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Lesson No.

1.1 : Definitions and Branches of Psychology

1.2 : Historical Background and approaches

1.3 : Methods of Psychology

1.4 : Learning Theories

1.5 : Trial and Error Learning and Gestalt Learning

LESSON NO. 1.1 **WRITER : Dr. SANGEETA TRAMA**

DEFINITIONS AND BRANCHES OF PSYCHOLOGY

LESSON STRUCTURE

1.1.0 Objectives :

This lesson provides an introduction to the field of psychology. We shall discuss as to how the science of psychology developed, starting from its earliest definitions and then proceeding onto its other definitions. We shall also brief upon the various branches of psychology.

By the end of this lesson, you should be able to :

* explain how the term psychology originated;
* describe the viewpoints of various theorists about psychology; and
* describe the various branches of psychology.

1.1.1 Introduction :

Human behaviour is a complex phenomenon. We are all interested in understanding behaviour. Primarily, it was philosophers who took up the subject of human behaviour, and tried to find out the cause for such behaviour. Thus, psychology was wrenched out of the bosom of philosophy, and gradually developed into an independent branch of study.

1.1.2 Definitions of psychology :

In order to understand the nature of psychology, it is necessary to have an overview of the various definitions of psychology, how the term originated and as to how it was regarded by different theorists.

1.1.2.1 Psychology as Science of Soul

The term psychology is derived from the two Greek words. "Psyche" and "Logus". "Psyche" means "soul. Logus" means "talks". Hence, psychology was regarded as talk about soul. Later on it was observed that it was better to call psychology as the science of soul rather than talk about soul. This definition was initially given by the Greek philosophers Plato and Aristotle.

Then later psychologists realised that it is not possible to have any direct knowledge of the soul. They thought that though the mental activities are also intangible and unstable, one can get direct knowledge of them atleast when they are taking place within himself. Each person can directly know whether he is perceiving, remembering, imagining, thinking, etc. at a certain moment. All those are open to his own direct observation, but the soul to which he related them is always beyond the grasp, and is unknown.

1.1.2.2 Psychology as Science of Mind :

From the study of soul, psychologists changed the concept of psychology as "study of mind." The term mind or mental processes was considered better, and it was substituted for soul. Theorists referred them to matter or a substance to which they were supposed to belong. Similarly, mental activities were related to mind as a substance, whose activities and functions they were supposed to constitute. But it was gradually realised that mind as a substance was unknown as the soul. Mind too, could not be subjected to experiment like soul.

1.1.2.3 Psychology as Science of Consciousness :

Psychologists, therefore (for reasons explained earlier) introduced the term "consciousness" or "conscious experience" as a general name for mental activities and defined psychology as the "study of experience" or consciousness." They selected this term because it could be used for whatever a person has been aware of at the moment, and whatever he is likely to be aware of in the future. The term has a personal reference. Experience was thus, sought to be the most suitable label that could be attached to mental activities to make them different from the natural processes studied by the physical sciences.

1.1.2.4 Psychology as Science of Behaviour :

Still later, some more ambitious psychologists objected to the term "experience". They argued that experience is something very personal and private. What science studies is something public. None can observe the mental activities of another person. The psychologists, therefore insisted that the subject matter of psychology should consist only of those activities of a man that are open to everybody's observation. But a person's behaviour is open to everybody to observe, it can be directly studied and it is better to confine the study of psychology to behaviour alone as the activities of the individual can be observed, compared and analysed by all. They defined psychology as the "Science of Behaviour". It is a systematic study of all that man does in response to his world of things and persons.

It is, however, noted that confining psychology only to the study of bodily activities

1.1.2.6 *Analysis of Various Definitions :*

From the above definitions, one can say that psychology is the scientific study of the activities of an organism in relation to the environment. It is a positive science of behaviour because it studies facts as a positive and is concerned with "what is ?" It is a systematic study under controlled conditions.

A science is a body of knowledge obtained in a systematic manner. It is also defined as the systematic study of the nature and behaviour of the material and the physical world based upon the experiment, observation, measurement and the formulation of laws to describe the facts in general terms and accepted by all.

In Psychology with the advent of experimental method, the study of the organismic variable is very systematic and the observation is done under **controlled** conditions. In psychology also **predictions** can be made regarding the organisms behaviour. Many of the human behavioural aspects are **measured** accurately by conducting the experiment. The results can be verified through repeating the experiment under similar conditions. In psychology the staistical techniques are used (Mean, S.D, t-test) for quantifying and interpreting the results. Hence in psychology certain laws and theories are formulated as in any other science.

The term **activity** is used in a broader sense. It includes cognitive activities like seeing, hearing, remembering and thinking, motor activities like walking and speaking and emotional activities like laughing, weeping and feeling happy or sad. Therefore it includes three activities namely cognitive, conative and affective. Psychology studies the **activities** of an organism in relation to the environment. The environments influence plays a vital role in determining the behaviour of an individual. The individual is always responding to the environmental forces in his behaviour patterns of man and animals, would not serve the purpose of understanding how and why these activities do really take place. If we consider psychology as a science, then it should not only describe behaviour, but it should also be able to explain behaviour. Mental activities are always at the back of bodily activites of man. The mental and bodily activities, experience and behaviour, are so closely related that one cannot be separated from the other. We would therefore, refer to define psychology as a systematic study of experience and behaviour.

1.1.2.5 Definitions given by Other Psychologists :

Having studied different definitions given by different psychologists, it is necessary to have a clear idea about the definitions given by other psychologists. These psychologists have taken into account various aspects of the study of psychology.

McDougall believes that "Psychology is the positive science of conduct and behaviour."

Murphy opines "Psychology is the science that studies the responses which the living individuals make to their environment."

According to Woodworth, "Psychology is the scientific study of the activities of the individual in relation to his environment."

Munn opines that "Psychology is a positive science of behaviour and experience interested in terms of experience."

Check your progress-I

Note : Space is given below for you to write your answer.

State, in not more than 15 lines, what does the term psychology mean.

or

State, if Psychology is a Science?

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1.1.3 Branches of psychology/scope

During recent times, psychology has made great progress. Psychology is a tremendously different field and quite a large one; infact, there are currently more than 20,000 psychologists in North America alone, and more than 50,000 worldwide (American Psychological Association, 1999). It is concerned with various forms and

aspects of human behaviour taking place under different conditions. For one person, psychology may mean psychoanalysis; for another, it may mean the study of how the brain controls behaviour, and for yet another, it may mean the precise analysis of sensory system. With so many approaches, the individual psychologists has strong tendency to specialize in one particular area even in the same branch. This had led to the division of psychology into several branches. Some of the important branches are described below :

1.1.3.1 Clinical Psychology :

Clinical psychology is one of the largest branches of psychology. It studies the diagnosis, cause and treatment of mental disorders. It tells how persons can be helped with their behavioural problems. Because sometimes, a person may not know how to act in a given situation. He may remain undecided. Another person may act in a particular manner, but he may not get the desired results. A third person may act in a highly unusual manner. All such persons are said to be facing behaviour problems. Clinical psychology helps in overcoming their difficulties. For example, clinical psychologists have recently devised several effective forms of treatment for reducing depression. The clinical psychologist uses several kinds of psychological tests. He also gathers information about a person by interviewing him and other persons associated with that person. In order to help the person, the clinical psychologist applies all that he knows about the ways of understanding and modifying human behaviour. He produces such mental conditions that lead him to change his feelings, his attitudes, his way of looking at things and persons, and even at himself.

1.1.3.2 Abnormal Psychology :

It studies behaviour which is unusual and different from the normal. Such abnormalities of behaviour may be due to defect, disease or disorder of the mind. We expect that under similar circumstances, man behaves more or less like other people in a similar situation. But we generally find that some human beings do not behave in the same way as others do. Their behaviour is different from what we come across when we observe other person's behaviour. Abnormal psychology tries to study why abnormal people behave in a very different manner from the normal, what makes a man abnormal, what are the types and causes of abnormal behaviour, and how can abnormal behaviour be changed into normal behaviour.

1.1.3.3 Social Psychology :

We all are social animals and our personalities develop through social influence while studying human behaviour, we notice that a person acts, feels and thinks in one way when he is alone. In the company of others, he acts, feels and thinks in a

very different way. Social psychology thus, studies the social interaction of man. We study the influence of the society in which a child grows and lives, on the formation of his habits and on the development of his ideas and beliefs. Social psychology also provides answers to such questions like why and how do a mass of people fight against each other when they know the result of the fight might be harmful to both, why and how are people attracted to each other, and why we like some people and dislike some.

1.1.3.4 Child Psychology :

It is concerned with the development of the child. Psychology studies human behaviour. Man's behaviour undergoes constant change from the moment of his birth. Child psychology tells us about the physical and mental development of the child. It tells us about the early sensory capacities of the child. How does the child's perception of his environment develop ? How and at what stage in his development the child learns to hold or grasp objects and walk ? What is the first sound a child produces ? How his language development takes place ? Child psychology enables us to understand the development of thinking in a child.

