right response, that response should be repeated again and again. Which learning process we repeat many times, we learn it easily. Learning can be made easy by exercise. According to Dr. J. N. Sinha- “keeping other conditions constant, whenever a changeable relation is exercised between a situation and a response, it becomes strong. This is called the law of exercise.”

There are the two aspects of law of exercise—

(i) Law of Use

(ii) Law of disuse

**(i) Law of Use**—Whichever work is exercised again and again, is learnt easily. As a poem is repeated again and again to remember it. In the same way for learning riding bicycle, a child has to try many times, he falls and get wounded, but at last he learns riding bicycle. Painting, typing, learning music, playing any game etc can be learnt by using and exercise.

**(ii) Law of disuse**—This law is quite opposite to the law of use. If learnt work is not practiced or used, a man forgets it. For example—A man can not play or sing after leaving the practice of singing and playing. A player cannot play properly, when he comes in the play ground after a long time. Thus, the same thing can be said in the learning process, as- Success can be obtained in maths after doing daily practice. In brief, it can be said whichever work is not done or repeated for a long time, it is not remembered. It is called the law of disuse. So a teacher should give continue exercise to the student in the different subjects, otherwise taught knowledge, in the absence of exercise, or due to disuse, they will not remember it.

**(3) Law of Effect**—This law is also called the law of satisfaction or dissatisfaction. If after doing some work we get satisfaction, we want to do that work again and again. The law of reward and punishment in the education indicates this side, if after doing any work child gets reward he wants to do it again and again, and by doing any work if he gets punishment, he does not want to do that work, so he does not learn it. This law, in the education can be used psychologically. It is the duty of a teacher that he should develop such situation for the learning of a child so that he could get success, and feel satisfaction and pleasure. For whichever work does a child get appreciated, he learns that work soon. All the laws of learning are depend and internally related to each other.

**Learning by Trial and Error**—Firstly Thorndike presented learning method by trial and error, after doing many experiment on the animals. Thorndike's classical experiment, which he did after keeping a cat in the puzzle box, on the basis of it the learning method of trial and error, can be explained. The same experiments have been described in the earlier pages. According to Thorndike when a problem originates in front of a man, he does different types of responses in order to solve the problem. These responses are erroneous in the beginning, but after doing many responses he gets success in his response.

In learning the meaning of trial and error is in the learning time in the beginning success does not come, there is some errors in it, but when it is repeated many times, after each trial errors are less, as soon as trial is done, the numbers of error is less. And at last such time comes that a man gets success in attempting his work properly. Woodworth has said the following steps of learning method by trial and error in his book 'Psychology'.

- (a) Readiness to reach some goal.
- (b) The path of reaching to the goal is not seen clearly.
- (c) To examine the situations and finding the possible way and use them.

(d) At last obtain the proper way.

**The situations of learning by trial and error**—the following situations are originated in the process of learning by trial and error—

(1) It is necessary to have drive in the learner. Drive inspires for the learning, and makes it active.

Hunger is a drive. In the experiment of Thorndike, we saw that it was there which inspired cat for the learning (learning to open the door of the case).

(2) When obstacle comes in the satisfaction of drive, man makes efforts. After doing trial and error, at last he learns.

(3) There are random activities by the learner for the satisfaction of his drive, because learner does not have the knowledge of right response, like the unnecessary jumping of cat.

(4) All of Sudden he gets success after doing right activities by random activities fortunately.

**According to Thorndike**, following practical conditions are found in the learning, by trial and error:

(1) **Goal**—It is necessary to have a goal for the learning. After getting the knowledge of goal, readiness will be seen in the learning process.

(2) **To be mentally fit**—A mentally recovered person tries to solve the problem, and looking for the possible way for the solution of the problem. If some obstacle comes in the way, he tries other ways.

(3) **Obstacle in obtaining the goal**—In case of originating obstacles, problem originates, and a man tries to solve the problem.

(4) **Trial**—A man tries after finding obstacles, and upon failure he tries another method until he finally succeeds.

(5) **Sudden success**—After doing many trials fortunately he gets success in the process.

(6) **Stabilization of correct Process**—When suddenly there is information of correct process, after doing many efforts, that correct process is chosen for obtaining the goal and the correct process is stabilized after repeating it again and again.



**(7) The selection of correct process**—It is the stage of learning. Effort is successful after selecting the correct process, and there is not mistake.

**Educational Utility of Trial and Error learning method**— The important utility of trial and error learning method is following—

(1) This method is like an improvement method. By this method child takes the benefit of the experience obtained by his earlier errors.

(2) After doing continuous effort, the characteristics of patience and hardwork develop in the children.

(3) In this method a child repeats the activities which he likes, these activities as a stimuli inspire him in the process of learning. He learns by the selecting successful process, so some psychologists have said this method 'Learning by selection of the successful variation.

(4) This method is depended on the practice. So learnt work gets permanent. So a teacher should encourage the student, if student gets failure in any activity. This method is very useful for serious subjects, as- math, science, grammar etc. The solution of the problems of math, the opportunity of doing by the trial and error should be provided. A child is more benefited by this method. The success after doing many trials is permanent.

(5) A child knows the goal but not get the idea of obtaining the goal, by this method, and then he does efforts himself, which develop in him the characteristics of self confidence and self dependence.

These characteristics help him in developing the capability of finding the solutions of the problems and situations coming in the future, whose goals will be known to him but not the way of obtaining them.

(6) This method is not useful for the younger children.

(7) This method is specially not useful for the dull minded children.

## **Pavlov's classical conditioning theory, Operant Conditioning theory and Insight learning.**

### **Introduction**

I. P. Pavlov delivered the conditioned reflex theory (1849–1936). He was the native of Russia and a famous scientist. He was provided Nobel Prize in 1904 for doing the work on the digestion process.

In fact he was studying the role of the flow of saliva in the digestion of dogs, at that time, he noticed

that there is growth in the flow of saliva of dog, when the food comes and the sound of the feet of someone taking food is heard. After observing this incident, he delivered learning related theory.

Thus he became a psychologist in the age of fifty. He published two books, Conditioned Reflex and

Lectures on Conditioned Reflex. This theory is known by the name of Connected Reflex, Connected

Variation, and Conditioned Response. But on the basis of the experiment, done by Pavlov on the

dog, this theory has been given the name of 'Classical Conditioned Theory'. On the basis of nature

of this theory it has also been given the name of 'Response Bond Theory'. Here the main aim is, to

deliver the opinion of Pavlov's experimenting on the dog and its conclusion applied on the human

behavior in the field of learning. So firstly it is necessary to understand the classical Pavlov's classical

experiment.

### **Pavlov's Conditioned Reflex Theory Notes**

**Pavlov's Classical Experiment**—Pavlov did his experiment on a dog in a laboratory. He added a tube in

the gland salivation after doing surgery which fell in a utensil, which can be helped in the observation

of salivation. During this experiment, food was given to a dog on a certain time everyday. Seeing the

food the salivation of dog began to excrete. The presentation of food was a natural stimulus and the

process of salivation by this stimulation was a natural response. Pavlov rang the bell in the second time, which was unnatural stimulus, and the alertness of dog and twisting the ears with this stimulation was an unnatural response. After this Pavlov rang the bell along with the presenting the food, means natural or unnatural stimulus presented together, as a response the dog salivated. This was the only response of both stimuli. This process was repeated in the laboratory many times, by which food and bell means, natural or unnatural stimulus connected reflexes were conditioned. Now in the third round Pavlov only rang the bell, means only unnatural stimulus, but did not present food even then dog salivated. Here it is an important thing that food as a stimulus substituted bell as a stimulus. This is the learning of substitution. Which Pavlov named conditioned reflex. Now a days psychologists named the Pavlov conditioned Reflex Theory Classical theory.

**Higher Order Conditioning**—Pavlov found on extending his experiment that other unnatural stimulus also does the work of reinforcement after presenting it along with the unnatural stimulus. Awakening natural response with the unnatural stimulus is higher natural response. Pavlov presented unnatural stimulus as the rays of light when the dog started salivating process on hearing the bell in this experiment. It was done many times, after some times it was noticed that dog salivated to see the rays of light (other unnatural stimulus). In this experiment the process of salivating to see the rays of light is higher order conditioning, because in the beginning, other unnatural (the rays of light) stimulus was not presented along with the reinforced or natural stimulus. Besides higher order conditioning, Pavlov and his followers did many experiments on the dog, and presented many important opinion on the basis of those conclusions, which extended to the conditioning learning theory. These opinions are following-

**Temporal Relationship between Conditioned Stimulus and Conditioning Stimulus**—It has been

found in the experiments done on the dogs, that the connection between C S and UCS is established

when there is a definite close timed relationship between them. In the experiment of Pavlov, conditioned

learning was seen with the closeness of five seconds between CS and UCS. There are three situations of

time closeness—

**(A) Simultaneous Conditioning**—When conditioned stimulus and unconditioned stimulus were

presented all together. As—

C.S..... Food

.....

U.C.S..... Bell

.....

**(B) Delayed Conditioning**—When conditioned stimulus was presented after the presentation of

unconditioned stimulus, As-

C.S..... Food

.....

U.C.S..... Bell

.....

It was found in the experiments that delayed conditioned process is most affective, because soon

connection is established between both stimuli in this closeness of timing.

**(C) Trace Conditioning**—When unconditioned stimulus was presented after a long time from delayed **Notes**

conditioning and conditioned stimulus, as-

C.S..... Food

.....

C.N..... Bell

.....

If there is a great time interval between both stimuli in this condition, conditioning becomes impossible.

**(D) Backward Conditioning**—Backward conditioning is that condition when unconditioned stimulus

is present before the conditioned stimulus, as—

C.S..... Food

.....

U.C.S..... Bell

.....  
Conditioning does not happen in this condition.

**Extinction**—Pavlov stopped the presentation of conditioned and unconditioned stimuli on the basis

of time closeness in his further experiments, means only the bell was rung but food was not presented

consequently, dog stopped the salivation process on sound of the bell. This was called extinction. It was

found after evaluating each effort of dog in the salivation process on the sound of bell that the quantity

of salivation was continuously less. Hence extinction finishes the conditioning process. And it makes a

weak the association of the sound of the bell and salivation as conditioning reinforces that association.

**Spontaneous Recovery**—It is seen in the observation of extinction related experiments that conditioning

never finishes completely; rather the capability to counter is developed in the conditioning process.

According to **Morgan and King**—“Extinction is a process of learning to inhibit the response acquired in conditioning.”

If the same conditioned and conditioning stimuli are presented many times, soon on the basis of

time closeness, conditioning is established after establishing the relationship between both stimuli

as disappearing or forgetting something, the process of remembering it after it happens again. For

example when food and bell are not presented altogether, it is seen the salivation of dog is stopped on

the sound of bell. This process is extinction. But after presenting the food and bell sound in the time

closeness again, the dog starts the salivation upon hearing the sound of the bell-

This is Spontaneous

Recovery.

**Inhibition**—Inhibition is that process in the function of establishing conditioning, in which any other

stimulus originates inhibition in the response. It can be caused by two reasons—(a)

Internal Reason—

in which any internal inhibition element does work, and (b) External Reason—in which any external

inhibition element of environment does work. **Generalization**—

Generalization is that process in which stimulus related to conditioning response

seems same. For example, if a dog has learnt salivation on the bell sound, he salivates on the sound of metronome, because both have the same sound.

**Reinforcement**—The difference between conditioning process and extinction process is only presenting

the conditioning stimulus (food). It is clear from these differences that association is going on reinforced

or weak. It is necessary to have reinforcement for making conditioning response. A famous theory of

learning was developed with the experiment of Pavlov's theory. Psychologist **Skinner** and **Hall** have

forced this side of learning, so their theory was called reinforcement.

**Learning by Conditioned Refl ex**—Learning by conditioned refl ex can be understood by the classical

experiments of Pavlov, which has been already described in the last chapters. This is the beginning

and appropriate example of learning by conditioned refl ex, which should be presented for the better understanding of the students.

**Utility and Importance of Conditioned Refl ex Theory in Education**

Conditioned Refl ex Action, famous by the name of Connected Refl ex, Conditioned Refl ex, Connected

Response and Connectionism action delivered by Pavlov, is very important and useful in the learning

theory and method education, because the beginning of man's learning is possible by the expecting responses. In the educational way, the utility and the importance of conditioned refl ex theory can be **Notes**

highlighted in the following way-

(1) More advantage can be taken in the education of the child by the connectionism process. In the

childhood many actions are related to the peculiar things and continue to adolescence. For example

if a child is uninterested, hates, fears any peculiar thing and person, in the stage of adolescent his

behavior is same towards the same things. Connectionism should be used carefully for the learning of good habits for the children.

(2) This method helps in removing bad habits and in changing the conduct and behavior.

(3) With the help of this method fear related mental diseases can be cured.

(4) For the establishment of discipline, the theory of reward and punishment is also depended on it.

(5) This method helps children in the social awareness and adjustment with the environment.

(6) The scholars of society and uncommon psychology have explained many subjects on the basis of this

theory. This theory can be helped in the explanation of uncommon human behavior. The opinion of

Crow and Crow is, "This method is useful for the education of those subjects, in which rumination

is not needed, as-writing, alphabet series."

(7) It is the natural method of learning. Child always gets the opportunity of learning by this method.

(8) The seeing, hearing material, which is used in the learning, is depended on this theory.

(9) The learning process happening in the home and school can be explained easily with the help of this method.

(10) This method should be used properly for the conditioning work of children. This method is very useful in the learning process.

### **(c) Transfer of learning- types, theories and educational implications of transfer of training.**

#### **Meaning of Transfer of Learning**

In education, transfer of learning means 'To make use of learnt application and subject in other situations. In other words, Acquiring knowledge in other subjects and situations is affected by the acquired knowledge in one subject and situation, is called the transfer of learning. It is also called

learning transition' and learning transfer. For example- the knowledge which is gained in learning maths helps in the learning of Physics, chemistry and statistics. This application is called the transfer of learning. In this way a child uses his general knowledge of maths in the buying of thing in the market.

It is evident that there is transition of education in some form in related fields. The meaning of learning

transfer is evident with the following definitions given by psychologists—

**(1) Velon and Veinstein**—“Transfer of learning means that performance on one task is by affected performance on another task”.

**(2) Crow & Crow**—“The carry over of habits of thinking, feeling or working of knowledge, of skill, from one learning area to another is usually referred to as the transfer of training.”

**(3) Callesanik**—“transfer is the application to carry over of knowledge, skill, habits, attitude or other responses from the situation in which they are initially acquired to some other situation.”