1.1.3.5 Experimental Psychology :

It studies all aspects of basic psychological process such as sensation, memory, perception, learning and motivation. In this branch, an attempt is made to test, study and analyse the behaviour of human through experiments. This field is concerned with understanding the fundamental principles of behaviour. In recent years, some experimental psychologists have also been working with social behaviour, personality and behaviour disorders.

1.1.3.6 Physiological Psychology :

It studies the physiological process which directly or indirectly affect behaviour. It investigates the biological bases of behaviour by explaining the role of complex biochemical events in our nervous systems and bodies in everything we do sense, feel or think. It is the study of physiological processes in relation to mental life. It gives an account of the structure and functions of the human brain and of its various parts. It also tells us about the structure and functions of the organs that are involved in the activities of digestion, breathing circulation of blood, and so on.

1.1.3.7 Counselling Psychology :

This branch of Psychology helps in explaining the biological causes of depression, anxiety and also helps in diagnosing the etiology of various mental disorders. It assists individual in dealing with many personal problems that do not involve mental disorders, Counselling psychologists deal with milder emotional problems. They also counsel people with vocational and academic problems, and in doing so, they

put a person through a battery of tests to assess aptitudes, interests, and personality characteristics. They assist people in career planning and in developing more effective interpersonal skills.

1.1.3.8 Developmental Psychology :

In this branch of psychology, the physical and psychological development of a person is studied. It studies man as a dynamic and developing being. Developmental psychologists study changes in behaviour from conception to death. It studies how people change physically, cognitively and socially over the entire life span. It has both pure and applied aspects. Developmental psychologists, for instance, have recently found that tendency towards shyness may occur very early in life, and is an inherited characteristic.

1.1.3.9 Educational Psychology :

It studies all aspects of the educational processes from technique of teaching to learning disabilities in students. It enables us to know what are the characteristics of a good teacher, and what methods should be adopted for selection of a successful teacher. It also enables us to know what method of teaching can produce effective learning. Educational psychology tells us how to deal with the gifted child and tells us about the best method of teaching the mentally backward children. Methods of improving their learning capacity are also suggested in educational psychology.

1.1.3.10 Industrial Psychology :

It studies all aspects of behaviour in work setting like selection of employees, evaluation of performance, work motivation, leadership. It tells about the ways of maintaining and improving the efficiency of workers, about the ways of reducing fatigue in workers, and preventing accidents. It deals with the methods of maintaining good relationship between the workers and employers. For example, industrial and organisational psychologists have found that individuals work harder when they have concrete goals than when they do not have specific goals. Most recent application of psychology to industry which began during world war II, sometimes called Engineering Psychology.

1.1.3.11 Comparative and Animal Psychology :

It is a study of the differences and similarities of behaviour between different groups of humans with respect to culture & race and also between humans and animals. How far is human behaviour similar to the behaviour of other animals ? In what respects does human behaviour differ from the behaviour of other animals ? Comparative psychology answers all such types of questions. Experiments on animals have shown how the nervous system functions and what are the condition of learning-comparing the developing mind of man with the lower manifestations of behaviour among animals brings out the nature of simpler forms of behaviour.

1.1.3.12 Environmental Psychology :

Environmental Psychology is newly established branch of Psychology. The study of the ways that the Environment influences and channels individual behaviour. Environmental Psychology includes the study of such factors as territoriality and personal space, ergonomic design, and the physical attributes of surroundings.

1.1.3.13 Criminal Psychology : Criminal Psychology is a branch of psychology. Criminal psychology deals with crime, criminal, punishment theories of criminal behaviour and prevention of crime. This branch encapsulated the causes of crime, theories of punishment. How to prevent and minimize the crime. What are methods to modify the behaviour of criminals and juvenile delinquents. What are the differences of criminals and delinquents.

1.1.3.14 Legal Psychology : Forensic or legal psychologists apply psychological principles to human problems in the field of law enforcement. Legal psychologists help the criminals (jailinmates) in rehabilitation by providing counselling. They also help the courts in crime detection eg. through the use of lie detector.

1.1.3.15 Health Psychology : Health psychology holds the view that both body and mind are important determinants of health and illness. Health psychology explains about the consequences of stress, anxiety, depression etc. on the physiology of an individual and also how the self efficacy, attitude & optimism helps in combating with an illness.

1.1.3.16 Sports Psychology : This deals with the application of psychology principles in training the sportpersons. It helps the players in dealing with anxiety and stress before the game. Sports psychologists provide counselling to sportspersons regarding maintaining motivation and discipline during the game.

1.1.3.17 Human Factors Psychology : Human factors is an area of psychology that focuses on a range of different topics, including ergonomics, workplace safety, human error, human capability and human computer interaction.

1.1.3.18 Positive Psychology : This is a recent branch of psychology which focuses on happiness and self-contentment i.e. it deals with how common people can become happier and more content. It urges people to focus on what they are good at, so they achieve more goals and are content. It also deals with inculcation of positive emotions like empathy, love, compassion for the well being.

1.1.4 Cross Cultural Perspective :

Cross Cultural psychology is new and emerging branch of psychology that studies the influence of culture on human behaviour. In the past many aspects of human behaviour were considered universal. But the study of impact of cultural differences on human behaviour leads to surprising in low people think, feel and behave.

1.1.4.1 What is Culture?

Culture refers to characeristics of a group of people, including attitudes, values, customs, rituals and traditions that are transmitted from one generation to next generation. Cultures throuhout the world share many similar attitudes but are marked by considerable differences. For example, people of all cultures get married, how they get married, rituals they perform, traditions they follow and attitudes they hold varies from culture to culture.

1.1.4.2 Major topics of cross-cultural perspective :

-Emotions

-Language aquisition

-Child Development

-Personality

-Social Behaviour

-Family and Social relationships

1.1.4.3 History and Importance

The International Association of Cross-Cultural Psychology (IACCP) was established in 1972, and this branch of psychology has continued to grow and develop since that time.

Why Cross-Cultural Psychology is Important?

Since psychology emerges mainly in North America and Europe, researchers began to question whether the observations and ideas of these culture are reliable or not. In this branch of psychology researchers try to find the difference in the results of participants of different culturer. For eg. some cultures prefer individualism and personal autonomy whereas, other cultures place a higher value on collectivism. The result may get siased if findings of one culture is generalized over another culture.

1.1.4.4 Approaches

Cross cultural psychologists follow these approaches :

The etic approach -

This approach focused on studing how different cultures are similar.

The emic approach -

This approach focuses on studing the difference between cultures.

Overview of the Branches of Psychology : The entire study and scope of psychology has been divided into the branches and fields explained above. These branches named above however, do not entirely cover the scope of psychology. Other branches are

also worth mentioning such as criminal psychology (which studies the behaviour of criminals and its legal implications), military psychology (which deals with war and other allied problems) and the like.

Thus to conclude scope of psychology is way vast as it is applied in understanding, explaining predicting and controlling an organisms behaviour. Psychology is applied in all spheres of life and is applicable in understanding the human behaviour right from the conception till death. Psychology has an application in industries, schools, hospitals, military, sports, etc. Where ever human factor or behaviour is involved psychology comes into action.

1.1.5 Summary

In this lesson, we have focused on the following points

(i) meaning of the term "Psychology";

(ii) how the term "Psychology" originated.

Check your progress-II

Note : Space is given below for you to write your answer.

Q.1 State, in not more than 15 lines, the various branches of psychology.

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1.1.6 Keywords

Experimental Psychology :

It studies all aspects of basic psychological process such as sensation, memory, perception, learning and motivation. In this branch, an attempt is made to test, study and analyse the behaviour of human through experiments.

Clinical Psychology :

Clinical psychology is one of the largest branches of psychology. It studies the diagnosis, cause and treatment of mental disorders. It tells how persons can be helped with their behavioural problems.

Positive Psychology : This is a recent branch of psychology which focuses on happiness and self-contentment i.e. it deals with how common people can become happier and more content. It urges people to focus on what they are good at, so they achieve more goals and are content. It also deals with inculcation of positive emotions like empathy, love, compassion for the well being.

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Culture

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1.1.7 Long questions

1. Discuss the key contributions of different theorists in shaping the understanding of psychology over time.

2. Explain the significance of various branches of psychology in understanding human behaviour.

3. Describe the cross-cultural perspective in psychology and its importance in understanding how cultural differences influence human behaviour.

1.1.8 Short questions

1. What are the different early definitions of psychology, and how did the concept evolve over time?

2. List and briefly explain three branches of psychology.

3. What is the significance of experimental psychology, and how does it contribute to our understanding of fundamental psychological processes?

1.1.9 Suggested Readings

Morgan, C.T. King, R.A., Weisz. J.R. Schoper, J. (1987). *Introduction to Psychology*. McGraw-Hill, New York.