**(4) Prof. Sorenson**—“Transfer is discussed to carry over the knowledge, training and habit acquired in one situation to another situation.”

**(5) Pretorson**—“Transfer is generalization for it is extension of idea to a new field.”

It is evident from the above definitions, that, to make use of earlier learnt, acquired knowledge, skill, habits or other responses in other situations, is called transfer.

### **Theories of Transfer of Learning**

After understanding the theories of learning it is necessary to know, how does transfer happen? For this, it is necessary to study the different theories of transfer. These theories are following-

**(1) Faculty theory of Mind and concept of Formal Discipline**—This theory depends on the faculty psychology. According to it mind is made after mixing up many faculties, like- observation, memorization, imagination, discussion, and decision. This strength is different and free from one



another. After training them and doing practice they can be made fast. And they can be used skillfully in any situation. For example if faculty is trained of memory, it is necessary to learn those words, which are not useful for person at that time. Therefore it is the opinion of followers of this theory, that logical **Notes** power can be trained by maths and then it helps in the learning of those subjects in which logical power is needed. According to this theory the selection of the learning subjects should be done in this way, by which, the mental faculties could be strengthened. Current psychology does not accept the division of mental faculties, so this theory cannot be accepted.

**(2) Theory of Identical Elements**—The founder of this theory Thorndike confirmed this, on the basis of his experiments, when there is similarity between the subjects and the contents of two experiences, there is more possibility of transfer. If there is similarity between both, the acquired knowledge of one subject proves fruitful in the study of other subject. As maths knowledge in Physics and in statistics, history's knowledge in political science, Psychology's knowledge in Educational Psychology, and the knowledge of philosophy helps us in the study of Educational- philosophy and we do not feel complication. The main reason of it, that, the identical parts and elements are found in these subjects. Sir Gates has given his statement in its confirmation- 'It is seen that there is a higher ratio of transfer in the identical elements.' That's why during the time of selecting subjects students try to select the subjects, which have identical elements in some parts. As- Selecting political science with current history.

**(3) Theory of Generalization**—The founder of this theory is Mr. Charles Jud. According to this theory when a person finds out a general theory with the support of his experience, study and knowledge, he can transfer it in other situations. Explaining this theory Mr. Jud has said, "according to this theory, development of individual skill, complete possession on individual facts, attainment of individual

habits and instincts have less importance in other situations from the transfer point of view- Till then skillfulness, facts and habits are not orderly related those other situations , in which it could be used.

It is evident from the above statement that child should be given education not only for discipline in one situation but also should be trained for well conduct and behavior in different times or situations.

**(4) Theory of 'G' and 'S' factor**—The founder of this theory is Spearman.

According to him a child

needs a general and individual capability for the learning of each subject. General capability or intellect

is used in every sphere of life. But individual intellect is used in the specific situation. General intellect

helps a man in every situation, so general capability and element is transferred, not individual elements.

History, Geography and Literature are related to general capability, but drawing, music etc are related to individual capability.

**(5) Theory of Gestalt psychologists**—Among the Gestalts Psychologists, mainly Kohler's name comes.

Kohler forces on the using of insight after observing the entire situation. These psychologists give

importance to insight in learning. The development of insight is learning, which is used in one situation.

According to these psychologists- To carry over the performance of insight, used and developed from

one situation to other is called transfer of learning. A man observes the similarity between first and last

situations and transfers the insight gained from one to another situation. This transfer happens due to

the observed similarity. This type of transfer is seen in the solution of a problem, in which a man uses

the solution gained from one situation into another similar situation. So this transfer is purposeful and

effortful and equal opportunity is needed for this. Kohler has confirmed this theory by doing many

experiments on the chimpanzee. According to Bayles, it is necessary to have three things for transfer of

learning. (1) Arrival of opportunity. (2) To observe the opportunity. (3) The instinct of taking advantage with the opportunity in a man.

### **Types of Transfer of Learning**

There are six types of transfer of learning—

**(1) Positive Transfer**—When the learning of one subject proves useful into other subject, it is called

positive learning. We find in the positive transfer that, the affect of previous obtained knowledge, skill,

instinct or other responses is seen in later obtained knowledge, skill, instinct or other responses. For

example the man who has learnt typing on the English type writer, he learns easily typing on Hindi

type writer. Means English typing proves useful for learning. The opinions of psychologists related to positive transfer are following.

**(i) Morgan and King**—“Positive transfer occurs when something previously learned benefits performance or learning in a new situation.”

**(ii) Sorenson**—“A person learns through transfer to the extent that the abilities required in one situation help in another.”

Positive Transfer is like a horizontal and vertical. Its description has been presented in no.3 and 4.

**(2) Negative Transfer**—When the learning of one subject and skill hinders in the learning of another

subject and skillfulness or produce complication, which is called negative transfer, as it is difficult for

a science side student to learn Arts side subjects. And other example as- the skill or knowledge of

previous learnt English typing hinders in the learning of Hindi typing on Hindi type writer. This is

negative transfer. In relation of negative transfer in which, we find after completing previous task in the

completeness of later work, Psychologists have following opinions-

**(i) Morgan and King**—“Negative transfer occurs when something previously learnt hinders performance or learning in a new situation.”

**(ii) Boring and others**—“when learning one task makes the learning of second task harder we speak of negative transfer.”

Negative transfer is horizontal and vertical type as well. Its description has been presented in point no.

3 and 4. The nature of negative transfer is of two types—

**(a) Retro-active Negative Transfer**—When something previously learnt is affected or forgotten by the

learning of new thing, it is called retro active negative transfer. For example it is difficult to remember

previously learnt poem after learning the new poem.

**(b) Pro-active Negative Transfer**—When previous learnt thing affects or hinders the learning of the

new thing, it is called proactive negative transfer. For example, the previously learnt poem hinders in

the learning of second poem, or the lines of previous poem interfere in the memory.

**(3) Horizontal Transfer**—There are two types of horizontal transfers. When different types of talents

and knowledge help in the learning of other talents and knowledge, it is called horizontal transfer. This

transfer occurs between two subjects in a class. For example in the tenth class, a student's maths related

learning helps in the study of Physics. We call this type of transfer positive horizontal transfer. On the

contrary if the learning and talent of one subject hinders in the learning and talent of other subject, it will

be called negative horizontal transfer. For example tenth class student obtains knowledge and talent in

maths, but this obtained knowledge hinders in the learning of Hindi and English. This type of learning

will be called negative horizontal transfer.

**(4) Vertical Transfer**—There are two types of vertical transfers, negative and positive. When the talent

and knowledge obtained in a situation proves helpful in the obtaining knowledge of related subjects moving further, it will be called positive vertical transfer. For

example, learnt maths in class eight proves

helpful in the learning of maths in tenth class by a student. On the contrary, when obtained knowledge

and talent related to one subject hinders in obtaining knowledge and talent related to that situation, this type of transfer is called negative vertical transfer, for example- the literature knowledge of class eight's student hinders in obtaining knowledge in next class, this type of learning will be called negative vertical transfer. Means the first step of learning hinders in the learning of second step.

**(5) Lateral transfer**—when the efficiency of one organ of body affects the other related talent of the same organ, then, this type of learning will be called lateral transfer. For example- the skill of Hindi writing by the right hand affects the skill of Sanskrit writing.

**(6) Bi-lateral Transfer**—When the acquired efficiency by one organ of the body affects the efficiency of another organ, then this type of transfer will be called Bi-lateral transfer. For example a man learns to write with right hand but according to the need he can also write with left hand, even while he has not practiced to write with left hand. We can see in this situation that the talent of right hand was transferred in left hand.

### **Conditions of Transfer of Learning**

The following conditions prove helpful in the transfer of learning—

**(1) Generalization**—Much as a person is capable in finding the general theory or rule on the basis of his previous experiences, there is transfer of training.

**(2) Understanding**—Identical knowledge is acquired after the understanding of any thing very well.

Consequently there is more transfer. So it is better to understand any subject well for the transfer of teaching.

**(3) The degree of mastery on the subject-matter**—More the skill is gained after the deep studying of any subject, more transfer of that subject into others subjects is possible.

**(4) Deliberation**—If a man after keeping his previous experiences tries to understand the new situation

or subject by the effortful and proper education methods, there is the transfer of teaching.

**(5) Attitude toward the material of transfer**—A person's positive attitude towards the material of transfer proves helpful in the positive transfer.

**(6) Method of Teaching**—Above teaching methods provide help in the transfer of teaching.

### **Educational Importance of Transfer of Learning**

**For the education**—It affects of the process of learning transfer in education.

Following things should

be paid attention to for the transfer of learning in education-

**(1) Transfer and syllabus**—The most important use of transfer is for the development of syllabus.

For the discipline in the children, the favorable syllabus should be prepared, means it includes such

subjects which are useful and related to the problem of daily life. The nature of syllabus should be

practical. It is the opinion of Thomson- "It is beneficial to have more subjects in the syllabus. The more

subjects will be, more students will learn the abilities of surviving."

**(2) Transfer and Teaching method**—A teacher should provide the education by the proper method

for the positive transfer. They should be given education in such a way that he could make the use

of acquired knowledge of one subject, in the learning of other subjects. Child should also be given

necessary guidance for the transfer. Children should be told identical element related to subject for the

transfer of one subject's knowledge in to other subject. For this it is necessary to pay attention to the

rules of association. For the success of transfer, a teacher should try to make his subject more interesting.

**(3) Generalization**—A teacher should follow such an educational method during the time of teaching,

following which the student could himself find out the general theory related to subject. Student should

be provided opportunity and should not be interfered in that. After developing the characteristics of

generalization, child uses it soon in the new situation. It is the statement of Handrix related to it “The child who has the knowledge that after multiplying six by eight makes forty eight, he can soon tell that 8 chairs in 6 rows are 48.” So whatever a teacher teaches should be taught on the basis of generalization. There is more possibility of transfer with it.

### **Unit –II:**

(a) Intelligence- Meaning, theories of intelligence (Unitary, Spearman, Thurston and Guilford’s), measurement of intelligence, uses and limitations of intelligence tests.

### **Introduction**

Intelligence is a common word in daily life, which is used in many meanings. During the time of studying personality differences in detail, we will see that two persons are not similar, some are more intelligent and some are dull minded, some are slow and some resolve the problems within few minutes. There are many reasons for personality differences, among which Intelligence is important. Mental ability of a child is affected by his intelligence. This is a universal truth that, an intelligent man gets success in all the spheres of life, on the other hand a proper environment is also needed for his development. Intelligence is not one quality in itself but a collection of many qualities. A man cannot be called intelligent or dull minded, until the intellectual characteristics in his behavior are tested. Intellect cannot be seen directly, so we can say that intellect is an imagined power. A man mostly uses intellect in understanding the

### **Nature and Theories of Intelligence**

#### **Nature and Definition of Intelligence**

“What is intellect?” Psychologists have different opinions in regard of this question. Different Psychologists have described the nature of intelligent according to their opinion. So we can understand the nature of intelligence after studying the definitions given by them. The definitions given by psychologists are following—

**1. According to W. Stern**—“Intelligence is a general capacity of an individual consciously to adjust his thinking to new situation.”

**2. According to C. Burt**—“Intelligence is the innate capacity to adapt relatively to new situations.”

Intellect can not be seen directly, it’s an imagined power.

**3. According to A. Binet**—“To judge well, to comprehend well, to reason well, these are the essential activities of intelligence.”

**4. According to F. Galton**—“Intelligence is the power of recognition and learning.”

**5. According to L. Terman**—“Intelligence is the capacity to carry on abstract thinking.”

**6. According to Thorndike**—“Intelligence is the power of good response from the point of view of truth or fact.”

**7. According to Buckingham**—“Intelligence is the ability to learn.”

**8. According to W. C. Dougall**—“Intelligence is the capacity to improve upon innate tendency in the light of previous experience.”

**9. According to Wells**—“Intelligence is the ability of adjusting to new situations.”

**10. Spearman**—“Intelligence is the power of attention.”

**11. Stout**—“Intelligence is the general ability of the individual.”

**12. Woodrow**—“Intelligence is an acquiring capacity.”

**13. Ebbinghans**—“Intelligence is the power of combining parts.”

**14. Wechsler**—“Intelligence is the aggregate or global capacity of the individual to act purposefully, to think rationally and to deal effectively with his environment.”

**15. Garret**—“The ability demanded in the solution of problems which require the comprehension and use of symbols, i.e words, numbers, diagrams, equations, formulas.”

**16. Woodworth**—“Intelligence is a way of acting.”



## **Characteristics of Intelligence**

On the basis of the definitions given by psychologists, intelligence has following characteristics—

1. Intelligence is an innate power. It is gained from heredity.
2. Intelligence is the power, by which, a man organizes his behavior according to the situation after removing its complication.
3. Intelligence is the capacity of learning.
4. Intelligent is the ability of taking advantage from previous experiences.
5. Intelligence is the ability of abstract thinking, means with the help of intelligence we can think of something which is not evident.
6. Intelligence is the set of different abilities.
7. Intelligence is the essence of all special abilities.
8. Knowledge obtained by intelligence can be used in new situations.
9. There is difference between intelligence and knowledge.
10. Due to the sexual differences, difference is not seen in intelligence.
11. Intelligence is the power of introspection. Intelligence itself criticizes the actions and thoughts done by a man.
12. Intelligence tries to understand any problem, and then inspires the mind to take decision.

**Factors influencing the intelligence**—There are many factors influencing the intelligence—

Heredity  
Race Sex  
Mind  
Health  
Environment Age

**1. Heredity**—Many psychologists did various experiments in this context and found out the conclusion that heredity effects intelligence. As Freeman considered that intelligence is closely related to heredity.

**Gesell and Galton** found out the conclusion that intelligence is more effected by heredity not by environment. **Pearson** proved this on the basis of his study that the children of intelligent parents

are also intelligent to a large extent. Besides it, Psychologists like Schvesinger, Dason, Newman also considered that intelligence is more effected by heredity. So it is an important factor.

**Environment**—Many psychologists also did many experiments in the relation of environment. They believe that intelligence is more effected by environment than heredity. Kodak studied such eighty mothers who had brought up their children in good environment to know the effect of environment on intelligence. **Wellman** Leahy and Skeel also proved on the basis of his experiment, if a child is provided good environment, big changes can be brought in his intelligence. The psychologist of this belief also accept that intelligence is more affected by environment.

**Age**—The relationship between intelligence and age is also accepted as an important factor. Many experiments and study have been done in this context. As by- Terman, Miles & Miles, Johns, Thorndike, Spearman etc.

On the basis of all these experiments it has been concluded that, generally intelligence grows from the age of 16 to 20 years, but in India it is considered that the development of intelligence happens till the age of 25.

**Race**—Psychologists also accepted the effect of race on intelligence in their study and reached on the conclusion that race difference has no effect on intelligence. There are three groups of people are found

in all the races - intelligent, common and dull minded. Their percentage can be more or less, however some psychologists considered that intelligence is also affected by the race.

**Sex**—Intelligence is affected by sex, or not, many experiments also have been done in this connection.

Psychologist Witty considered that there is no especial difference between sex difference and intelligence,

but if girls are not provided proper environment , their rumination side go backward, and the girls, who

do not get liberal environment, are less intelligent than the boys. **MacMeeken** (1939) evaluated the

intelligence of 875 children in his study, who were from Scotland. The evaluation of the intelligence

of these children was done by Stanford Binet Test. After the study it was found that boys' IQ was on average was 100.5 and girls' IQ average was 99.7. Both the mean of I.Q and S.D was 15.9 and 15.2 respectively. Some psychologists' concept was that girls I.Q were more than that of boys from six to fourteen. After this at the age of sixteen both, girls' and boys' IQ is equal and after this age boys' IQ is more.

**Health**—As it is said that 'Healthy mind grows in healthy body'. It has been felt that from daily life's experiences that better is the health, better is the development of the intelligence in the child. So health also affects the intelligence of a person.

It has been concluded on the basis of many psychological experiments that the development of intelligence happens between the age of 16 to 20, however it is believed that it grows till the age of 25 in India.

### **Difference between Intelligence and Knowledge**

According to the psychologists there are following differences between intelligence and knowledge—

1. Intelligence is an innate power obtained by heredity, while knowledge is obtained power. Knowledge is attained in environment.
2. Intelligence is stable, knowledge is increased by gaining. Intelligence is not more or less, but knowledge can increase.
3. More intelligence can develop more knowledge, but more knowledge cannot develop more intelligence.
4. A man can be a scholar, but it is not necessary that he will be intelligent. In this way it is not necessary that whoever is intelligent, will also be a scholar.
5. To know many things is knowledge, but to use them is intelligence.
6. Psychologist Ross said that "Intelligence is the goal and knowledge is only a way to reach it."
7. Psychologist Ballard said that "Intelligence is a mental ability which is evaluated by the means like knowledge, interest and habit."
8. "In the worldly life intelligence the usable knowledge and thinking is intelligence." These thoughts

have been expressed by Sir Adams.

9. If a man's intelligence is destroyed, his knowledge is finished.

10. Intelligent men can face difficulties easily, while scholars are unable in doing so.

Explain the meaning of obtained and innate in the context of intelligence and knowledge.

### **Kinds of Intelligence**

Psychologist Thorndike has considered intelligence, as the collection of many abilities. He has given the following three types on the basis of it—

1. Abstract Intelligence
2. Social Intelligence
3. Motor or Mechanical Intelligence

**1. Abstract Intelligence**—Minor feelings are known by this intelligence. Poets, Author, Painter etc

express their feeling by this intelligence. Words, digits and symbols are used in this type of learning.

This is a process of learning the academics. And the processes of solving of those problem in which

words and symbols are used. So it is the giving of abstract and oral intelligence to express the opinion

by the medium of words and symbols. It is necessary to develop Abstracts intelligence in such

subjects as- reading, Mathematics, Geography, History in school. New planning, new invention,

new rumination is possible by this intelligence.

Abstract intelligence can be tested by three types—

**a. Level of ambition**—by the evaluation of the level of the ambition of a man, that man's abstract

intelligence is known. Highly ambitious man will have high intelligence.

**b. Doing different types of job**—The man who are involved in different type of working, their capacity

of working can be known under abstract intelligence.

**c. Speed of doing work**—the man who does abstract actions with high speed. His abstract intelligence

will be less or more according to that.

### **Self Assessment**

Put right or wrong sign in front of given statements:

1. Psychologist ‘Galton has said about the intelligence—“Intelligence is the power of learning and recognition.”

2. Intelligence can be gain by effort.

3. In India intelligence is developed till forty years.

4. Intelligence is an innate and obtained power.

**2. Social Intelligence**—This intelligence is related to the social conditioning, which helps a man in adapting according to the society. Due to the social intelligence, a man affects another man with his behavior. This type of man is happy, practical and takes interest in social activities. Due to the social intelligence a man leads a successful life in society. These types of men are occupational, politician and social worker.

**3. Mechanical Intelligence**—Mechanical intelligence means the power or ability, by which, a man can adjust himself with the situation related to mechanical or material things. The children, who have this intelligence, are seen in the starting period. They try to repair by opening their watch, toy and bicycle. Such children, after growing up, become expert mechanic, engineer. Mechanically intelligent children are expert in games and physical activities.

#### **14.5 Summary**

□□ Intelligence is a common word in daily life, which is used in many meanings.

During the time of studying personality differences in detail, we will see that two persons are not similar, some are

more intelligent and some are dull minded, some are slow and some resolve the problems within few

minutes. There are many reasons for personality differences, among which Intelligence is important.

Mental ability of a child is affected by his intelligence. This is a universal truth that, an intelligent

man gets success in all the spheres of life, on the other hand a proper environment is also needed

for his development. Intelligence is not one quality in itself but a collection of many qualities.

□□ Various Psychologists have described the nature of intelligence on the basis of their thinking.

□□ Intelligence has some characteristics. Intelligence is the capacity of learning. Intelligent is the ability of taking advantage from previous experiences. Intelligence is the ability of abstract thinking, means with the help of intelligence we can think of something which is not evident.

□□ There are many factors influencing the intelligence: heredity, environment, race, age, sex and health.

□□ Psychologist Thorndike has considered intelligence, as the collection of many abilities. He has given the following three types on the basis of it, i.e. Abstract intelligence, Social Intelligence and Motor or Mechanical Intelligence.

1. Abstract Intelligence
2. Social Intelligence
3. Motor or Mechanical Intelligence

## **Intelligence Tests**

### **Introduction**

As two men look different in their color, physique, height, and weight, so they are different in mental abilities. It is important in the field of education to study the differences in mental abilities. Keeping in mind the differences of the mental abilities of students, teachers have to arrange the educational work and divide the classes in different groups. The differences between the mental abilities and capabilities are decided by intelligence.

### **Intelligence Tests**

In education it is necessary to study the personality differences. Many methods are used for obtaining the knowledge of personality differences. Psychologists have made different tests for the measurement of personality differences. Intelligence tests have been prepared for the measurement of intelligence.

Intelligence tests help in the solution of many problems related to education, so it is necessary to obtain knowledge about them.

### **History of Intelligence Tests**

It is evident after describing the meaning, nature, kinds and theories of intelligence that psychologists define the intelligence as the ability of learning, ability of rumination and the ability of adjustment.

The credibility of intelligence and its connection goes to personality differences. In 1796 in Greenwich

astrolological laboratory, a man named Kinnerbrooke was appointed as an assistant supervisor. He

studied the movement of stars, planets with the help of telescope and calculated the time. His speed

was slow, so he was fired from the job. After some time astrologers pondered on this event and found

out that every man has different ability and capability. So they developed the thought of personality equation.

In the modern times, scientific studies related to intelligence tests were started in Europe. The famous

German Psychologist, Wundt established first laboratory of psychology in 1879.

In this laboratory

intelligence test was done on the scientific basis. Here the measurement of intelligence was done by

the instrument. Being encouraged by the work of **Wundt**, the psychologists of other countries also

started doing work related to intelligence tests. In this relation **Alfred Binet** of France, **Thorndike** and

**Terman** of America have done works that worth mentioning. Other psychologists as **Galton**, **Cattell**

and **Pearson** have also invented many intelligence tests, but these tests measured common mental

activities, so these cannot be called intelligence tests. In this field the first and prominent was **Alfred**

**Binet**. In 1900 Binet prepared exercise for the intelligence test of different ages' children with the help

of psychologist Simon, which was called '**Binet-Simon Scale**'. Binet Simon Tests were considered in

different countries. Then after 1908 Binet Simon Scale was improved in America and Europe. Terman in America corrected the name of Binet Simon Scale between 1913 and 1916 and kept its name Stanford

**Binet Scale.** In 1937 **Terman**, in India, made some improvement in it with the help of **Merril** and kept its name **Terman-Merril Scale**. These tests are used for the measurement of intelligence for the children in America and India. Even in Indian psychologists' laboratory, Allahabad corrected Binet Simon tests for the Indian children. In India **Dr. Sohanlal, Dr. Jalota, P. Lajjashanker Jha** and **Dr. Bhatia** etc have prepared different tests.

### **Kinds of Intelligence Tests**

Different psychologists have prepared different tests for the measurement of intelligence. It is evident from the study of intelligence tests' History that many intelligence tests had been prepared even before **Binet** in which Cattell's intelligence test was also present, but Binet, with the help of Simon in 1905 prepared an intelligence test, which has a scientific basis and which was used in different countries as a first famous intelligence test. Although after improving many things it has been given a new look yet many intelligence tests have been prepared in comparison of it. Today many intelligence tests are present, for the measurement of intelligence. If we put light on the kinds of intelligence tests, they can be divided between two groups—

- (a) Personal or community intelligence test
- (b) Verbal or non-verbal intelligence test

Intelligence test can be divided into four parts by the combination of above two groups—

1. Personal translation intelligence test
2. Personal non-verbal intelligence test
3. Community verbal intelligence test
4. Community non-verbal intelligence test

It is necessary to understand the differences and the nature of both groups before describing the different



kinds of intelligence tests—

**(a) Personal or community intelligence test**—Personal intelligence test includes the testing of one man

at a time, on the contrary, when many people are tested together at one time, it is called community

intelligence test. Personal and community intelligence tests have some differences which are following-

### **Difference between personal and community intelligence tests**

Following differences are found in the personal and community intelligence test

#### **Personal Test**

1. This test takes much time.
  2. This test can only be taken by a trained man.
  3. This is appropriate for the young children.
  4. This test has
  5. There is diffi
- questions.
6. This test is expensive.
  7. Child is often confused in this test.
  8. There is close intimacy established in this test between the child and invigilator.
  9. The results of this test are more valid and reliable.
  10. In this test, community intelligence cannot be known.

#### **Community Test**

1. This test is often completed within 45 to 50 minutes.
2. This test can be taken by a common man.
3. It is appropriate for the elders and adolescence.
4. It has easy questions.
5. Questions are prepared easily in it.
6. This test is not expensive.
7. In the community test, they support happily.
8. There is lack of this thing in community test.
9. The conclusions of community test are less valid and reliable.
10. Community can be guessed in the community test.

We can say after the above description that personality test is better in comparison of community test.

Personality test needs more money, time and trained man, so community tests are used mostly. But as far as the question of validity and reliability, personality tests are appropriate.

**(b) Verbal or Non-Verbal Intelligence Test**—Language is used in the verbal intelligence test. Many questions are collected together in a small book in this test. In the verbal test words and digits are mostly used. In this test it is necessary for a man to have knowledge of language and digits. In non-verbal intelligence test language is not used. Some indications are indicated for doing some work in this test, so it is also called '**Performance Test**'. Performance intelligence tests are used for the people who do not have the knowledge of language or illiterate. Mostly non-verbal or performance intelligence tests are in the form of personality tests. In non-verbal intelligence, test language is not used, indications are provided for doing some works. So it is also called performance test.

Development of learner and teaching learning process 127 30/07/13 3:03 PM

### **Difference between verbal or non-verbal intelligence test**

In verbal or non-verbal intelligence test, following differences are found-

**Verbal Test**

1. In verbal test, it is necessary for a man to have knowledge of language and digit.
2. In verbal intelligence test the marking of responses is done after reading the instructions given in language and digits.
3. For the marking of responses in the verbal test, putting tick on the words/sentences, filling in the blanks, matching the correct responses are used as methods.
4. In the verbal intelligence test, time limitation is not so important.
5. The effect of the development of language affects the result of this test.
6. Mostly, verbal intelligence tests are taken in groups.

### **Non-Verbal Test**

1. In non-verbal less test it is not necessary to

have knowledge of the language.

2. In the non-verbal intelligence test examiner gives oral instructions. The candidate verbal instructions and functions. Instructions can also be written, but the response does not use words or numerals.

3. In the non-verbal test, to recognizing the picture completing the organs, making the figure, joining the parts according to the picture etc. methods are used.

4. In the non-verbal test for the measurement of Intelligence, limitation of time is given importance.

5. The effect of level of the knowledge of language does not fall on the conclusion of non-verbal intelligence test.

6. Non-verbal intelligence tests are often taken individually.

Now it will be appropriate to briefly describe the four groups of intelligence tests that emerge from these two broad categories—

**1. Personal verbal intelligence test**—One man is tested at a time in the personal verbal intelligence

test. It is necessary for a man to know the language which is used in the test.

Specific personality verbal intelligence test are following—

**(a) Binet-Simon Intelligence Scale**—Binet developed an intelligence test with the support of his

companion **Simon** in the effort of recognizing weak students, which was published in 1905. Binet test is

considered first among the successful intelligence tests. In 1908 and 1911, both

tried to make it complete after doing corrections in it. This test is known with the name of Binet-Simon Scale test.

In **Binet-Simon Scale** test Intelligence is done on the basis of mental age. Some questions are given

to know the mental age each year. The child who responds correctly to the entire questionnaire

for the determining age, his mental age is calculated, for example, if five years child gives correct

answers of the questions determined for four years' age, his mental age is considered to be four years, but if he answers correctly to the questions determined for the seven years, his mental age will be considered seven years. In the comparison of real age, if the mental age is more, the child will be considered more intelligent. This type of intelligence measurement is expressed as intelligence quotient. To know the intelligence quotient methods are given. Binet- Simon intelligence test was decided for 3 to 15 years old girls/boys, four questions were determined for 4 years' child and no questions were determined for 11 to 13 years age. For three years' age, following questions were determined—

- (i) Tell your name.
- (ii) Point your mouth, nose and ear with your hand.
- (iii) After seeing a picture tell some important things.
- (iv) Repeat easy sentence of six words.
- (v) Repeat two digits after hearing once. As 2-3, 3-7, 6-8 etc.

It was found in the final studies that Binet-Simon Scale had many faults. The main fault was if any child could not answer the questions determined for his age, his mental was considered less than his real age.