Munn, N.L., Fernald Jr. L.D., & Fernald, P.S. (1972). *Introduction to Psychology*. Oxford & IBH Publishing Co., New Delhi.

LESSON NO. 1.2 **WRITER : Dr. SANGEETA TRAMA**

HISTORICAL BACKGROUND OF PSYCHOLOGY

LESSON STRUCTURE :

1.2.0 Objectives :

In this lesson, we shall provide you with the historical background of psychology as to how its study started and developed. We shall render information about :

* the early schools of psychology.
* the modern perspectives.

1.2.1 Introduction :

Ideas, concepts, methodology, theories and subject matter of every science is observed to undergo change and development, and at the beginning of every branch; knowledge is seen to be shrouded in confused, disordered and underdeveloped thought. As new advances are made, these same thoughts take an order, clarity and organisation. In the history of psychology, strong differences of opinion about what psychology should study and how it should do were represented in schools of psychology. Today, many

psychologists share the idea that psychology should study behaviour; even those who want to study internal events generally agree that this must begin with a look at behaviour. Sometimes, psychologists may disagree about what they see and what it means. Thus, fundamental differences in viewpoints shows up in the very definition of psychology and in ideas about what psychology should study and how. Some historical background will help to bring these point of view into focus.

1.2.3 Early Schools of psychology :

Ever since man woke to the mystery of thought and began to make some conjectures on the various changes that took place in his mind and body during conditions of sleep, walking, dreaming etc., he has been making a progress in the field of psychology. It is only a historical study of psychology which can reveal the fundamental assumptions that are to be seen in Greek times. Although the theories and assumptions of the modern psychologists appear to be completely at variance with their Greek counterparts, but a minute study will reveal elements of identity and relationship. Formal ideas about behaviour and mind in western culture began with the classical Greek philosophers and have continued to the day as part of the fabric of philosophy. Psychology, as a separate area of study, split away from philosophy a little over 100 years ago. The success of the experimental method in the physical sciences encourages some philosophers to think that mind and behaviour could be studied with scientific methods. In 1879, the German philosopher and psychologist **Wilhelm Wundt** established the first psychological laboratory at the university of Leipzig in Germany. Stanley Hall (1844-1924) founded the first formal psychological laboratory in the United States was set up at Johns Hopkins University in 1883, and within few years, more universities and psychological laboratories and departments were established. In Wundt's opinion, psychology should be the study of conscious experience. Our task is that of analyzing sensation, feelings and images into their most basic parts, just as chemists analyze complex substances. In that way, will come to understand the nature of human mind. We can accomplish this through introduction-asking individuals to describe what is going on in their own minds as they perform various tasks or have specific experiences.

William James, author of an early influential text, 'Principles of Psychology disagrees with Wundt's views. He said that mind is not static. It is always changing. So, the key task for psychology should be that of understanding how the mind functions in every day life. How does our basic psychological nature help us to adapt a complex and ever-changing world. To understand human mind, we have to study how it functions.

Watson, one of the most prominent American psychologist, moved psychology away from studying the contents of the mind to study only observable behaviour because

we can't see 'mind or' conscious experience. All we can observe is overt behaviour and people can't report accurately about what goes on in their minds. Overt behaviour can be observed or measured scientifically so that should be the focus of psychology.

As we see, these three individuals held sharply contrasting views about the nature of psychology. Wundt and other structuralists belived that psychology should focus on conscious experience and on the talk of analyzing such experience into basic parts. **James** and other **functionalists** felt that psychology should focus on observable, overt activities. Schools of thought formed around these psychologists. These schools of thought are known as the schools of psychology.

1.2.2.1 Structuralism :

This early school of physiologist grew up around the ideas of Wilhelm Wundt, a German Psychologist in 1879, and also he established first psychology laboratory at Leipzig university in Germany, his student Edward B. Titchner in his earlier studies investigated sensations and imagery. Wundt and his followers were called structuralists. They worked on this premise that it was the prime duty of the psychologists to explore the structure of consciousness and evolve the law of its formations. The main method used by structuralists to explore these elementary units of mind was **Introspection** (looking into). Subjects were trained to report as objectively as possible what they experienced in connection with a certain stimulus, disregarding the meaning they had come to associate with that stimulus.

1.2.2.2 Functionalism :

About twenty years later, a school of psychology was formed by functionalists who were dissatisfied with the structuralists emphasis on mental states. Instead of asking 'what is consciousness' as the structuralists did, they asked, "what is consciousness for ? What is its purpose or function ? Functionalists, such as William James Dewey (1873-1954), James R. Angell (1869-1949) and Barvey Carr (1873-1954) were specifically interested in the fact that mind and behaviour are adaptive - they enable an individual to adjust to a changing environment. They did experiments on the ways in individual memory, problem solving, and help people and animals adapt to their environments.

1.2.3 Approaches of Psychology:

An approach is a perspective (i.e., view) that involves certain assumptions (i.e., beliefs) about human behavior: the way they function, which aspects of them are worthy of study and what research methods are appropriate for undertaking this study. There may be several different theories within an approach, but they all share these common assumptions. Since Wilhelm Wundt opened the first psychology lab in 1879, psychologists have studied various aspects of human behavior, such as personality, brain functions and socio-cultural influences. As psychology progressed, it began to

tackle the question of why we do what we do from different angles, including: biological, psychodynamic, behavioral, cognitive and humanistic perspectives.

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

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

1.2.3.1 Biological Approach

Theorists in the biological perspective who study behavioral genomics consider how genes affect behavior. Now that the human genome is mapped, perhaps, we will someday understand more precisely how behavior is affected by the DNA we inherit. Biological factors such as chromosomes, hormones and the brain all have a significant influence on human behavior, for example, gender. Biopsychologists look at how your nervous system, hormones and genetic makeup affect your behavior. Biological psychologists explore the connection between your *mental states* and your *brain, nerves and hormones* to explore how your thoughts, moods and actions are shaped.

Biological approach suggests you are the sum of your parts. You think the way you do because of the way your brain is built and because of your body's needs. All of your choices are based on your physical body. The biological approach attempts to understand the healthy brain, but it also examines the mind and body to figure out how disorders like schizophrenia develop from genetic roots.

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

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

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

1.2.3.2 Behaviouristic Approach

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

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

Classical conditioning (CC) was studied by the Russian psychologist Ivan Pavlov. Though looking into natural reflexes and neutral stimuli he managed to condition dogs to salivate to the sound of a bell through repeated associated with the sound of the bell and food. The principles of CC have been applied in many therapies. Systematic desensitizing has been used extensively for the treatment of phobias (step-by-step exposed to a feared stimulus at once). Aversion therapy is used for the treatment of alcohol de-addiction treatment. In this therapy an unpleasant stimulus is added so that the subject experiences unpleasantness after consuming alcohol.

B.F. Skinner investigated the role of reinforcement and punishment in shaping the behaviour of an organism and termed it as operant conditioning. Skinner felt that some behavior could be explained by the person's motive. Therefore behavior occurs for a reason, and the three main behavior shaping techniques are positive reinforcement, negative reinforcement, and punishment.

Behaviorism also believes in (e.g., controlled experiments), and that only observable behavior should be studied because this can be objectively measured. Behaviorism rejects the idea that people have free will, and believes that the environment determines all behavior. Behaviorism is the scientific study of observable behavior working on the basis that behavior can be reduced to learned S-R (Stimulus-Response) units.

Behaviorism has been criticized in the way it under-estimates the complexity of human behavior. Many studies used animals which are hard to generalize to humans, and it cannot explain, for example, the speed in which we pick up language. There must be biological factors involved.

1.2.3.3 Cognitive Approach

Psychology was institutionalized as a science in 1879 by Wilhelm Wundt, who found the first psychological laboratory.

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

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

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

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

1.2.3.4 Evolutionary Approach

This perspective was founded in part by Charles Darwin and his theory of natural selection. His theories began to gain additional traction throughout the 19th and 20th centuries. In this way, other psychologists increased their own research of these ideals. A central claim of evolutionary psychology is that the brain (and therefore the mind) evolved to solve problems encountered by our hunter-gatherer ancestors during the upper Pleistocene period over 10,000 years ago.

The Evolutionary approach explains behavior in terms of the selective pressures that shape behavior. Most behaviors that we see/display are believed to have developed during our EEA (environment of evolutionary adaptation) to help us survive.

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

The mind is therefore equipped with 'instincts' that enabled our ancestors to survive and reproduce.

A strength of this approach is that it can explain behaviors that appear dysfunctional, such as anorexia, or behaviors that make little sense in a modern context, such as our biological stress response when finding out we are overdrawn at the bank.

1.2.3.5 Psychodynamic Approach

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

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

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

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

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

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

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

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

Conclusion

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

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

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

The humanistic perspective does recognize human experience, but largely at the expense of being non-scientific in its methods and ability to provide evidence. The psychodynamic perspective concentrates too much on the unconscious mind and childhood. As such, it tends to lose sight of the role of socialization (which is different in each country) and the possibility of free will.