**(b) Stanford Binet Scale**—In spite of having many faults in Stanford Binet-Scale, it became world famous and got success in getting the attention of popular psychologists. To make Binet-Simon intelligence Scale free of faults, **Cyril Burt** of England and **Lewin M. Terman** of America, who were professors of psychology in Stanford University, did important work in 1916. Thus improved intelligence test is known by the name of '**Stanford Binet-Scale**'. While doing correction Terman made it fault-less with the help of his friend **Maud A. Merrill** in 1937 and again in 1960. 90 questions were put in place of 54 exercises of Binet in this corrected intelligence test, in which, some questions of Binet were also included.

The intelligence of boys and girls of 2 to 14 years of age is measured by this scale. In this test two months were decided for the correct answer of each question for the age till 13, four months for the age till 14, and five months were decided for normal adult. On the basis of the answers of the questions of this exercise, mental age is known. And decision is given about the measurement of intelligence in the ratio to his

real age. For example, in the exercise of Stanford Binet for the age of three years the list of determining questions is followings—

- (i) Telling the name of his family.
- (ii) To say about itself whether boy or girl (sex knowledge).
- (iii) Repeat the sentence of 6 to 7 words.
- (iv) Telling about his mouth, nose, ears etc with his finger.
- (v) Seeing the knife, Scissors and keys etc, to tell their name.
- (vi) Seeing any picture, telling its important things.

Through the above mentioned questionnaire Binet – Simon and Stanford – Binet Scale IQ differences can be seen.

**2. Personality Non-Verbal Intelligence Test**—Personality nonverbal intelligence tests are for those who do not have language related knowledge. Pictures, things and figures are used in place of language.

This type of intelligence is also called performance intelligence, because answers are given in it in a performing way. Important nonverbal intelligence tests are following-

**(a) Picture Drawing**—This test is appropriate for the child from 4 to 10 years.

Paper and pencil is given to the child, he is asked to draw the picture of a cow. In this test, marks are given on the basis of the completeness of the picture.

**(b) Picture Completing Test**—In this test in front of the child picture is given cutting in square in shape, and said to them, after collecting make a complete picture.

**(c) Maze Test**—In this test, child is given such a picture which has many ways to reach to a destination.

The children, who reach there without any difficulty, are considered intelligent.

**Portius Maze Test**

**d) Form Board Test**—In it, there is a board of wood in which, the holes of different shapes are made, as circular, semi-circular, triangular and quadrangular etc. The pieces that have been cut out have to be fixed in proper places. The child, who puts the proper pieces in proper places within proper time, is considered intelligent.

**(e) Performance Group-Test made by Dr. Alexander**—Alexander has invented a Battery after assembling up three test for the measurement of intelligence. This battery has following three tests—

**I. Kohas Block Design Test**—In this test, there are sixteen colorful cubes of one inch and ten designs.

These designs are prepared upon the piece of card-board with the same color. Child has to jumble up all the cubes in such a way that design is made. Child has to jumble up all the cubes in many ways for different designs.

### **Kohas Block Design Test**

**II. Cube Construction Test**—This test has three parts—

**(i) In the first part**, there is a big model Block of 3"  $\square \square 1"$   $\square \square 1"$ . Its four surfaces are of red colors and upper and lower surface are simple. Apart from this, there are 9 cubes made of 1 inch. Its surfaces are colorful. Arranging the small boxes the shape of the model block is obtained.

**(ii) In the second part** of the model block, only the lower surface is not colorful. There are 9 cubes of 1 inch cube in it, whose surfaces are colorful. It is asked to them to prepare the shape of model block by jumbling them up.

**(iii) In the third part** there is a colorless cube of two inches and cubes of 8 cubes of 1 inch, out of which **Notes** three surfaces are colorful. Assembling up, all these small cubes have to be put in a shape.

**III. Pas Along-Test**—In this test, there are 8 square or rectangular pieces of red or yellow color. These

have to be moved without lifting that the required design is obtained. There are eight designs in this test.

**(f) Object Assembling Test**—Wacksler test is famous among this kind of tests. A human figure is divided in to many in it and child has to prepare a complete human figure after assembling the different parts.

**(g) Bhatia Battery**—The founder of Bhatia battery is Chandra Mohan Bhatia. It is also made for the measurement of intelligence in Indian situation. In this Battery, there is a assembling of five tests, which are following-

- (i) Kohas Block design test
- (ii) Alexander pass along test
- (iii) Pattern drawing test
- (iv) Immediate memory test
- (v) Picture creativity test

Intelligence test prepared by Dr. Bhatia is very good for the measurement of intelligence in Indian situation.

In the above test, there is limitation of time. Only 45 minutes are given for the responses. Students can answer the questions as early they want. On the basis of it, the speed of person is also tested along with the intelligence. In the tests where time is limited, they are called **time limited test**. Some tests don't have time limitation. Student can take long time for responding the questions. In this test, it is also seen how accurate work a student can do along with the intelligence.

**3. Community Verbal Intelligence Test**—language is more used in it. In this test many questions that are collected in a small book. In the verbal test words and digits are used mostly. Children's verbal ability is measured by these tests.

The examples of the questions of Verbal intelligence test's are following—

1. In the following words which words are different from other words, underline them—

Chair, Table, Cupboard, Bed, Shirt.

2. Which is not matched with the rest four among the five words?

China, Japan, Mumbai, India, France.

3. The opposite of night is –pupil, king, day, evening.
4. 1, 4, 12, 16, 20—Write the successive terms of this sequence.
5. The meaning of mountain is—Field, Coast, Hill, Stone.
6. Vimal runs faster than Kamal. Hari runs slower than Kamal. Who runs fastest? Kamal, Vimal, Hari?

Group verbal intelligence test was developed during the time of First World War, because armies were to be selected within the short span of time. The main tests of this group are following-

**(a) Army Alpha Test**—This is for the people who know English. This test was developed in America for selecting officers, supporting staff and soldiers in large number during the time of World War I. It seems that the subject material of this test has been taken from the **Stanford-Binet Test**.

**(b) Army General Classification**—Army general classification had been prepared for the classification of army for the different divisions during World War II in America. In this test, there are three kinds of problems, As-Vocabulary, Maths and the problems related to the counting. This test was used for conducting the intelligence test for about of 12 lacs applicants. In the field of collective intelligence test, notable efforts have been done in India. In which, Dr Mohanlal's B.P.T 12, B.P.T 13, B.P.T 14 are for the age of 12, 13,14. Dr. Jalota's and Dr. Joshi's tests are considered important. Besides it many intelligence tests have been prepared by Psychologists' Laboratory, Uttar Pradesh which are for the classes of eight, ninth and tenth standard.

**4. Group Nonverbal Intelligence Test**—Language is not used in it. In this test the picture of any animal is made and mistakes are to be found in the given picture. **Terman, Thomson, Hangto, Ballard** and **Cattell** etc. psychologists gave essential contribution in the construction of intelligence test. Ballard's saying in this relation—"To find out fools and not to plough donkey with bull and to place capable person on the right position is possible with this plan." This type of test is applied for many men together without using language. This group's noted tests are following—



**(a) Army Beta Test**—Army beta test was also developed during the time of First World War in America for the fulfillment of purpose like Army Alpha test. The selection for the various positions for different divisions in the army was to be done from the people who were illiterate or had no knowledge of English language. Hence this method was adopted to find out the people with relative intelligence among the people with no knowledge of English language. Intelligence is measured in this method by counting of the articles, telling the relation between two articles with respect to the printed figure, and marking the elements of the figure which do not correspond to these articles at all etc. problem resolving.

**(b) Chicago Non-verbal Test**—Chicago non-verbal test is used for the age from 6 years boys or girls till the adulthood. It has proved more useful for the intelligence test of the age of 13 years. In this test, many working instruction are given, as telling the equality or inequality in different shapes, completing the picture after assembling the separated pieces of the picture, counting the things with the help of wooden pieces and recognizing the same things among the different things and putting them in different classes.

Besides the above in the group verbal intelligence test, **Cattle's** cultural independence test and **Pigeon's** non-verbal test have important place, where different kinds of shapes are shown and similarities or differences have to be shown in those shapes.

### **Intelligence Testing in India**

The development of intelligence testing has been done in India some days ago. In the above described intelligence test, it was attempted to use Binet test in the Indian situation. Intelligence test related work was being done in the 'education department 'or psychological Bureau' in the universities of the different states. In 1922 Dr. C.H. Rice published '**Hindustani Binet Performance Test.**' This test is the

corrective form of Binet test. After this, whichever performance test was constructed, **Dr. Bhatia Battery of Performance Test** is worth mentioning.

**Bhatia Battery of Performance Test**—Dr. Bhatia constructed the performance test for the children on the basis of battery of performance test made by Alexander. Following five tests are included-

In your opinion, what are the reasons of late start of the intelligence testing in India?

1. Kohas Block Design Test.
2. Alexander Pass Along Test.

3. Pattern Drawing Test.
4. Immediate Memory Test for digits.
5. Picture Construction Test, it has two tests of the same types which have been described above.

**Pattern Design Test**—In the Pattern Design Test, 8 line art were drawn on different cards. It is asked to draw the similar picture putting them in front.

**In the Immediate Test for Digits**—some digits as 7, 5, 11, 14 are asked to repeat once they are shown or told.

**Picture Construction Test**—There are five scenes from Indian life, putting them in the different pieces it is told to assemble them. Complete picture is prepared with this activity.

Apart from these intelligent test, following tests have been prepared in Hindi—

**1. Verbal Intelligence Test**—This was constructed in psychological Bureau in U.P. This test is for the age of 10 to adulthood.

**2. Verbal Intelligence Test**—This test has been prepared in U.P., this test is for the children of class 8, 10, and 12.

**3. Verbal Intelligence Test**—This test is for the children of 10 to 16. It has been constructed by Dr. S.A. Mohsin.

**4. General Mental Ability test**—This test has been constructed by Dr. Jalota. This test is for the age of 12 to 16 years.

Besides it, many intelligence tests have been prepared, which are used in the different fields according to the need.

**Self Assessment**

Select the correct alternative:

1. The credit of establishing the first laboratory goes to—  
(a) Alfred Binet (b) Wount  
(c) Terman (d) Alexandar
2. The American psychologist who corrected 'Binet-Simon Scale' was—  
(a) Pearson (b) Galton  
(c) Terman (d) Alfred Binet
3. The credit for preparing the first intelligence in India goes to—  
(a) Dr. Sohan Lal (b) Dr. Bhatia  
(c) Dr. Jalota (d) All above
4. The basis of intelligence test prepared by Dr. Bhatia in India was—  
(a) Cattell's Performance Test (b) Binet Performance Test  
(c) Alexander's Performance Test (d) Binet-Simon Test

### **Method of Measuring Intelligence**

It is necessary for us to obtain knowledge about two subjects for knowing the method of measuring intelligence.

1. Mental Age
2. Intelligence Quotient

**Mental Age**—Mental age of a man is the indication of the level of intelligence. Mental age, in some especial age, expresses the mental maturity of a child. According to Dr. Mathur, "Mental age is the expression of limit of the development obtained by any man which is known by his works, and it is expected of him in some specific age." In psychology various kinds of intelligence tests have been constructed for the different ages and for determining mental age. Mental age can be known by these intelligence tests. For example, if any intelligence test, for the age of 12 years child's determines average score as 75, if the test score of any child is 75, his mental age will be considered 12 years even if he is 10 years old. There is no fixed relationship between the real age and mental age of any child. The mental age of 12 years old child can be equal to 8 years old child also. It is necessary to use intelligence test for

knowing the mental age. The knowledge of mental age is obtained on the basis of the responses of the above descriptive tests.

### **Intelligence Quotient**

After knowing the mental age of a man, it is not found whether he is intelligent, common or dull minded.

**Psychologist Terman** invented intelligence quotient for measuring the intelligence. What is Intelligence

Quotient? To know this, first it is necessary to find out the chronological age and mental age. After this,

intelligence quotient is known by the following formula.

Intelligence Quotient =  
Mental Age

$\frac{\text{C h r o n o l o g i c a l A g e}}{\text{C h r o n o l o g i c a l A g e}} \times 100$

Or, I.Q. =  $\frac{\text{M.C.}}{\text{C.A.}} \times 100$

For example if the mental age of any child is 15 years and his chronological age is 12 years, his intelligence

quotient is obtained in this way—

Intelligence Quotient =  $\frac{15}{12} \times 100 = 125$

The meaning of this intelligence quotient is that, the child is intelligent. Generally, whose intelligence

quotient is 100 or approximately, they are considered of normal intelligence.

### **The Classification of Intelligence Quotient**

Psychologists have put the intelligence of man in the following classes on the basis of the counting of intelligence quotient.

#### **Intelligence-Quotient Class Intelligence Class**

1. From 140 till 200 Genius
2. From 120 till 140 Very Superior
3. From 110 till 120 Superior
4. From 90 till 110 Average
5. From 80 till 90 Dull
6. From 70 till 80 Feeble Minded
7. From 50 till 60 Moron
8. From 25 till 50 Imbecile
9. Under 25 Idiot

### **Utility of intelligence Tests Notes**

Intelligence tests have important place in the field of education. According to modern psychologist, education should be provided considering child as the central point. So it is necessary providing education, keeping in mind the intelligence and the capability of child. From this point of view, intelligence tests have become the important aid to education. Intelligence tests have following utilities in education—

**1. Help in the Selection of the Student**—Intelligence test helps in the entrance of proper student for proper class. Unworthy student are found out by it. And only worthy students are selected.

**2. Help in the Psychological Classification of Child**—Children can be divided into various classes with the help of intelligence tests. Genius, Average and dull minded children, Putting them in different classes, education should be provided to them according to their ability.

**3. Help in the Measurement of Especial Ability**—The best student in the college can be selected by this test, whoever gets highest place in the debate or other activities.

**4. Help in the Dealing with the Problematic Students**—The intelligence quotient of such a child found out by the intelligence test, whether the reason of his behavior is lack of intelligence or any other reason. Thus, with the help of intelligence test, the reason of uncommon behavior is known and they can be cured or improved.

**5. Help in Giving Work According to the Capacity of a Child**—The working capability of child can be found out by the intelligence test.

**6. Indication Towards the Future of a Child**—Douglas and Dazed have said, “intelligence tests point towards the future of a child.” His future problem can be found out by this test.

**7. Help in the Selection of Syllabus**—It can be found on the basis of the test which subjects are proper for which students.

**8. Help in the Annual Examination**—On the basis of these tests, if intelligent student get less mark in the examination or gets failure, or due to illness he does not obtain good marks, he can be promoted to

the next class.

**9. Verification of the Works of a Teacher**—How has teacher taught the students, it can also be found out by these tests.

**10. Help in the Teaching Work of Teachers**—By using the intelligence test, genius or dull minded child can be put in the different classes. Teachers feel comfort in teaching in this type of class, in which the students are of same level of intelligence and student also learns with interest.

**11. Help in the Guidance Related to Occupation**—Student's occupational ability can also be known by the intelligence test and they can be provided help in the selection of occupation.

**12. Knowledge of the Progress of the Students**—Teacher finds this by using the intelligence quotient, that, according to his ability, a student is progressing in his subjects or not. Thus by this test, the hardwork done by the student can be known.

**13. Diagnosis of Mental Health**—By the intelligence test, mental unhealthiness can known and cured.

**14. Help in Deciding Scholarships**—By these tests, worthy students can known, and scholarships can be given to them.

**15. Remedy of Extravagance in the Education**—Often in the colleges, many youngsters post-pone their education after failure. So for removing this extravagance, knowledge of a child's ability can be known, and they can be provided help in the selection of the proper subjects.

**16. Help in the Study of the Specific Classes of Children**—Intelligence test helps in the survey of the intellectual level of other racial community or specific classes as- dumb, deaf and blind.

**17. Utility in the Field of Industrial and Occupation**—By the intelligence test, help can be taken in the selection of the employees and officers for the government and non-government services. Thus,

we can see that the use of the intelligence test in the different field of day to day life is increasing.

Many problems can be resolved and cured by the intelligence test in all the important spheres of life.

Especially its usage has been proved very important in the educational field.

### **Summary**

□□ It is important in the field of education to study the differences in mental abilities. The differences

between the mental abilities and capabilities are decided by intelligence.

□□ In education it is necessary to study the personality differences. Many methods are used for obtaining the knowledge of personality differences.

□□ Psychologists have made different tests for the measurement of personality differences. In modern warfare, intelligence-tests began in Europe in relation to scientific study.

□□ In this relation **Alfred Binet** of France, **Thorndike** and **Terman** of America have done works that worth mentioning. Other psychologists as **Galton**, **Cattell** and **Pearson** have also invented many intelligence tests, but these tests measured common mental activities, so these cannot be called intelligence tests. In this field the first and prominent was **Alfred Binet**.

□□ Today many intelligence tests are present, for the measurement of intelligence. If we put light on the kinds of intelligence tests, they can be divided between two groups—(a) Personal or community intelligence test (b) Verbal or non-verbal intelligence test.

□□ The development of intelligence testing has been done in India some days ago. In the above described intelligence test, it was attempted to use Binet test in the Indian situation. Intelligence test related work was being done in the 'education department' or 'psychological Bureau' in the universities of the different states. In 1922 Dr. C.H. Rice.

□□ Intelligence tests have important place in the field of education. According to modern psychologist, education should be provided considering child as the central point. So it is necessary providing education, keeping in mind the intelligence and the capability of child. From this point of view, intelligence tests have become the important aid to education.

### **Theories of Intelligence**

Psychologists have accepted the following theories about the organization of intelligence—

1. Unifactor or Monarchic Theory

2. Two factor Theory

**Theories of Intelligence**

3. Three factor theory **Notes**

4. Multi factor or anarchic theory

5. Multi mental Ability theory

6. Group factor or Oligarchic theory

7. Hierarchical Theory

8. Cattell's Theory

9. Unified Theory

**(1) Unifactor or Monarchic Theory**—It has been called one factor theory. The followers of this theory are Binet, Terman and Stern. According to it, intelligence is a unit and entire intelligence does only one type of work at one time when active. According to this theory intelligence is the most powerful mental power, which dominates all mental abilities. But this theory is considered faulty, because we cannot say if a person is good in Mathematics, he will be good in arts as well.

**(2) The Two Factor Theory**—the follower of this theory is psychologist, Spearman. According to this theory, there are two factors of intelligence, means intelligence can be divided between two parts.

(a) General Ability or 'G' factor

(b) Specific Ability or 'S' factor

**According to Spearman**, intelligence is the addition of two kinds of strengths.

General ability helps a

man in all kinds of activities and special ability helps in doing some special work.

As-one is intelligent in

music or art and other in Maths or Science. For the skillfulness in special activities,

'S' factor is needed.

**General factor of intelligence has following characteristic**—(1) it is found in all the factors. (2) It is innate. (3) This factor is always equal. (4) There is difference in the general ability of every person.

(5) The man who has this factor more, he gets more success than other person. (6)

This factor is more



needed in all works of life.

Spearman has considered difference in the general ability of man, one who has this factor

more, he succeeds more than others.

**These are Characteristic of Special Factor of Intelligence**—(1) this factor is found in different people

in less or more quantity. (2) Different kinds of special factor are determined for different activities.

(3) the person who has more quantity of any special factor, he gets more ability in that. (4) Special factor

can be acquired. (5) Different persons have different kinds of special factors.

**(3) Three Factor Theory**—In this theory, **Spearman** added collective factor with 'G' and 'S' factors of

intelligence. According to it, three factors are needed in the intelligence test—general intelligence, special

intelligence and language and spatial knowledge. This theory is in controversy.

Psychologists have

expressed their difference of opinions in this theory. So this theory cannot be all accepted.

**(4) Multi Factor or Anarchic Theory**—the founder of this theory is **Thorndike**, the famous psychologist

of America. According to his opinion intelligence is the collection of many kinds of powers and there is

no need of any kind of equality in these different kinds of powers. **Thorndike** does not consider the equal

factor of intelligence, in his opinion, all men have unique intelligence. If one has the ability in one subject,

his ability in other subject can not be guessed. **Thorndike** has divided the intelligence in three parts—

(i) Social Intelligence

(ii) Concrete Intelligence

(iii) Abstract Intelligence

Psychologist, Thorndike does not accept the equal factor of intelligence; rather in his opinion every man has a special intelligence.

**(5) Multi Mental Ability Theory**—Thorndike has called intelligence the collection of many abilities, but

Psychologist Thurston and Kelly have said that the intelligence is made of a collection of some mental

abilities. Kelly has described nine following abilities in the construction of intelligence—

- (i) Social Ability
- (ii) Verbal Ability
- (iii) Numerical Ability
- (iv) Motor Ability
- (v) Physical Ability
- (vi) Mechanical Ability
- (vii) Musical Talent
- (viii) Interest
- (ix) Ability to deal with special relations

Thurston concluded after using different kinds of psychological tests that intelligence is the collection

of following seven Primary Mental Abilities:

- (i) Number Ability or N
- (ii) Verbal Ability or V
- (iii) Spatial Ability or S
- (iv) Word Fluency Ability or W
- (v) Reasoning Ability or R
- (vi) Memory Ability or M
- (vii) Perceptual Talent or P

It can be written in this way in English formula:

$$\text{Intelligence} = N + V + S + W + R + M + P$$

**(6) Group Factor or Oligarchic Theory**—The follower of this theory is G.

Thomson, the famous

psychologist of Scotland. According to him, there is a group or collection of special abilities. There

is equality among the same abilities of a group or collection, as-under the collection of the literature

abilities there will be a close relation among poem, story, and fiction and essay, but these abilities will

have no relationship with the abilities of the collection of science.

**(7) Hierarchical Theory**—The follower of this theory is **Burt** and **Vernon**. They

have given hierarchical

theory to the mental abilities. And they have told the four following mental abilities.

- (i) General mental health
- (ii) Two parts of mental Ability-
  - (a) Performance, mechanical, internal and psychical abilities
  - (b) Verbal, numeric and educational abilities.

- (iii) Division of above two level of abilities into many mental abilities, like memory, imagination and thoughts
- (iv) Special mental abilities

**(8) Cathell's Theory**—Cathell has told the two factors of the general factor of theory of Spearman. These **Notes** two factors are—

- (a) Crystallized Intelligence—Cathal has called it GF factor and
- (b) Fluid Intelligence—Cathal has called it GE factor.

The effect of heredity falls on the development of fluid intelligence. So, due to the different reason and heredity related changes, there is difference in the intelligence of different persons. The development of the crystallized intelligence is affected by the environment. Therefore, due to the environmental differences or similarities, equality or inequality can be seen in the intelligence of different persons.

According to Cathal, after philosophical analysis, the above two factors they can be divided among many factors. Cathal has constructed 'Culture Free Test for the measuring the intelligence'. By which fluid intelligence is measured.

**(9) Unified Theory**—Guilford has delivered the unified theory. According to Guilford, intelligence is a 'structure of intellect Model'. There are three parts of structured model which includes different abilities. These are following—

Which is the most scientific theory among the different theories of intelligence in your opinion? And why?

### **Guilford's S.I. Model**

Under many intelligence related theory, Guilford has constructed his own theory. According to Guilford—intelligence is only a structure of primary intellectual abilities. Guilford said that every intellectual ability is special or unique in itself. There is need of some or the other intellectual ability in doing every

work in proper way. Therefore, in Guilford's opinion, every intellectual ability should be measured in different way. Sir Guilford accepts that there are some similarities shown among some mental abilities.

Guilford has put these in the three groups on the basis of these similarities-

1. Process or operation
2. Content or material
3. Product

Sir Guilford has described some special mental abilities for the each parts of these three, which is described in short—

**1. Process or Operation**—process means the nature of mental process by a man, means what will be nature of mental activities adopted by man in doing any given work, its explanation comes under the 'process'.

For example, if a man is asked to explain the pros & cons of mobile, here the evaluation will be found comprising of five factors of process, under which following five important mental abilities come—

**(a) Cognition**—on the basis of this ability a man remembers any thing again. Repeat it and try to recognize it.

**(b) Memory**—on the basis of this ability a man, on the basis of his previous experiences, establishes relationship with the present. He remembers his previous experiences and remembers them carefully.

**(c) Divergent thinking**—on the basis of this ability, a man uses his intelligence in the many dimensions. He can think about different dimensions, can take decision according to the situation.

His thinking is not one sided.

**(d) Convergent thinking**—convergent thinking is the other side of divergent thinking. Both types of thinking are important in the life of a man. With this type of thinking, a man becomes capable in a way that he finds out correct solution for any problem at last.

**(f) Evaluation**—on the basis of this ability, a man lives in whichever atmosphere or doing work

on whichever problem, he tries to keep all information about them. Then, after analyzing the entire situation he reaches out to the correct decision by the proper method.

**2. Content or Material**—Content means the field of information, which serves as the basis for all process.

Guilford has divided this kind of information among four parts. Under process, whichever examples have been presented, evaluation is included in them. Its content is semantic. But sometimes it happens that the information obtained by person is not semantic, rather it is in the form of pictures. In this condition, the nature of content will be called figurative. Under it Guilford has described the following four parts—

**(i) Figure**—It means that a man tries to understand and recognize some special figure after watching it. He does this work with the help of his sense organs. And inspect the figure thoroughly in a proper way.

**(ii) Symbolic**—It means that after understanding the different symbols in proper way, a man can use them according to the importance in his life. It is needed to understand the different kinds of symbols to do different kinds of work in life.

**(iii) Language**—Language related ability is considered important to succeed in life. In the condition of having good command over language, a man can convey his own thoughts to others very well and understand others' thought very well. Even the nature of thoughts can also be easily perceived.

**(iv) Behavioral**—It means social intelligence, which helps a man in the understanding of different human communications easily. It has been considered as the most important stage of life.

**3. Product**—the meaning of product is the result of the process done by any special kind of content.

Guilford has divided it in 6 parts. For example, if we tell any student to put odd and even numbers in

different categories, then the work done by the student will be put under product category. When content is used in any process, result is obtained. Under it, six types of abilities come, they are following—

**(a) Units**—It is important to understand the meaning and knowledge of seeing, hearing and symbolic units. Means, here a man tries to understand the uniqueness and characteristics of sensory perceptions.

**(b) Class and Category**—Under it, the ability of the classification of the units come. It is seen in it that a man can put thoughts in category or not.

**(c) Relation**—Under it, it is observed that a man can understand the relationship among different things, or not, along with this whether he can explain this relationship or not.

**(d) Systems**—According to it, providing the arranging the nature of different kinds of thoughts and problems and finding out their solution etc are included.

**(e) Transformations**—It is related to that type of ability in which a man can learn of the nature of particular thing after making a specific change, or to advice which change will be able to bring

about the specific form. **Notes**

**(f) Implications**—it means that the man has the sufficient ability to understand the contained meaning in the thought, things and facts. So some people use implication as the contained meaning.

It is clear from the above description, that, in the context of intellectual abilities, mental abilities have the followings things contained in them as per Guilford—

1. Five operations
2. Four contents or materials
3. Six Products

According to Guilford all these mental abilities are related to one another. Thus, the total counting of the intellectual dimensions can be called—  $5 \times 4 \times 6 = 120$

Guilford's above descriptive theory is one of the best extended theories. Yet the assumption of Guilford

states that this model is quite theoretical and changes can be done in it. The most important thing is that

it gives birth to new possibilities in the scientific field.

This theory of Guilford can be understood in short in the following way, that, intelligence is a logical structure

which is made of two main things—memory and rumination. The classification of the rumination has been

done under cognition, product and evaluation. Product has been divided between two classes—divergent

thinking and convergent thinking. Thus, in total there is a collection of five intelligence parts, which has been

classified by the medium of some processes. The classification of five collections has been done on the basis

of two theories. Under it whichever types of outcomes (units, classes) are included and the types of content

(figure, language, symbolic and practical) that have been taken, in this connection Guilford ends his theory,

stating, that the blank cells indicate towards those primary mental abilities, whose discovery still remains.

Its long factors—Guilford presented a model of the shape of box, on the basis of scientific analysis in

1967, which is known by the name of Intellect Structure Model. He made cubes of  $5 \times 4 \times 6$  in this model,

means total 120 cells, in which different factors depending on the three factors related to mental ability

have been put. Minimum one factor or ability has been kept in each cell, in some cells, factors more than

one can be put. There is no arrangement of it. Guilford has described each factor in three dimensions and

on the basis of his factor analyzing research; he has got success in establishing the existence of 80 factors,

and was hopeful for the remainder. Guilford has divided all the factors of intelligence in this way.

General Mental Intelligence

Operation Content Product

1. Evaluation 1. Figural 1. Units

2. Production 2. Symbolic 2. Classes

3. Memory 3. Semantic 3. Relations

4. Cognition 4. Behavioral 4. Systems

5. Transformations

## 6. Implications

### **Productional Implications**

As far as the question of the implication of this theory in the educational field, Guilford had told during the time of delivering this theory that this theory will give birth to new possibilities in the field of education and in the field of research. Guilford had this belief that this theory would provide a new

nature to the entire educational learning process. He has compared learner to computer. Difference between them is so that student determines his program himself, while computer depends on others.