The biological perspective reduces humans to a set of mechanisms and physical structures that are clearly essential and important (e.g., genes). However, it fails to account for consciousness and the influence of the environment on behavior.

Source: https://www.simplypsychology.org/perspective.html

1.2.4 Summary

In conclusion, there are so many different perspectives in psychology to explain the different types of behavior and give different angles. No one perspective has explanatory powers over the rest. Only with all the different types of psychology, which sometimes contradict one another (nature-nurture debate), overlap with each other (e.g. psychoanalysis and child psychology) or build upon one another (biological and health psychologist) we can understand and create effective solutions when problems arise, so we have a healthy body and a healthy mind. The fact that there are different perspectives represents the complexity and richness of human (and animal) behavior.

1.2.5 Keywords

Structuralism :

This early school of physiologist grew up around the ideas of Wilhelm Wundt, a German Psychologist in 1879, and also he established first psychology laboratory at Leipzig university in Germany, his student Edward B. Titchner in his earlier studies investigated sensations and imagery. Wundt and his followers were called structuralists.

Functionalism :

Instead of asking 'what is consciousness' as the structuralists did, they asked, "what is consciousness for ? What is its purpose or function ? Functionalists, such as William James Dewey (1873-1954), James R. Angell (1869-1949) and Barvey Carr (1873-1954) were specifically interested in the fact that mind and behaviour are adaptive - they enable an individual to adjust to a changing environment.

Biological Approach :

The biological approach believes that most behavior is inherited and has an adaptive (or evolutionary) function. For example, in the weeks immediately after the birth of a child, levels of testosterone in fathers drop by more than 30 per cent. This has an evolutionary function. Testosterone-deprived men are less likely to wander off in search

of new mates to inseminate. They are also less aggressive, which is useful when there is a baby around.

Behaviourism Approach

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

Evolutionary Approach

This perspective was founded in part by Charles Darwin and his theory of natural selection. His theories began to gain additional traction throughout the 19th and 20th centuries. In this way, other psychologists increased their own research of these ideals. A central claim of evolutionary psychology is that the brain (and therefore the mind) evolved to solve problems encountered by our hunter-gatherer ancestors during the upper Pleistocene period over 10,000 years ago.

The Evolutionary approach explains behavior in terms of the selective pressures that shape behavior. Most behaviors that we see/display are believed to have developed during our EEA (environment of evolutionary adaptation) to help us survive.

1.2.6 Long Questions:

1. Discuss the contributions of Wilhelm Wundt, William James, and John B. Watson in shaping different perspectives within psychology.
2. Compare and contrast the early schools of psychology, namely structuralism and functionalism. Analyze their approaches to understanding behaviour.
3. Describe the main approaches of psychology, including the biological, behavioristic, cognitive, evolutionary, and psychodynamic approaches.

1.2.7 Short Questions:

1. What is the main difference between structuralism and functionalism in psychology?
2. Briefly explain the key principles of the behavioristic approach in psychology.

1.2.6 References

Morgan, C.T. King, R.A., Weisz. J.R. & Schoper, J. (1987). *Introduction to Psychology*. McGraw-Hill, New York.

Munn, N.L., Fernald Jr. L.D., & Fernald, P.S. (1972). *Introduction to Psychology*. Oxford & IBH Publishing Co., New Delhi.

Check your progress-I

Note : Space is given below for you to write your answer.

State, in not more than 15 lines, the major contentions of the school of behaviourism.

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LESSON NO. 1.3 **WRITER : Dr. SANGEETA TRAMA**

METHODS OF PSYCHOLOGY

LESSON STRUCTURE :

1.3.0 Objectives

The objective of this lesson is to introduce the methods of psychology, highlighting their significance and applications. The lesson will cover observation, experimental method, case study, and survey methods of psychology, providing an understanding of each method's strengths and limitations.

1.3.1 Introduction :

Psychology is the science of behaviour and experience of the organism in relation to the environment. Being a science, it has its specific tools, methods of procedures which help in the collection and organisation of facts or data. Methods save time, efforts, energy, and aid efficiency. Some psychologists are of the view that because of these methods, psychology is a science, and this very thing speaks of the importance of methods.

1.3.2 Methods of psychology :

Methods of psychology have undergone a drastic change. They depend on the needs of the society. Previously, we used methods like introspection, but later on, other methods of scientific inquiry became prevalent.

1.3.2.1 Meaning of Methods :

Charles Gide has said, "In scientific language, the term "method" is used to designate the road that must be followed to lead to the discovery of truth."

According to Oxford dictionary, method is a way of doing something, system of procedures, orderliness, conscious regularity, etc.

1.3.3 List of Methods of Psychology :

The following methods are prevalent in psychology :

1) Introspection,
2) Observation,
3) Experimental method,
4) Case history,
5) Genetic of Developmental Method,
6) Pathological method, and
7) Statistical method.

1.3.3.1 Observation :

All sciences use observation to obtain facts. Psychology is a systematic description and explanation of man's behaviour. But to descibe any facts, it is necessary that one should have observed that fact of event. It is the study of behaviour as it occurs in its natural settings. But our observations may be either useless or unnecessary. The psychologist also observes the description given by those persons of their mental activities for whom its possible. Such descriptions have been called verbal behaviour, because it is made with the use of words, that is, spoken or written language. A psychologist has one advantage over other scientists. He can observe the phenomena both from within and without. He may watch other people's behaviour, and may also look into his own behaviour from inside or ask other people to report about their behaviour.

There are thus, two kinds of observation. One is objective or naturalistic method and the other is subjective method or **introspection**. Observation which can be verified by others as well as the subject is called **Naturalistic or Objective Observation.** In this method, the observer acts as a non-participant observer. By this, he is more likely to maintain an objective viewpoint. For example, anybody can see how fast or accurately I type, walk or play cricket and such observation is objective, but while doing these acts, I may be feeling pain, fatigue or hunger and

may be conscious of them. When we study this consciousness, our observation becomes subjective. Our behaviour can be observed in its bodily aspect, that is thoughts, feelings, wishes, purposes which accompany bodily movements or changes. Both kinds of observation are needed in psychology for every act of behaviour, because every act has both mental and physical aspects.

This method has some **merits** and **demerits** also. This method is basically an objective method and therefore, quite scientific. Through this method, it is possible to make the observation about all sources of individuals and it has been used since ages. It is the most ancient method of study. It is used by almost all the sciences. It is quite an easy method. Every human being can use this observation with little efforts. But this method suffers from some disadvantages also. In order to have correct and accurate information, it is necessary to wait for the desired situations. For example, if we want to study the psychology of man in his happy mood, we have to wait till the man concerned is in a happy mood. Since the observer or investigator is also a human being, it is quite possible that this personal feelings and emotions may influence the observations. That is why the data provided by this method is not 100% dependable, and the data becomes unreliable. Prejudice also plays a very vital role in observation.

1.3.3.2 Experimental Method :

Psychology is the positive science of human behaviour. Hence, experimental method is most important in the study of psychology. This method has the credit of bringing psychology to the level of an exact science. Experiment is observation under conditions which we can control and vary. One advantage of this control is that we can repeat our observations as often as we like, and obtain better and more accurate results. Here are some main steps in the process of experimentation. The first step in this method is the formation of problem.

Problem : Problem is any statement that is testable.

Hypothesis : On the basis of previous knowledge and research and through insight, you make some hypothesis in relation to certain facts. It is necessary that this hypothesis or provisional explanation should be sensible. The second step is to deduce consequences from that hypothesis which can be experimented upon. The next step is to arrange an experiment to test and see if those consequences can be **verified** or not. If they are verified, the hypothesis is strengthened and may be accepted. If the experiment gives negative results, the hypothesis stands disproved and will not be supported. Then, we will have to frame another hypothesis.

Let us now describe some of the essential features of an experiment. First of all, an experiment is an observation which we can repeat as often as we wish. The advantages of repetition are very much clear. It removes all possible doubts. Because of **repetition**, we may be reasonably sure that our results are valid and

reliable. In this method, we do not have to wait for an opportunity for right observation and arrange for it ourselves, and check it up by repeating. It saves a lot of time. Second, generalization can be possible only because of repetition. For sound generalization, repeated observations must be made under similar conditions, that is, conditions must be controlled. If conditions change, the results may not be the same. It is difficult to keep all the conditions similar and under control, but we have to see that all the relevant and important conditions remain unchanged.

Suppose we want to study the effect of caffeine on the alertness of a person. Many factors would be involved, but it is possible that a person might be influenced by the fact that caffeine is being tried on him. In order to control this factor, two group of people are taken. They resemble in age, sex, and intelligence. Two kinds of pills are prepared. One pill containing caffeine and another similar in appearance but not containing caffeine. The latter pills are called *placebos*. The group taking the caffeine pill is called the experimental group and the group taking the placebo is called the control group. By comparing the behaviour of the two groups, we can find the effect of caffeine. The person on whom an experiment is done is called a subject. The person who does the experiment is the experimenter.

Thirdly, every experiment must have a variable. A **variable** is any characteristic that may appear in changed amount or quality in different instances. In organizing the experiment, the investigator or experimenter decides which stimulus and organising variables he intends to study in relation to which response variable. In the above experiment, caffeine and alertness are two variables. Caffeine is called the independent variable because we can change its amount independently of the other. Alertness on the other hand, is the dependent variable because we are trying to see if it depends on caffeine.

Experimental method is a scientific method, but it cannot be said to be always successful and accurate. In the first place, human feelings and emotions are quite fickle and transitory and it is, therefore, very difficult to apply this method. Secondly, an experiment is an artificially arranged observation and the psychologist has to check what he want to control and observe. Thirdly, another great disadvantage of the method that we cannot use it wherever we like and we cannot make experiments with human beings or animals as we like, as is possible with materialistic things. Fourthly, psychological experiments are sure to interfere with the very thing they aim at studying. Natural sciences are able to isolate the object of their observation but such isolation is not possible in psychology. People on whom experiments are done are highly sensitive and the mere knowledge that their behaviour is being studied will make them behave differently.

1.3.3.3 The Case Study Method

The case study, or case history is another descriptive research method used by psychologists. In a case study, a single individual or a small number of persons are studied in great depth, usually over an extended period of time. A case study involves the use of observation, interviews and sometimes psychological testing. The case study is exploratory in nature, and its purpose is to provide a detailed description of some behaviour or disorder. This method is particularly appropriate for studying people who have uncommon psychological or physiological disorder or brain injuries. The case study method is not limited to the social sciences. This method is also used in business to make a number of presonnel evaluations and to make selection of persons for appointment or promotion. Case histories are also conducted and maintained in schools, prisons, mental clinics, armed forces, marriage and family consultation etc.

Case studies have provided the foundation for psychological theories. The theory of Sigmund Freud is based primarily on case studies of his own patients.

Advantages of Case Study Method

1. The case study approach is used in social sciences primarily for the insights it can offer to guide further research on large samples. The purpose of the case history is to see how action and attitudes develop over a period of time.
2. Case study adds to over knowledge and its a tremendous produces of ideas suggestions and hypothesis about behaviour.
3. By this method the researcher gets a detailed data on a few cases hence it helps in formulating new concepts or a new framework within which to carry out controlled experiments later on.
4. Case studies are flexible enough. It can be conducted in any kind of social setting.
5. Case study method like any other method can be used for testing theories.

Disadvantages

Although the case study has

1. The major disadvantages of case history method is that the generalization to larger sample is almost impossible.
2. The case studies depend upon retrospective data, there is a real possibility that the subject may either forget important details or may purposefully falsify them.
3. In some case studies letters or personal documents can be used, the researcher must also be aware of the distortion.

establish the cause of behaviours observed in a case study, and observer bias is a potential problem. Moreover, because so few individiuals are studied, researchers do not know how applicable, or generalizable their findings may be to larger groups or to different cultures.

1.3.3.4 Survey Method

A Survey allows reseracher to gather a large amount of information from a large number of people in a relatively short time. Surveys are used to obtain information related to consumer preferences, opinion polls, political opinions, social issues etc. An adequate survey requires a carefully pretested questionnaire, a group of interviewers trained in its use, a sample carefully selected to ensure that the respondents are representative of the population to be studied, appropriate methods of data analysis and reporting so that the results are properly interpreted.

There are various steps involved in conducting a survey. First the problem is defined objectively. Then the sample to be studied and size of sample is planned. A list of questions or questionnaire is prepared. Then the researcher decides the type of survey to be conducted i.e. mail survey, personal interview, telephone survey. Then the content analysis is done and finally reporting of the data is done.

Types of Survey

There are various modes of conducting survey.

1. Mail Survey : Mail surveys represent the most common means of distributing self-administered questionnaries. Mail surveys can be done relatively quickly. Mail surveys are the best for dealing with highly personal or embarrasing topics, especially when anonymity of respondents is preserved. The major limitation of this type of survey is law response rate. Quite often people are not interested or they are too busy to return a questionnaire.

2. Personal Interviews : This is a face to face interview. Personal interview allows much greater flexibility in asking questions than does the mail survey. The personal interview is very costly as the sample size is large and the respondents have to be contacted personally. There are chances of bias as well, interviewer tries to adjust the wording of a question to 'fit' the respondent or records only selected portions of respondents answers.

3. Telephone Survey : Telephone survey have become very popular as its provides quick and speedy. Collection of information about the respondents. The major disadvantages is that the people who do not have a telephone can't be interviewed.

Conclusion

Survey method has a wide application and can be used to study the attitudes**,** beliefs, habits of the people in a particular society. It also helps to make decisions related to social or political problem on the basis of consensus.

1.3.4 Summary

Various methods are prevalent in psychology, each having its own advantages and disadvantages. These methods may be used individually as well as in combination to render significant information. The importance of these specific tools of methods cannot be ignored since they save time, effort, money and energy, and provide us with concrete and empirically established results.

2. It may be difficult for the researcher to decide as to when to stop collecting data for a case study.
3. Often case studies involve problems cases. As a result of which undesirable traits tend to be over-emphasized and desirable common characteristics tend to be under emphasized.
4. Case studies are very time consuming and fail to provide conclusive proof of anything

Although the case study has proven useful in advancing knowledge in several areas of psychology, it has certain limitations. Researchers cannot

Check your progress-II

Note : Space is given below for you to write your answer.

Q.State, in not more than 15 lines, the main features of the experimental method.

1.3.5 KEY WORDS

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Telephone Survey : Telephone survey have become very popular as its provides quick and speedy. Collection of information about the respondents. The major disadvantages is that the people who do not have a telephone can't be interviewed.

A **variable** is any characteristic that may appear in changed amount or quality in different instances. In organizing the experiment, the investigator or experimenter decides which stimulus and organising variables he intends to study in relation to which response variable.

A case study involves the use of observation, interviews and sometimes psychological testing. The case study is exploratory in nature, and its purpose is to provide a detailed description of some behaviour or disorder. This method is particularly appropriate for studying people who have uncommon psychological or physiological disorder or brain injuries.

Observation which can be verified by others as well as the subject is called **Naturalistic or Objective Observation.** In this method, the observer acts as a non-participant observer. By this, he is more likely to maintain an objective viewpoint.

1.3.6 Long Questions

1. Explain the nature and Scope of psychology.
2. Discuss the most scientific method of Psychology.
3. Discuss various schools of Psychology.

1.3.7 Short Questions

Write short notes on :

(a) Survey Method
(b) Industrial Psychology
(c) Observation Method

1.3.8 Suggested Readings

Morgan, C.T. King, R.A., Weisz. J.R. Schoper, J. (1987). *Introduction to Psychology*. McGraw-Hill, New York.

Munn, N.L., Fernald Jr. L.D., & Fernald, P.S. (1972). *Introduction to Psychology.* Oxford & IBH Publishing Co., New Delhi.

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LEARNING

Structure

1.4.0 Objective

In this lesson the students will get acquainted with the nature of learning, types of learning and the various laws of learning.

1.4.1 Introduction

"Learning is a discipline of psychology that attempts to explain how an organism learns. It consists of many different theories of learning, including instincts, social facilitation and observation. Learning is one key process that

many people take for granted . They just assume it happens and happens basically the same way for most people. Definition of learning is comprised of several different components:

The 4 Factors That Form The Definition of Learning:

1) Learning is inferred from a change in behavior/performance*
2) Learning results in an inferred change in memory
3) Learning is the result of experience
4) Learning is relatively permanent

This means that behavior changes that are temporary or due to things like drugs, alcohol, etc., are not "learned. It is the combination of these 4 factors that make definition of learning. “Learning is a relatively durable change in behavior, behavioural potential or knowledge that is due to experience” here Behavior Potential means that once something is learned, an organism can exhibit a behavior that indicates learning as occurred. Thus, once a behavior has been "learned", it can be exhibited by "performance" of a corresponding behavior.

1.4.2 Nature of Learning

As learning always involves some kind of experience , the behavioural changes occurring because of it are relatively permanent e.g. suppression of orienting reflexes resulting in habituation . Habituation is a decrease in response to a stimulus after repeated presentations. For example a new mobile ring tone, may initially draw your attention or even become distracting. After you become accustomed to this sound, you pay less attention to the noise and your response to the sound will diminish. This diminished response is habituation. But if it occurs due to fatigue or drugs it is not learning. Habituation is an example of non-associative learning.

Learning may be both vertical and horizontal. It is vertical in so far precision in increased or information is added to that already learned. It is horizontal in so far as what is learned is integrated and organized as a part of a functioning unit of expanding experience. Thus the former means qualitative and latter is quantitative in nature.