### **Operation**

Evaluation  
C-Production  
D-Production  
Memory  
Cognition  
Units  
Classes  
Relations  
Systems  
Transformation  
Implication

### **Content**

Figural  
Symbolic  
Semantic  
Behaviour  
C M P P E

I  
T  
S  
R  
C  
U  
B  
S  
S



F

## **Product**

### **Intellect Structure Model**

In short it can be said that Guilford's above descriptive theory is not completed yet and it is necessary to

do further discoveries in this regard. There is no doubt that Guilford has shown a new way of searching

by delivering this theory in the field of intelligence. Igink writes in the relation of this theory-

“Guilford 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. Of these, Guilford claims to have evidence in actual factorial studies for eighty. He is optimistic about the discoveries of remainder.”

### **Summary**

□□ Intelligence affects the mental ability of a child. What is intelligence? The answers to this question have been given by the psychologists as per their opinions. Psychologists have explained the nature of intelligence with the help of various definitions, and their conclusion is, that, intelligence is a general ability. It is a collection of different abilities and the essence of special ability.

□□ Psychologists have accepted the following theories about the organization of intelligence.

1. Unifactor or monarchic Theory
  2. Two Factor theory
  3. Three factor theory
  4. Multifactor or anarchic theory
  5. Multi mental Ability theory
  
  6. Group factor or Oligarchic theory
  7. Hierarchical Theory
  8. Cathell Theory
  9. Unifed Theory
- Under many intelligence related theory, Guilford has constructed his own theory. According to

Guilford—intelligence is only a structure of primary intellectual abilities. Guilford said that every intellectual ability is special or unique in itself. There is need of some or the other intellectual ability in doing every work in proper way. Therefore, in Guilford's opinion, every intellectual ability should be measured in different way. Sir Guilford accepts that there are some similarities shown among some mental abilities. Guilford has put these in the three groups on the basis of these similarities—

1. Process or operation
2. Content or material
3. Product

**(b) Emotional intelligence- concept, dimensions, role of teacher in promoting emotional intelligence.**

Intelligence is a general descriptive term referring to a hierarchy of mental abilities, from simple perceptual processes and information processing to higher and more general forms of problem solving (Carroll, 1993). Until now the term "intelligence" has been limited largely to certain kinds of problem- solving involving language and logic. However, human beings are able to deal with numerous kinds of content besides words, numbers, and logical relations -- for example, space, music, the psyches of other human beings. Thus, in the present decade, researchers have explored the possibility that intelligences are a more diverse and looser confederation of abilities than once was thought. One evident factor in the rethinking of intelligence is the perspective introduced by scholars who are not psychologists.

Anthropologists have commented that some cultures do not even have a concept called intelligence, and others define intelligence in terms of traits such as obedience, good listening skills, or moral fiber (Gardner, 1999). Neuroscientists are skeptical that the highly differentiated and modular structure of the brain is consistent with a unitary form of intelligence. By the end of the twentieth century, it was amply evident that mental functions are highly interconnected. Most of one's mental processes, from colour perception to self-insight, potentially involve and activate both emotion and intelligence

1. The Definition and Scope of Emotional Intelligence

Emotional intelligence (EI) is historically defined as the ability to carry out accurate reasoning focused on emotions and the ability to use emotions and emotional knowledge to enhance thought (Mayer & Salovey, 1997). Its primary focus has to do with reasoning about emotions and the use of emotions to enhance thought. Thus, EI represents abilities that join intelligence and emotion to enhance thought.

Many commentators suppose that EI derives from the broader construct of social intelligence (e.g. BarOn, 2000). Contemporary perspectives on social intelligence have their origins in Thorndike's influential, tripartite division of intelligence into the following broad classes: (a) abstract-scholastic

intelligence: the ability to understand and manage ideas, (b) mechanical-visuo-spatial intelligence: the ability to understand and manipulate concrete objects; and (c) social (practical) intelligence: the ability to understand and manage people and act wisely in social contexts. However, despite considerable interest and numerous attempts to define and measure social intelligence over the past eight decades, these attempts have proved problematic (Kihlstrom & Cantor, 2000). The inability to discriminate between general and social intelligence, coupled with difficulties in selecting external criteria against which to validate experimental scales, led to a decline in research focusing on social intelligence as a distinct intellectual entity, until the recent upsurge of interest in EI.

#### Emotional intelligence (EQ) vs. Intellectual intelligence (IQ)

Many Research studies have shown that Emotional Intelligence significantly contributes to job performance and leadership. Competency research in over 200 companies and organizations worldwide suggests that about one-third of this difference is due to technical skill and cognitive ability while two-thirds is due to emotional competence. (Goleman, 1998). Research by the Center for Creative Leadership has found that the primary causes for derailment in executives involves deficits in emotional competence. The three primary ones are: difficulty in handling change, not being able to work well in a team, and poor interpersonal relations. A study of 130 executives found that how well people handled their own emotions determined how much people around them preferred to deal with them (Walter V. Clarke Associates, 1997). John Kotter of Harvard Business School aptly quotes - "Because of the furious pace of change in business today, difficult to manage relationships sabotage more business than anything else—it is not a question of strategy that gets us into trouble, it is a question of emotions." Goleman (1998) relates the story of Melburn McBroom, who was a domineering leader, with a bad temper. The problem with this combination of emotional deficiencies was that he also happened to be an airline pilot. In 1978 as McBroom's plane was approaching Portland, Oregon to land, he noticed a problem with the landing gear. He decided to maintain a holding pattern as he obsessed about the landing gear. His co-pilots watched as the fuel gauges approached empty, but they were so fearful of their leader's wrath that they said nothing. The plane crashed, killing ten people. This story is told in training courses to enforce the need for teamwork, open communication, cooperation, listening, which leaders with high emotional intelligence foster. (Goleman, 1998) IQ measurements on most children with autism are typically very high, yet it is well known that these children are burdened by their inability to communicate in other forums. We all know people who are academically brilliant and yet are socially inept and unsuccessful. What they are missing is emotional intelligence.

## 5 Main Components of Emotional Intelligence

**1. Self-awareness:** Recognize and understand your own moods and motivations and their effect on others. To achieve this state, you must be able to monitor your own emotional state and identify your own emotions. *Emotional Maturity in this trait shows:*

- Confidence
- Sense of humor (can laugh at self)
- Aware of your impression on others (can read the reactions of others to know how you are perceived)

**2. Self-Regulation:** Controlling your impulses—instead of being quick to react rashly, you can reign in your emotions and think before responding. You express yourself **appropriately**. *Emotional Maturity in this trait shows:*

- **Conscientious** and take personal responsibility for your own work/deeds.
- Adaptable (and favorable) to change
- When someone is complaining or is rude to you, you do not respond in kind. You respond in a manner which would not escalate the situation. (At this point, you will also realize that when someone expresses anger at you, they're not always angry at you; they're often just angry and want to take it out on someone.)

**3. Internal Motivation:** Internal motivation is marked by an interest in learning. It is also self-improvement vs. a pursuit of wealth and status (as a pursuit of wealth and status is an external motivator). *Emotional Maturity in this trait shows:*

- Initiative and the commitment to complete a task
- Perseverance in the face of adversity

**4. Empathy:** The ability to understand another person's emotional reaction. This is only possible when one has achieved self-awareness—as one cannot understand others until they understand themselves. *Emotional Maturity in this trait shows:*

- **Perceptive** of other's emotions and taking an active interest in their concerns.
- **Proactive**—able to anticipate someone's needs and the appropriate reaction.
- Social Situations such as office politics do not phase one who has a firm grasp of empathy.

**5. Social Skills:** Identifying social cues to establish common ground, manage relationships and build networks. *Emotional Maturity in this trait shows:*

- **Communication:** Listening and responding appropriately
- **Influence and Leadership:** The ability to guide and inspire others
- **Conflict Management:** The ability to diffuse difficult situations using persuasion and negotiation.

**(c) Creativity- concept, difference between creativity and intelligence, identification of creative child and methods of fostering creativity.**

### **Introduction**

**Everyday there are new inventions in this age of scientific, technological and industrial development. Where there is tireless effort of the scientists behind the majority of these inventions, their creativity has not contributed any less. Earlier it was believed that only writers, poets, painters, musician etc. were only the creative people, however it is now believed that creativity can be expressed in all spheres of human life.**

**In fact creativity is found in all living beings in the world, some have less of it and some have more.**

**In order to make the human life convenient, to do new inventions and to find solutions of problems, creativity plays an important role.**

**Creative people are required in today's complex and troublesome world. It has become a need of the nation to look out for creative people in order to have the scientific and technological achievements. Present chapter describes the meaning, and the methods of measuring creativity.**

## **Meaning of Creativity**

**Various psychologists have defined creativity in various ways. Some main definitions of creativity are as follows:**

**According to DeHann and Havinghurst, "Creativity is the quality, that provokes a person towards the production of a new and desirable thing. This new thing can be new to the whole society or may be just for the person who produced."**

**In words of Dravehel, "Creativity is that human ability by which he can express any thought or creation."**

**According to psychologists Crow & Crow, "Creativity is a mental process of expressing original outcomes."**

**In the words of Cole & Bruce, "Creativity the ability and the process to understand, express and appreciate the human mind in form of original product."**

**It is evident from the analysis of above definitions that creativity is primarily related to originality and newness. Creativity aims at the effort of looking at the problems in a new way and finding solution. In other words, creativity is the ability which enables a person to think and reflect in a new way to find a smart solution for any problem. Aside from the popular ways, the ability of working and reflecting in a new way is the creativity.**

## **Elements of Creativity**

**By looking and analyzing the definitions of creativity, we come to know that creativity could be understood in context of sensibility, curiosity, imagination, originality, searching, flexibility, fluency and elaboration etc. All these synonymous traits of creativity appear in scientific researches, artworks, music, creation, writing and poetry, painting etc creative works. There are four main elements of creativity—**

**(i) Fluency—By fluency we mean the multiple solutions on a problem. Fluency can further be divided into four divisions, Ideational Fluency, Expressional Fluency, Associative Fluency and Word Fluency. In the ideational fluency the free outpouring of ideas is encouraged, like telling the possible titles of a story, the uses of some item, or telling the ways to improve something. In the expressional fluency, the free outpouring of human expressions is encouraged, like making a sentence out of the given four words, or complete the given incomplete sentence. Associative fluency means to establish the association among the given words and things, like write synonyms and antonyms of the given word.**

**Word fluency is associated with words, like make words of the given suffixes and prefixes. The fluency Notes of any creative test on any item by someone is often expressed by the number of responses over that item. In order to know the fluency score on a test, all fluency marks are added.**

**(ii) Flexibility—Flexibility means the variation in the responses or alternatives on given problem. This tells how much mutually different are the answers or the alternatives from one another that are presented by the person. The three dimensions of flexibility could be—Figural Spontaneous Flexibility, Figural Adaptive Flexibility, and Semantic Spontaneous Flexibility. Figural Spontaneous Flexibility means the flexibility in the solutions of improving any figure or an object. Figural Adaptive Flexibility**

means the flexibility in the methods of changing the form of an object or a figure into another. **Semantic Spontaneous Flexibility** means the flexibility in the uses of words or objects. Flexibility can be expressed by a person's different types of responses at any item on the test of creativity. In order to know the flexibility score of any person on a test, his flexibility marks on different items are added.

(iii) **Originality**—Originality means the uncommonness of the responses or alternatives presented by the person. It is observed how much different are the given responses or alternatives from popular responses and alternatives. In other words the originality is primarily related to newness. The person who presents the different alternatives from others is said to be original. Telling the new uses of a thing, writing titles of a story, poetry or an article, forecasting remote outcomes of changes, to discover some new symbols are all examples of originality.

(iv) **Elaboration**—By elaboration we mean the elaborate explanations of given thoughts or emotions, completion or presentation. There are two kinds of elaboration, **Semantic Elaboration** or **Figural Elaboration**. In the semantic elaboration, some brief event, process, or work situation could be asked, to be expanded, whereas in the Figural Elaboration, a complete and meaningful figure is to be rendered out of incomplete figure or line by adding something.

### **The Criteria of Creative Personality**

Torrance created a list of 84 personality traits of a creative personality after extensively studying the behaviors of many creative people. In the measurement of creativity, these 84 traits of creative personality can play an important role. These eighty four traits are below:

1. **Accepts Disorder**
2. **Adventurous**
3. **Strong Affection**
4. **Awareness to Others**
5. **Attraction to Disorder**
6. **Attempts Difficult Jobs**
7. **Constructive Criticism**
8. **Deep and Conscientious Conventions**
9. **Altruistic**
10. **Always Baffled by Something**
11. **Attracted to Mysterious Discoveries**
12. **Bashful Outwardly**
13. **Courageous**
14. **Defies Conventions of Courtesy**
15. **Defies Conventions of Health**

#### **Desire to Excel**

17. **Determination**
18. **Differentiated Value-hierarchy**
19. **Discontented**
20. **Disturbs Organization**
21. **Dominant**

22. Emotional
23. Emotionally Sensitive
24. Energetic
25. A Fault Finder
26. Does not fear being thought differently
27. Full of Curiosity
28. Appears self-satisfied at times
29. Likes Solitude
30. Feels whole parade is out of step
31. Independence in Judgment
32. Independence in Thinking
33. Individualistic
34. Intuitive
35. Industrious
36. Introversive
37. Lacks business ability
38. Makes Mistakes
39. Never Bored
40. Not hostile or Negativistic
41. Not Popular
42. Oddities of habits
43. Persistent
44. Becomes Preoccupied
45. Preference for Complex Ideas
46. Non-conformity
47. Keeps unusual Hours
48. A questioning ability
49. Radical
50. Receptive to External Stimuli
51. Receptive to Ideas of Others
52. Regresses Occasionally
53. Rejection of Suppression as a mechanism of Impulse control
54. Rejection of Repression

### **Measurement of Creativity**

**Although creativity is a mental ability, yet the measurement of creativity is a complex work in comparison of the measurement of other mental abilities. The creativity comprises of many abilities of doing unique, explicit, wide and complex works. Therefore it is a difficult task to measure the creativity. In fact with help of just one test, the whole creativity of a person cannot be measured at all. That's why Mc Neil (1960) suggested that all factors of creativity should be measured with the help of separate tests. This is prerequisite before preparing any test to measure any factor or constituent of**

creativity, that, this factor or constituent of creativity shall be implicitly and objectively defined. All traits of creativity and the criteria of creative personality have been already described. Hargreaves Thurstone, Wilson, Taylor, Guilford, Murrison, Holland, Kent, Harrish, Owen, Torrance etc have given significant contribution in the efforts of measurement of creativity. 'Creativity Test for College Students' by Guilford and Murrison, 'Creativity Test for School Students' by Holland and Kent, 'Minnesota Test of Creative Reflection' by Torrance became very famous. In India, the creative tests developed by B.K. Passi and Baqer Mehdi have received considerable success.

Although many tests have been prepared to measure the creativity, yet these creative tests have failed to prove any practical usefulness. Credibility of most of the tests is doubtful, the coefficient of tests and re-tests' credibility has been often found between 40 and 75. The Predictive Validity of these tests has reduced greatly. Score on the various tests of creativity are not closely and mutually correlated. That's is why the credibility and the validity of score from creativity tests cannot be considered satisfactory. Still, until more credible and valid methods of measuring creativity are developed, the measurement of creativity will be done on the basis of available tests.

### **21.5 The Construction of a Creativity Test**

Like the development and measurement of other tests, in the development of creativity test, planning, preparing questions, selecting question by analysis of items, evaluation of test are the four major steps that are followed. The work done under these four steps is roughly same as displayed during the construction of any Acquisition Test or Intellectual test. Often, in order to select the items for creativity tests, item validity and item discrimination is established and for this, the correlation coefficients between test score and items score are calculated and the comparison of high and low creative groups with respect to item scores, the T values are calculated. While calculating the validity and item discrimination, most of the test creators use the creative scores given by the test items. This process of item analysis for the measurement and construction of creativity test does appear to be appropriate. In fact there is some fundamental difference between the acquisition, intellectual and the nature of creativity test. Because of which using the similar method of item analysis for both of these tests is not right from the psychometric viewpoint.

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(iii) Consequences Test

(iv) Test of Inquisitiveness

(v) Square Puzzle Test

(vi) Blocks Test

It is evident that this test includes both, verbal and non-verbal tasks. On this test, along with the creativity score we get fourteen dimensional scores as well. However the manual for this test is in English only however test booklets are available in Hindi & English both 4. Baqer Mehdi Test of Creative Thinking

This creativity test series, by Baqer Mehdi of Aligarh., has two tests (i) Verbal test of creative thinking (ii) Thinking Creatively with Figures. The first test is a verbal test, there are four main functions that are carried on:

(i) Consequences Test

(ii) Unusual uses Test

(iii) New Relationship Test

(iv) Product Improvement Test

With the help of this test, the three factors of creativity, namely Fluency, Flexibility, and Originality are measured.

The other test created by Baqer Mehdi which is a non-verbal test, has three main steps—

(i) Draw a picture

(ii) Complete picture and suggest title

(iii) Triangular and Elliptical shapes

This test helps in measuring the two main factors of creativity, Elaboration and Originality.

### Unit –III:

#### (a) Personality- concept, determinants of personality and Assessment.

##### Introduction

Generally personality means the external aspects, color and physical built. Often, we hear in the daily life that the personality of that man is very good, effective or bad. The meaning of good personality is that the physical appearance of that person is beautiful, he is healthy and soft spoken, he is good

natured and his conduct is good and he easily attracts others. Undoubtedly these virtues are the characteristics of good personality, but this is only one aspect of personality. From the psychological point of view, the meaning of personality is something else. Personality is the mirror of whole behavior. Personality is expressed by thinking, behavioral activities and one's movements. The conduct and behavior of a man is the mixture of physical, mental, emotional and social virtues, in which oneness and consolidation is found. Thus personality is the entire virtue of the behavior of a man. All behavior of a man is for the adjusting with the society. In the social circle of each man, due to his special personality, some differences are found in his behaving pattern. Whatever type of behavior he does for adjusting himself with the social surroundings that makes his personality. The behavior of a man is affected by his internal feelings and external environment. According to some people, there is no special difference between conduct and personality. According to Woodworth—"the indication of character is towards that character, which can be called good or bad, which is success or failure in adopting the accepted ideals by the society. The indication of the personality is towards that behavior, which is neither good nor bad, but other persons feel it interesting or uninteresting and which makes the conditions favorable or unfavorable among his companions. The difference between character and personality is not explained by this statement. So according to scientists this difference can be neglected. What is conduct? What are the characteristics of conduct? These things have been mentioned in the previous chapter. Higher characteristics have important place in the personality development, so in the daily life it will not be practical to consider conduct different from personality. It is necessary to study the opinions of different psychologists for understanding the nature of personality clearly. In the present chapter the meaning and definition of personality, the characteristics of personality, factors influencing the personality along with organized personality, the light will be thrown on the personality tests as well.

### **Meaning and Nature of Personality**

Many opinions are famous related to word 'personality'. In the common language the meaning of personality is understood by external aspects, but psychologists have given its meaning under a new light—

- (1) Verbal meaning—'Vyaktitva' is the Hindi translation of the word 'personality'. This word has been taken from the Latin word 'Persona' which means outfits, wearing which, the character of the drama, during the time of play, used to change into indifferent roles. In the beginning, the meaning of this word was used as a cover, thus word personality indicates towards the external virtues.
- (2) Meaning from general point of view—The meaning of common people's personality is, the external aspects and those virtues by which he attracts others toward himself and after influencing others, wins over them.
- (3) Meaning from the practical point of view—"A man's personality is the total picture of his organized behavior." —Deshiell
- (4) Meaning from the philosophical point of view—personality is the other name of spiritual knowledge; it is the ideal of completeness.
- (5) Meaning from the social point of view—On the basis of sociology, the definition of personality has been given in this way-

**“Personality is the organization of those all factors by which a man gains some place in the society; so we can call personality a social flow.”**

(6) Meaning from the psychological point of view—**from this point of view, in the explanation of personality, importance has been given to the environment and heredity. It seem after explaining personality in the psychological way, whatever internal and external qualities, abilities and characteristics are in a man, personality is the integrated form of all of them. Whichever virtues, capabilities and strengths are conceived by a man from birth, they continue to develop by and by. A man, in his developing period, on the basis of his innate strength, does activity and reaction for the adjustment with the society, consequently he gains some special abilities, habits, interests, and attitudes. In the effort of establishing adjustment with the environment, his innate gained virtues are purified and increased, so personality is also called ‘Dynamic Organization’.**

**The aim of education is the all round development of personality. Psychological and educational intimate relationship. Therefore, it is necessary to know the definitions of personality provided by psychologists—**

- (a) Biesanj & Biesanj—**“Personality is the organization of person’s habits, attitudes and traits and arises from the inter-play of Biological, social and cultural factors.”**
- (b) Munn—**“Personality maybe defined as the most of the behavior, interests, attitudes, capacities, abilities and aptitudes.”**
- (c) Allport—**“Personality is the dynamic organization within the individual of those psychophysical systems that determine his unique adjustment to his environment.”**
- (d) Drever—**“The word personality is used for the dynamic organization of well organized form of those physical, mental, moral and social virtues of individual, by which he deals with others in his social life.”**

### **Types of Personality**

**It is important to know the types of personalities for knowing the diversities related to personality. Different Psychologists have classified the personality on the basis of different attitudes. Generally from the following points of view the kinds of personality have been divided-**

- 1. Constitution Viewpoint**
- 2. Sociological Viewpoint**
- 3. Psychological Viewpoint**

(1) Constitution Viewpoint—**German psychologist Kreshmer has made the following types on the basis of constitution.**

- (a) Asthenic—**This type of man is thin and lean. His head is long, arms are slim, chest is small and limbs are long and slim. This type of man does not like to hear his criticism, but likes to criticize others.**
- (b) Athletic—**This type’s individual is strong and healthy. His chest is wide, swelling and strong arms and strong muscles. They can adjust with other according to wish.**
- (c) Pyknic—**This type man is short height, circular, and fatty. He is fond of comfort and is practical.**
- (d) Dysplastic—**The mixture of above three types is found in it. The body of this type’s man is simple.**

**The famous psychologist of America ‘Sheldon’ has divided the personality on the basis of physical shape—**

- (a) Endomorphic—**This type of man is more fat, spherical, soft and has concrete body. His digestive parts are more developed. He is fond of food. He is fond of comfort, fast in sleeping, fond of love, fond**

**of entertainment, gentle, wise, tolerant and soon gets worried.**

(b) Mesomorphic—**These type of men have healthy and well organized body. They have more strength and energy. They are adventurous, active and hard working.**

(c) Ectomorphic—**Such men have lean, soft and weak body. They are hesitant, less talkative, isolated, patient and full of emotions.**

**Psychologist Warner have told many types of men from the physical health and development point of view—(a) Health (b) Incomplete (c) Undeveloped (d) Handicapped (e) nerve patient (f) backward and dull minded (g) lazy (h) epilepsy (i) powerful.**

**Psychologist Canon has said the types of personality on the basis of inner excretion gland. The development of man is affected much by glands, by which personality differences are found—**

(a) Thyroid Gland—**The excretion through this gland is called Thyroxin. Physical and mental development is effected by it. If this gland is not developed properly among the men, they are dull minded, tiny and lean. They are lazy, worried, depressed and disappointed. When this gland works properly, man is always cheerful and his health is proper.**

(b) Pitutory Gland—**Because of the more excretion of this gland, body becomes long, if there is less excretion, the body becomes tiny or body is not developed properly. If this gland works properly, man is cheerful, peaceful, patient and physically and mentally tolerant.**

(c) Adrenal Gland—**When this gland developed more, the nature of man is quarrelsome and industrious. They are developed before time.**

**Thus the more and less excretion of gland makes the personality of man uncommon. Human nature depends upon the activities of these glands. So we can say that these glands also decide the personality.**

**According to Indian Ayurvedic there are three kinds of men—**

(a) Phlegmatic—**These people are fatty, peaceful and hardworking.**

(b) Painstaking—**These are lean, working and fickle minded people.**

(c) Rheumatics—**These people are neither fatty nor lean, they have medium body but they are irritated.**

**It is the belief of Athenians that there are four kinds of men on the basis of four gland found in the body of the men—**

(a) Phlegmatic—**these people are peaceful, lean and peaceful.**

(b) Melancholic—**These people are pessimistic.**

(c) Choleric—**these people are soon aggressive.**

(d) Sanguine—**These people are optimistic, highly ambitious, happy and of hard working nature.**

(2) From the Sociological point of view—**Psychologist Sprangar has given the following kinds of personality on the basis of social feelings and work—**

(a) Theoretical—**This kinds of man forces more on the theory of man. Philosophical, scientific, social reformers come in this category.**

(b) Economic—**This kinds of man evaluates everything from the economical point of view. Traders are come in this category.**

(c) Religious—**These people have faith in god and spirituality, as, saint, sage, yogi, kind-hearted and religious men.**

(d) Political—**These people have faith in the politics and power, this type of men have a desire of dominating others. They take interest in political works, as, leaders**

(e) Social—**These types people have more social virtues. They are interested in social-welfare.**

(f) Aesthetic—**These types of people are devotees of art and beauty and watch every thing from the aesthetic point of view, as-artists, painters, etc.**

(3) Psychological point view—**Psychologists have told the two basis of personality on the basis of human nature—**

Psychological Age: **on the basis of human nature are described by two major personality—**

(i) Introvert Personality—**Those people have this types of personality, whose nature, habits and virtues are not expressed externally. These people are self centered and lost in themselves, they have no worry of outer world. Their other qualities are following—**

(a) **These people are less talkative.**

(b) **They are soon confused.**

(c) **They feel complication in expressing their thought because of hesitative nature.**

(d) **They are worried, keep themselves limited in their thought.**

(e) **They are full of anxiety, doubt and carefulness.**

(f) **They have true sense of duty.**

(g) **They do every work carefully.**

(h) **They are good author, but not good orator.**

(i) **They are studious and thoughtful, often such men are the book licker and they become scientist, philosopher and researcher after some time.**

(j) **They do not like useless laughing, criticism and useless talking.**

(ii) Extrovert Personality—**This type of people take interest in the outer world, their qualities are followings:**

(a) **These people take interest in social life, always aware for adjustment in the society. They are optimistic and according to situation they manage themselves.**

(b) **They are expert in the practical life, they have opportunistic nature, and soon they become popular. This type of man becomes mostly social, political or trader, leader, actor and player etc.**

(c) **They influence others to do their work.**

(d) **They are free from worries; their purpose is to pass a joyful life. They remain cheerful in the present and do not worry about future.**

(e) **They have more sense of self exposure. They always try to influence others by their movement, outfits and abilities.**

Ambivert Personality—**This type man can bring introvert virtues in his thinking and he can give place to extrovert virtues as a work. For example- a man can be a good writer and speaker, a man exposes social behavior, but he does not want to do any work alone. The man of Ambivert personality sees the benefit of self and society.**

(B) Freud, who was a famous psychoanalysis, has said the following three types of personality—

(1) Oral Erotic—**According to Freud, an infant wants to get sexual pleasure in his mouth means sex dwells in the mouth in the infancy, he sucks, bites, licks for getting the pleasure of sex. And he brings things towards his mouth. Moving ahead in the activities of getting this pleasure, personality is seen dividing between two parts.**

(a) Oral Passive—**The children, in which oral passive types of personality is developed. They are**

**optimist, immature, depended, always involved in their thoughts.**

(b) Oral Sadistic—**The children in which Oral sadistic types of personality is developed, they are pessimistic, aggressive, doing uncouth behavior toward others and have doubtful nature.**

(2) Anal related—**Child's anal is the second basis or stage of getting sexual pleasure. Children are engrossed with the anal related activities at this level; in this stage he gets sexual pleasure by doing stool. Obsessions, misery, lover of rules and management, etc virtues are developed by this type of activity.**

(3) Phallic—**This is the third level of the personality development, which is called the level of phallic development. Children touch their phallic at this level, these types of activities work in the adolescent. The especial characteristics of personality are developed inspiring by the tendency of these activities, by which adolescent behave to attract others and by exposing self love.**

(c) Allport has classified the personality on the basis of the virtues of man. According to him virtues have realistic and strong existence. Allport has defined the virtues in the following way—

**“A trait is a generalized and focalized neurophysic system with the capacity to render many stimuli functionally equivalent and to initiate guide consistent forms of adaptive and expressive behavior.”**

**According to Allport, the nature of virtues is general and stable. He has divided all the human virtues into three parts—**