Learning is expected to bring about more or less permanent change in the learner's behavior. This change may range from the acquisition of a relatively simple skill. item of information to the mastery of complicated mechanical performance and application of difficult and abstract reading material, change in response or behavior is caused partly or wholly by experience. It includes

behavior change in the emotional sphere, refers to the acquisition of symbolic knowledge or motor. skills. it however does not include physiological changes like fatigue, temporary sensory resistance and hunger.

Learning should enable us to make the least use of the things in the world around us. For example, one has to learn the art of living harmoniously with others by learning how to establish good relations with his fellows. Learning not limited

to the school alone, it being earlier and continues even after the school days.

1. **Learning is growth :**

   The individual grows as he lives. This growth implies both physical as well as mental development of the learner. The individual gains experiences through various activities. These are all sources of learning. The individual grows through living and learning. Thus growth and learning are inter-related and even synonymous.

2. **Learning is adjustment :**

   Learning enables the individual to adjust himself properly, with the new situations. The individual faces new problems and new situations throughout his life and learning helps him to solve the problems encountered by him. That is why; many psychologists describe learning as "a process of progressive adjustment to the ever changing conditions which one encounters." The society in which we live is so complex and so dynamic that any one type of adjustment will not be suitable for all of many situations and problems. It is through learning that one could achieve the ability to adjust adequately to all situations of life.

3. **Learning is purposeful :**

   All kinds of learning is goal-oriented. The individual acts with some purpose. He learns through activities. He gets himself interested when he is aware of his objectives to be realized through these activities. Therefore all learning is purposive in nature.

4. **Learning is experience :**

   The individual learns through experiences. Human life is full of experiences. All these experiences provide new knowledge, understanding, skills and attitudes. Learning is not mere acquisition of the knowledge, skills and attitudes. It is also the reorganization of experiences or the synthesis of the old experiences with the new.

5. **Learning is intelligent :**
   Mere cramming without proper understanding does not make learning. Thus meaningless efforts do not produce permanent result. Any work done mechanically cannot yield satisfactory learning outcomes. Learning therefore must be intelligent.
6. **Learning is active :**
   Learning is given more importance than teaching. it implies self-activity of the learning. Without adequate motivation he cannot work whole-heartedly and motivation is therefore at the root of self-activity. Learning by doing is thus and important principle of education, and the basis of all progressive methods of education like the project, the Dalton, the Montessori and basic system.
7. **Learning is both individual and Social :**
   Although learning is an individual activity, it is social also. Individual mind is consciously or un-consciously affected by the group activities. Individual is influenced by his peers, friends, relatives' parents and classmates and learns their ideas, feelings and attitudes in some way or others. The social agencies like family, church, markets and clubs exert immense, influence on the individual minds. As such, learning becomes both individual as well as social.
8. **Learning is-the product of the environment :**
   The individual lives in interaction of the society. Particularly, environment plays an important part in the growth and development of the individual. The physical, social, intellectual and emotional development of the child is molded and remolded by the objects and individuals in his environment. Therefore, emphasized that child's environment should be made free from unhealthy and vicious matters to make it more effective for learning.
9. **Learning affects the conduct of the learner :**
   Learning is called the modification of behavior. It affects the learner's behavior and conduct. Every learning experience brings about changes in the mental structure of the learner. therefore attempts are made to provide such learning experiences which can mould the desired conduct and habits in the learners.

The sequence of events and corresponding cognitive processes that are present in learning are:

(1) Gaining attention (reception)
(2) Informing regarding objective (expectancy)
(3) Recall of prior learning (retrieval)
(4) the stimulus (selective perception)
(5) learning guidance (semantic encoding)
(6) performance (responding)
(7) feedback (reinforcement)
(8) performance (retrieval)
(9) retention and transfer (generalization).

These events should satisfy or provide the necessary conditions for learning and as is clear from these that learning is an inferred process. Inference here means the act or process of deriving logical conclusions from premises known or assumed to be true. In other words it is the act of reasoning from factual knowledge or evidence.

1.4.3 Types of Learning

Learning can take place in many ways depending upon simple or complex form of responses that needs to be learnt. The simplest form of learning is conditioning. Two types of conditioning has been identified

1. Classical conditioning
2. Instrumental / operant conditioning

The other form of learning include

3. Observational Learning
4. Verbal Learning
5. Concept Learning
6. Insight

1.4.4 Classical Conditioning

Ivan Pavlov, a Russian physiologist who was studying digestion in dogs, discovered classical conditioning accidentally. Pavlov noticed that a dog salivated at the sight of a food bowl. Pavlov recognized this as an important phenomenon. It represented the triggering of a biological reflex (salivation) by learning (in this case, by the sight of the bowl). Pavlov studied this phenomenon in the laboratory and called it signalization.

Classical conditioning always starts with a *reflex* : an unlearned stimulus-response circuit in the nervous system. In many situations, an organism benefits by making a reflex response to appropriate situations slightly *early*. Therefore animals are sensitive to cues that predict the activation of a reflex. Such signals allow the animal to make an anticipatory biological response. This is classical conditioning.

Learning or *acquisition* of a classically conditioned response occurs when a signal or cue is put before the activation of a reflex. Learning is fastest if the signal comes about a half second before the reflex, if the reflex involves skeletal muscle movement, such as a knee jerk or withdrawal of a fingertip. Learning typically occurs after only a few pairings of signal with reflex.

Extinction or unlearning of a classically conditioned response occurs when the predictive relationship between the signal and the reflex is destroyed. The signal is presented but the reflex is prevented or a competing reflex is activated. Soon the signal no longer has predictive power and the animal ceases to respond to it. After a time, or if the context is changed, an extinguished response may reappear. To completely eliminate a conditional response, the response must be extinguished several times.

Generalization is the name for responding the same way to different situations. The more similar the situations, the more generalization will occur. In naturalistic settings, a conditional response may occur or not depending upon how an organism *categorizes* stimuli.

Discrimination is the name for responding differently to distinct stimuli. It is the opposite of generalization. An animal discriminates between stimuli when it responds differently to them. An example is *release from habituation*. It occurs even in small babies and can be used to determine whether they distinguish between different categories of stimuli.

1.4.5 Operant Conditioning

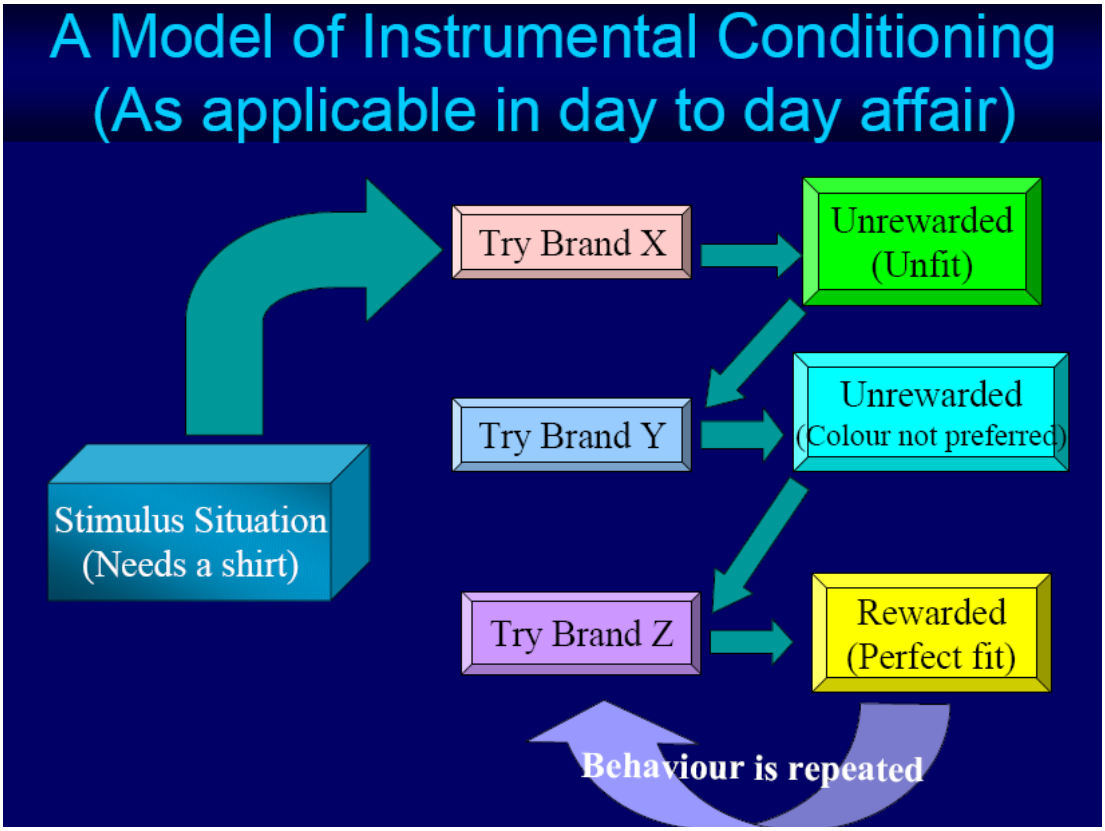
Classical conditioning forms an association between two stimuli. *Operant* conditioning forms an association between a behavior and a consequence. Operant conditioning is also called instrumental conditioning, because the subject uses its own behavior as an "instrument" to pursue some goal.

An operant is defined as a behavior producing a certain effect on the environment. Thus a bar-press operant is *any* behavior which results in a bar press, whether it is accomplished (for example) with the animal's paw or the animal's nose.

In a "rat lab" students start by teaching a rat to find food pellets in a small enclosure, the food magazine. Next the rat is reinforced (given food pellets) for any behavior that brings it close to the bar that sticks out of the cage wall. Then the rat is required to actually press the bar, to receive a pellet. This process of gradually reinforcing steps toward a desired behavior is called *shaping*.

A reinforcing stimulus is a stimulus that makes the behavior it follows more frequent. *Extinction* occurs when the reinforcer that maintains a behavior is stopped, and the behavior goes away. A punishing stimulus is one that makes the behavior it follows *less* frequent or probable. It is not the same thing as negative reinforcement. Negative reinforcement is a form of reinforcement (therefore it makes behavior more frequent). Negative reinforcement occurs when the reinforcing event is *removal* of a stimulus. "Negative punishment" or *response cost* occurs when the removal of a stimulus after a behavior makes the behavior *less* frequent.

Antecedents-stimuli that come before a behavior-are also used in operant conditioning. An S+ is a stimulus that indicates reinforcement *is available* if a behavior is performed. An S- is a stimulus that indicates reinforcement is *not* available. An S+ or an S- can be called a *discriminative stimulus*, because it helps the animal discriminate between situations when reinforcement is or is not available.



When animals learn to perform a behavior to escape from pain or other aversive stimulation, this is called *escape conditioning*. When animals receive a stimulus indicating something aversive is about to happen, they will try to escape ahead of time to avoid the unpleasant event. This is called *avoidance learning*. Avoidance conditioning is marked by its persistence. The relief produced by avoidance is reinforcing, so avoidance behavior tends to continue forever even when the original threat is no longer relevant.

1.4.6 Observational Learning

Observational learning, also known as modeling or imitation, proposes that learning occurs as a result of observation and consequence. Behavior is learned through imitation; however behavior that is rewarded is more readily imitated than behavior that is punished. Termed vicarious conditioning, this type of learning is present when there is attention to the behavior, retention and the

ability to reproduce the behavior, and motivation for the learning to occur. Observational learning is learning stimulated also by observing the behavior of another organism. *Modeling* is one form of observational learning. It occurs when one person performs a behavior, while others look on and learn from it.

Specialized nerve cells called mirror neurons may account for this ability. Mirror neurons are found in many different primate species. They fire the same patterns whether a creature is performing an action itself or watching another member of the same species performing the action. This provides a way for actions seen externally to be taken into the nervous system, through a sort of automatic motor empathy.

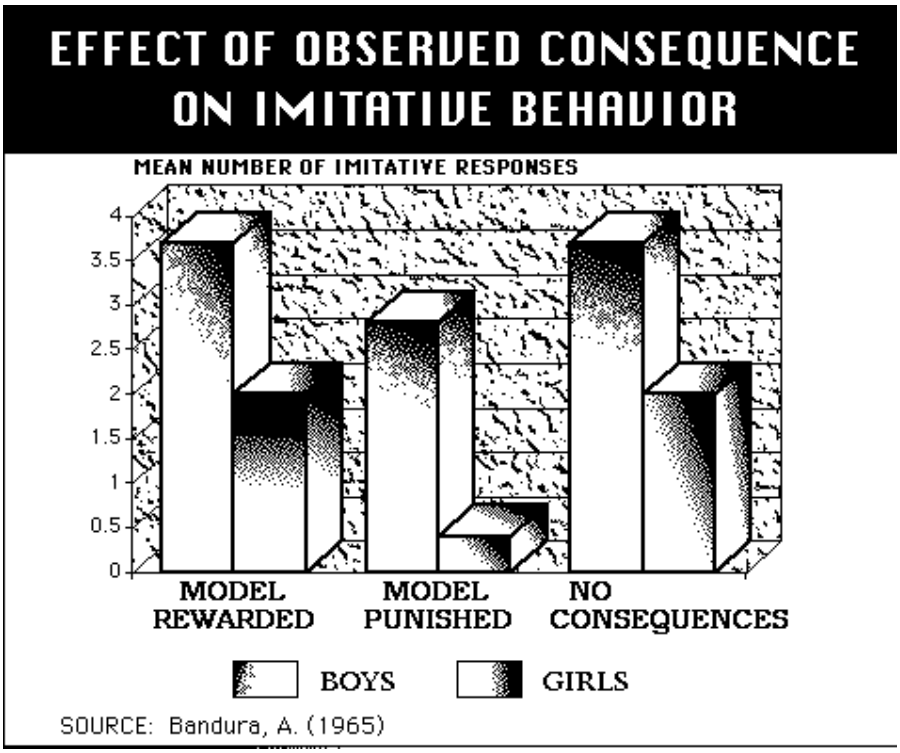
Observational or social learning is based primarily on the work of Albert Bandura. He and his colleagues were able to demonstrate through a variety of experiments that the application of consequences was not necessary for learning to take place. Rather learning could occur through the simple processes of observing someone else's activity. Bandura formulated his findings in a four-step pattern which combines a cognitive view and an operant view of learning.

1. Attention -- the individual notices something in the environment
2. Retention -- the individual remembers what was noticed
3. Reproduction -- the individual produces an action that is a copy of what was noticed
4. Motivation -- the environment delivers a consequence that changes the probability the behavior will be emitted again (reinforcement and punishment)

Bandura's work draws from both behavioral and cognitive views of learning. He believes that mind, behavior and the environment all play an important role in the learning process.

In a set of well known experiments, called the "Bobo doll" studies, Bandura showed that children (ages 3 to 4) would change their behavior by simply watching others.

Three groups of children watched a film in which a child in a playroom behaved aggressively (e.g., hit, kick, yell) towards a "bobo doll." The film had three different endings. One group of children saw the child praised for his behavior; a second group saw the child told to go sit down in a corner and was not allowed to play with the toys; a third group (the control) group saw a film with the child simply walking out of the room. Children were then allowed into the playroom and actions of aggression were noted. The results are shown below



1.4.7 Gestalt's Insight Learning

In contrast to classical and operant conditioning, which describe learning in terms of observable behavior, other theories focus on learning derived from motivation, memory, and cognition.

Wolfgang Köhler, a founder of the Gestalt school of psychology, observed the importance of cognition in the learning process when he studied the behavior of chimpanzees. In his experimentation, Köhler concluded that insight was key in the problem-solving conducted by chimpanzees. The animals did not just stumble upon solutions through trial and error, but rather they demonstrated a holistic understanding of problems that they solved through moments of revelation.

In the 1920s, Edward Tolman illustrated how learning can involve knowledge without observable performance. The performance of rats who negotiated the same maze on consecutive days without reward improved drastically after the introduction of a goal box with food, indicating that they had developed

cognitive maps of the maze prior to the reward although it had not been observed in their behavior.

1.4.8 Verbal Learning

A field of experimental psychology which studies the formation of certain verbal associations; deals with acquisition of the associations. Verbal learning is limited to human beings, as humans acquire knowledge largely in terms of words. the methods used in studying this kind of learning

1. Paired -Associates Learning: This method mimics S-S conditioning and S-R learning. It is used in learning some foreign language equivalents of mother-tongue words. First a list of paired associates is prepared. The first word of the pair is used is the stimulus and the second word as a response. Members of each pair may be from the same language or two different languages. A list of such words is given.

Ghar- home chhat- roof billi- cat etc.

The, first members of the pairs (stimulus term) are consonant-vowel-consonant (CVC) nonsense syllables and the second are English nouns (response term). The learner is first shown both the stimulus-response pairs together, and is instructed to remember and recall the response after the presentation of each stimulus term. after that a learning trial begins. One by one the stimulus words are presented and the participant tries to give the correct response term. In case of failure; he or she is shown the response word. In one trial all the stimulus terms are shown. Trials continue until the participant gives all the response words without any error. The total number of trials taken to reach the criterion becomes the measure of paired associate learning.