(i) Cardinal trait—**the traits which are in men in more quantity, those are cardinal traits, as, devout virtues towards the achievement. If this trait is presented in the man as a cardinal trait, it will be presented in him throughout life.**

(ii) Central trait—**central traits are less cardinal in comparison of cardinal traits. Yet they are generalized sufficiently, means their central tendency is often stable.**

(iii) Secondary dispositions—**the secondary dispositions of men are especially limited traits and are presented as attitudes. Attitudes quantitatively are inclined towards the positive and negative pole and it can be related to the learning.**

### ASSESSMENT OF PERSONALITY

#### Methods of Assessment of Personality

**The methods and tests, that are used for assessment of personality, are following—**

1. Subjective Method—**In this method, the investigation of personality is done either by self examination or with the help of a familiar. Some following methods are used in it—**

(a) **Case History Method**

(b) **Questionnaire Method**

(c) **Interview Method**

(d) **Autobiography or Self History Method**

2. Objective Method—**The external conduct of man is studied under this kind of methods. These are following—**

(a) **Controlled Observation Method**

(b) **Rating Scale Method**

(c) **Sociometric Method**

(d) **Physiological Test**

**3. Projective Method—Projective Method means the method, in which a stimulating situation is presented before student, in which he sees his concepts, feelings, tendency and emotions in others and expresses his thoughts which are collected in his unconscious mind.**

**As the irritation of the unconscious mind, is expressed by the scolding of others. In the projective method, student is asked to project his inner arising thoughts by the medium of external things. By the projective method, the personality related aspects are known, which are unknown to man. The popular projective methods are following—**

- (a) Thematic Apperception Test or T.A.T**
- (b) Children Apperception Test or C.A.T**
- (c) Rorschach Ink Blot Test**
- (d) Sentence and Story completion Test**

**4. Psycho-Analytic Method—Two methods come under this—**

- (a) Free word Association Test**
- (b) Dream Analysis**

**Above subjective and objective methods are introduced in short—**

**1. Case History Method—In this method, information related to man's physical health, physical characteristics, personality differences, social relations and family history etc are collected. This information is related to man's past, present and further coming possibilities. In this method, learner gets the information with the help of the different sources such as, parents, relatives, friends, neighbors and doctor. This method is used often for the prevention of psychological disease.**

**2. Questionnaire Method—A list of questions is prepared related to the different virtues of personality in this method, in which man has to reply in writing 'yes' or 'no'. This method is also called 'Paper Pencil Test'. With the help of this questionnaire, the characteristics and virtues of men as- interest, disinterest, confidence, social awareness, introvert tendency, tendency of dependence etc are tested.**

**The four main types of these questionnaires are following**

**(i) Closed Questionnaire—'Yes' or 'No' is written against of each question in it. Student has to reply the questions by ticking one of them, as—**

- (a) Do you get puzzled on a trivial matter? Yes/No**
- (b) Do you like to meet others? Yes/No**
- (c) Do you want to remain behind on the social occasions? Yes/No**

**(ii) Open Questionnaire—The complete answer of the question has to be written in this questionnaire. as, What should be the motives of Indian democracy?**

**(iii) Pictorial Questionnaire—Some questions are presented in this questionnaire. Student has to reply the questions by putting a tick on different pictures.**

**(iv) Mixed Questionnaire—There is a mixture of above questionnaires in this questionnaire.**

**3. Interview Method—In this method, interviewer gets some important information from the student, which is helpful in understanding the characteristics related to his personality. This method is mostly used for the selection of government jobs.**

**4. Autobiography or Self History Method—In this method, examiner gives a topic to the student**

related to personality and tells him to write his personal history, reading it examiner expresses his thoughts that correspond to that man.

5. Controlled Observation Method—This method is used in the controlled situation of the psychological laboratory. Examiner studies the different activities and conduct and behavior of the students in it. On the basis of this, the characteristics of a student are known.

6. Rating Scale Method—In this method, the evaluation of the virtues related to personality is done by the man himself or the persons connected to him, that they express their opinion to him. Whichever virtue has to be tested, for the group division of that virtue, a line is equally divided among, 3, 5, 7 parts,

7. Sociological Method—the social virtues of student are tested by this method, this type of questions are asked in it—

(a) Do you want to make your social circle limited to some special people? Yes/No

(b) Do you like to become leader or beginner in the community work? Yes/No

8. Physical Test—In this method with the help of different instrument, the physical traits of special student are studied.

1. Plenthisomograph—Blood pressure can be known through this instrument.

2. Electro Cardiograph—Heartbeats can be measured with the help of this instrument.

3. Sphygmograph—The movement of nerves system can be found with the help of this instrument.

4. Pneumograph—The movement of breathing can be measured with the help of this. The process of breathing is studied by it.

5. Psycho-Galvanometer—The changes that happens in the variation of skin are tested with the help of this instrument. In the emotional state, the electronic factors which found on the skin are increased or decreased, as, due to fear, feeling the thrill, feeling the trouble etc. in this way with the help of this instrument, the emotional changes that happen in man are understood. With the help of above instruments, the psychical traits of man his courage, bravery, devotion, timidity and Culprit tendency can be found out.

9. Thematic Apperception Test—(T.A.T)—Psychologist Murrey and Morgan had created this test. This Notes is also called T.A.T. The traits of man are tested by this. 30 pictures are used in this test. In it 10 pictures are for women, 10 pictures for men, 10 pictures are for children. Generally last 10 pictures are used. In the first few pictures, which things are seen, are following—

1. A child playing on violin.

2. A girl who has some books in her hand, another woman staring toward her and a farmer doing work in the field at a distance.

3. On the right elbow, holding the forehead, a boy lying on the floor who has a gun.

4. Bowing down the head, putting the right hand on the head and holding the door with left hand.

In this way, in the other picture some events are sketched, in the beginning of the exam, examiner gives the following indications to the student—

1. Who are these people?

2. What happened in the beginning, on the basis of which his event is shown in the picture?

3. What is happening now?

4. What are these people thinking? What kind of feelings is arising in their mind? What will be its end?

Five minutes are given to complete the story. A man expresses his natural desires, emotions, thoughts, feelings and thoughts in these stories. This can be his real story. Examiner analyzes these stories and



**finds out the traits of man on the basis of it.**

**10. Children Apperception Test—This test is used for testing personality arrangement of the children. 10 pictures are used in it. These pictures are related to some animals, which are seen behaving like man. The information on different interests, activities, problems of children can be obtained by this test.**

**11. Rorschach Ink blot test—Herman Rorschach, The famous Psychologist of Switzerland invented this test. In this test 10 proofed ink blotted cards are used, five are quite black among them. Two are black and red; more colors are mixed in three cards.**

**Test Method—Examiner needs special training for using this test, before using the test; student is given some indications—**

**Different things are seen to different people in it, these blots are shown to you one by one. Watch carefully to each of the cards and tell me, what you see in it? You may see it as long as you want to see it, but say everything**

**12. Sentence Completion or Story Completion Test—In this test, some incomplete story and sentences are presented in front of the student. He expresses his desires and emotions in these sentences and stories by the words and thoughts which have arisen in his mind and his personality can be studied on the basis of it.**

**13. Free Words Association Test—The internal condition of man can be known by this test. In this test 50 to 100 selected words are stimulating words. Examiner says one word in front of each student, as, house, water and sweet etc. He is encouraged for expressing all the words and thoughts whatever comes in his mind related to that word. Examiner continues to write the spoken words, each word, and the 'reaction period' on each word of student. And at last, on the basis of given responses, personality assessment is done.**

**14. Dream-Analysis—This method is used for doing psychiatry. In this method, a man is asked to write or express his dream after remembering it. In these dreams the knowledge of desires and feelings of unconscious mind of a man can be obtained. There are some complications in this method because a man cannot remember his dream properly. On the basis of the responses given by the man, it is tried to resolve his problem.**

(b) Mental health- meaning, importance, causes of mental illness and improvement of mental health of children.

### **Introduction**

**Mind has an important place in the human body, because whatever works a man does, he does it according to the indication of his mind or following his mind. Until our mind is healthy, we cannot do any work properly. The people whose mind is not healthy, they do not face the different situation in life easily. They always live in mental trouble or problem. Mental weakness and specific changes are the cause of it. Today the life of man is so much complicated. He has to face difficulties and disappointment at every step. He does not adjust himself in the society because of mental troubles. It is important for a man to be mentally healthy in such condition. The man, whose mental health is good, adjusts himself in the material and social situation. It is important in the human life to pay attention towards the mental health like physical health.**

**Physical health and mental health affect one another. So under education psychology, the study of mental health keeps important place, because for making the education process success, the mental health of both, teacher and student, after thinking the nature of science, the factor influencing the mental health and throwing light on the efforts of progressing in the mental health, we will discuss the importance of mental health.**

### **Meaning of Mental Health**

**It is identified from the above thoughts that a man can adjust himself in the different situation of life by mental health. For clarifying the meaning of mental health psychologist has given following definitions—**

1. Headfield—**“In the general terms we may say that mental health is the full harmonious functioning of the whole personality.”**
2. Ledell—**“Mental Health means the ability to make adequate adjustment to the environment on the plane of reality.”**
3. Kuppaswamy—**“Mental health means, the ability to balance feelings, desires, ambitions and ideals in one’s daily. It means the ability to face and accept the reality of life.”**

### **Meaning of Mental Hygiene**

**Mental health has been given the name of ‘Mental Remedy’. Mental hygiene means the science of keeping mind healthy. As the physical hygiene is related to the health of body, so the mental hygiene is related to mental health.**

**So that the personality may be developed balanced, by which man could be able in the adjustment of both types of easy and difficult situation of life. Psychologists have given definitions for explaining the meaning of this science—**

1. Drever—**“Mental hygiene means investigation of the laws of mental health and taking of measures for its preservation.”**
2. Head Field—**“Mental hygiene is concerned with the maintenance of mental health and the prevention of mental disorder.”**
3. Crow & Crow—**“Mental hygiene is a science that deals with the human welfare and pervades all field human relationship.”**

**Rojanoff A.J.—“Mental hygiene endeavors to aid people toward of the trouble as well as to furnish ways of handling troubles.”**

**Kolesnik—“Mental Hygiene is a set of condition which enables a person to live at peace with himself and others.”**

**In Webster’s Dictionary, The meaning of mental hygiene has been explained in this way.—“Mental hygiene is the science, by which we keep mental health stable, and prevents the growth of diseases related to madness and nerve system. In the general health hygiene, only attention is paid over the physical health, but in the mental hygiene physical health is also included along with the mental health, because mental health is not possible without physical health.”**

**According to this statement, it is important in this type of educational process that teacher and student both should be mentally healthy. If there is no mental health the child does not get success in acquiring education and teacher does not success in the educational work, so it necessary to think over the causes of their mental disease and the solution of maintaining good mental health.**

### **Factors which Adversely Affect Child’s Mental Health**

**There are many factors which adversely affect child's mental health. These factors are following—**

- 1. The Effect of Heredity—Some children are mentally weak because of faulty heredity, as lack of intelligence or nerve related diseases are found. Thus he is mentally ill.**
- 2. Effect of Physical Health—Physical health is closely related mental health. Patient feels complication with the adjustment of new situations.**
- 3. Effect of Physical Defect—Accident or diseases cause physical defect or illness. Physical defects generate the feeling of deficiency in the children. The feeling of deficiency generates the problem of adjustment with their friends and society for them.**

**Causes Related to Family: The following factors related to family effect the personality of children—**

- (a) The Environment of Family—If there is personal conflict and dispute in the family, it affects the child badly.**
- (b) Poverty of Family—If the economical condition of family is not well, the children are irritated and strict, they have the feeling of lack of security, lack of confidence and deficiency. All these things affect health badly.**
- (c) The Strict Disciplines of Family—If the children are scolded over a trivial matter, the sense of deficiency create in them and they are mentally unhealthy in such kinds of environment.**
- (d) Inappropriate Favor of the Family—If the parent in the family like other child very much and neglects one, this child is affected badly. The child, who is ignored, has the feeling of jealousy with the other children of family. The disputing tendency generates in them. They always try to harm other.**
- (e) The Beloved Child of Parent—Parents loves more the child, who is only or hardly alive or if the parents are rich. This thing also harms the child. They have lack of self confidence and they are unable to face the difficulties of life.**

**5. Psychological Causes—In spite of having above causes of mental sickness, some causes are such psychological, which help in the growth of mental sickness and mental ailments, which are called mental conflict, emotional tension, feeling complexities, anxiety, mental weakness and tiredness. All these things have been described earlier. All these affect badly on the mental health of child.**

**6. Society Related Causes—The defective organization and environment of the society also affect the mentality of child. The mental health of the children of unorganized society are not well, because there is always fight, dispute and different kinds of evils are presented in the environment of this society. The children, who grow in these types of environment, are very, emotional unstable, full of jealous, hate, chaos and conduct less. The racial and religious conflict of society, the feeling of high and low, the feeling of jealousy, hatred, incorporation in the different community, generate the feeling of mental tension in the mind of children. The condition of this type of society and environment is harmful for the mental health of children.**

**7. College Related Causes—After family, the mental health of child is also affected by the undesirable effect of college, which is described in this way-**

- (a) The Environment of College—If there is so much control on the student in the college, his desires are stressed, or it is not allowed him to take part in the cocurricular activities of college, this generates obstacle in his mind. There is always the environment of fear and strict discipline, child is always mentally unhealthy.**

(b) Defective Syllabus—If child does not get the syllabus according to his interest and ability, he does not take interest in it and gets failure in the examination. And his mental health is affected. When he does not learn the subject-syllabus, he is always worried and fearful that he will be punished. Such child lives in the mental depression and victim of criminal tendency. And often the runs away from the college.

(c) In Proper Education Method—If teacher uses un-psychological method, not paying attention on the individual difference, it is difficult for child to get knowledge and when he does not learn anything he gets disappointed.

(d) Defective Examination-System—In the current times subjective tests are popular, in which the real ability and progress of student is not known, on account of having many defects in the examination, child does not get success in the class and fortunately unworthy student gets success with high marks. In this condition intelligent student is discouraged and lose self confidence. And dull child does not take interest in the study. Such types of children cannot adjust themselves with the society.

(e) Feeling of Competition—Competition feeling, which is the feeling of jealousy, hatred, also affects the mental health of children.

(c) Motivation- meaning, types, techniques and educational implications.

#### Unit- IV:

(a) Education of the Children with special needs - Meaning, Types, Identification and intervention: Gifted, Delinquents and Educationally Backward Children.