2. Serial Learning: This method of verbal, learning is used to find out how participant learn the lists of verbal items, and what processes are involved in it. First, lists of verbal items. i.e. nonsense syllables, most familiar or least familiar words, interrelated words. etc. are prepared. The participant is presented the entire list and is required to produce the items in the same serial order as the list. In the first trial, the first item of the list is shown and the participant has to produce the second item. If, he or she fails to do so within the prescribed time, the experimenter presents the second item. Now this item becomes the stimulus and the participant has to produce the third item that is the response word. If he or she fails the experimenter gives the correct item, which becomes the stimulus item for the fourth word. This procedure is called

serial anticipation method. Learning trials continue until the participant correctly anticipates all the items in the given 'order.

3. Free Recall: In this method participants are presented a list of words, which they read and speak out. Each word is shown at a fixed rate of exposure duration.

Immediately after the presentation of the list, the participants are required to recall the words in any order they can. Words in the list may be interrelated or unrelated. More than ten words are included in the list. The presentation order of words varies from trial to trial. This method is used to study how participants organise words for storage in memory. Studies indicate that the items placed in the beginning or end of the lists are easier to recall than those placed in the middle which are more difficult to learn.

Verbal learning depends strongly on meaningfulness and category clustering. It has been found that verbal learning is both associative as well as organisational. Length of the list, meaningfulness, frequency, the usage of words and interrelatedness of the words in the list determine the learning difficulty. More the time spent in learning, stronger is the learning. Verbal learning is both intentional and incidental.

1.4.9 Concept Learning

The world in which we live consists of innumerable objects, events and living beings. These objects and events are different in their structures and functions. One of the many things human beings have to do is to organise the objects, events, animals etc. into categories so that within the category objects are treated as equivalent even though they are different in their features. Such categorisations involve concept learning.

What is a concept?

A concept is a category that is used to refer to a number of objects and events. A concept is a name expressed in words, often only in one word. Cow, fruit, building and crowd are examples of concepts or categories. A concept may be used to refer to a number of instances. It may be noted that the terms concept and category are interchangeable. A concept is defined as 'a set of features or attributes connected by some rule.' Instances of a concept are those objects or events or behaviours , which have common features. A feature is any characteristic or aspect of an object or event or living organism that is observed in them and can be considered equivalent to some features observed or discriminated in other objects. Features are of innumerable kinds and their

discriminability depends upon the degree of the observer's perceptual sensitivity. Properties like colour, size, number, shape, smoothness, roughness, softness, and hardness are called features.

Rules that are used to connect the features to form a concept may be very simple or complex. A rule is an instruction to do something. Keeping in view the rules that are used in defining concepts, psychologists have studied two types of concepts- artificial concepts and natural concepts or categories.

1.4.10 Laws of Learning

Laws and principles of learning are attempts to define the fundamental conditions of the learning process. In general, we have five almost universally accepted laws of learning. Each of these laws has common sense applications based on lessons people have learned over the years. Your mastery of these applications will greatly enhance your ability to influence your students to learn and perform at a high level.

Law of Readiness

According to the law of readiness students learn best when they are physically, mentally, and emotionally ready to learn. Since learning is an active process, students must have adequate rest, health, and physical ability. Students who are exhausted or in ill health obviously cannot learn much. Although these areas are beyond your control, you must know how to address them in your classroom. For students to be mentally ready to learn, they must master certain knowledge and skills at one level before they can learn those required at the next higher level. For example, students who have not learned the basic application of a law have little chance of applying that law to more complex situations. Just as students must be ready to learn, you must be ready to teach. Always prepare your lesson plans, training materials, and classroom or laboratory before you begin to teach. Your readiness is an important step in gaining the confidence and attention of your students. Remember, you only get one chance to make a first impression.

Law of Effect

An individual learns best those things which result in satisfying consequences. Since the law of effect has a direct relationship to motivation, it has many practical applications for you in the training environment.

One of the most basic applications is in your relationship with adult students. Adults want immediate benefits from training, so begin your instruction by

presenting the benefits of the lesson. Continue to remind students of these benefits throughout the training. Point out the value of the training in meeting the needs of your students: self-satisfaction, self-confidence, improved skills, and so forth. Begin each lesson with a statement of objectives to help students establish goals, and let them know you expect them to meet those goals. Motivate students by providing positive reinforcement as they proceed from success to success. That is the basis of the law of effect.

Law of Primacy

Based on the law of primacy, students retain information they learn for the first time longer than they retain information they must relearn. Unlearning incorrect procedures (or bad habits) is always more difficult than learning the correct procedures in the beginning. Therefore, the law of primacy plays an important role in Navy training. Navy training courses allow a limited amount of time for learning do not include time for students to relearn improperly taught information. Make sure you teach the correct information and procedures the first time; proceed from the simple to the complex, from the known to the unknown. Clarify misunderstandings and errors before moving on. Remember, your students must be ready to learn new material.

Law of Exercise

This law is based on the old maxim that practice makes perfect. It has been proven that students learn best and retain information longer when they have meaningful practice and repetition. The key here is that the practice must be meaningful. It is clear that practice leads to improvement only when it is followed by positive feedback. That means that as an instructor, you need to follow upon every homework assignment, every lab exercise, and any other student activities you assign. Students must have supervised practice in applying new skills to reach the required level of expertise to master course objectives. That is how the transfer method of learning takes place; from the information you teach, to the students' use of it.

Law of Intensity

The law of intensity states that a vivid experience is learned better and retained longer. Make your instruction powerful enough to have a strong, positive effect on your students by getting them actively involved in the lesson. Instruction that allows students to sit passively in the classroom doesn't have much intensity. You can talk about the effects of tear gas all day. But talking will

never have the same impact as putting students in a controlled environment and letting them experience tear gas without a gas mask. That is **Intensity.**
Use the best instructional media available, including the real thing. Use examples, analogies, and personal experiences to make learning come to life. Make learning interactive by initiating and controlling your students' involvement in the learning process.

1.4.11 Factors Affecting Learning

Many factors affect learning. Everyone does not learn in exactly the same way or at the same rate. Each is subject to a variety of negative and positive influences in the overall process. You need to be aware of as many factors that affect learning as you can. The more you know, the better chance you have of positively influencing the learning process.

Motivation

Perhaps the single most important factor in learning is motivation. Unfortunately, it is one of the hardest to get a handle on or to channel effectively. Humans basically try to succeed and, conversely, try vigorously to avoid failure, and thus constant efforts towards new learning are made. Without a will to learn, a person would resist any efforts towards acquiring new skills, behaviors, or cognitive mechanisms or modifying the existing patterns of functioning. Similarly, a motivated person would learn even if he gets a small opportunity. Little doubt exists that motivation, either internally or externally stimulated, initiates learning; directs it; and, when derailed, can reduce or stop it.

The Learning Senses

Sensory learning is the first that occurs for any human being. Its influence is apparent in children as we watch them grow up. Each sense, either singularly or in various combinations, provides a pathway to learning. With that in mind, the learning process to be optimum it is essential that all the organs are functioning normally and any sensory deficit would be a factor hindering learning.
Sight is considered the most important sense, accounting for as much as 75 percent of our basic learning. Most early learning comes from seeing and imitating. Hearing is the second most important sense, accounting for a large percentage of the remaining sensory learning capacity. Experts differ on specific numbers, but the significance of sight and sound together is overwhelming. The

sense of touch, while important in itself, becomes a major learning factor when combined with other senses. For eg. children do not associate/learn the word "hot" with anything in particular until they associate the word with their sense of touch. Through experience, we become sensitive to temperature, pressure, and the overall feel of things. For instance, an experienced engineer doesn't need a temperature gauge to determine if a bearing is running hot, just as an experienced damage control investigator doesn't need one to decide that the temperature of a watertight door is above normal. The importance of taste is important to the training/learning of cooks and bakers. The sense of smell is part of our human warning system. For example, electricians immediately recognize the smell of burning insulation. Therefore, the sense of smell is a valuable learning tool in certain narrow applications.

Although it is not normally identified as one of the senses, the phenomenon of kinesthesia is an extension of sensory learning. Think of it as a sensory perception residing in one's muscles, joints, and tendons that gives people a special awareness of their spatial relationship with their surroundings. Kinesthesia is actually a blend of all senses with psychomotor and perceptual skills. It manifests itself in people's ability to balance or move with coordination and determines the learning of skills through practice

Retention It has been estimated that people retain only 10 percent of what they read, 20 percent of what they hear, and 30 percent of what they see. When those senses are combined, however, retention takes a dramatic leap forward. Those same estimates tell us that when someone hears and sees, retention jumps to 50 percent. Hence the role of senses in learning is undeniable.

Individual Differences

There are marked individual differences among learners. The physical differences, besides those for sight and hearing impairments, are those dealing with physical prerequisites for training/learning of psychomotor skills. More subtle differences exist in aptitude and ability. Aptitude depends on the student's intelligence, inquisitiveness, ambition, reasoning ability, and other mental traits. Ability is somewhat similar to aptitude but deals more with skills in processing information to acquire concepts or to master physical skills.

Being slow learner or fast learner, prior knowledge and leadership qualities would also affect the type, pace and amount of learning of different individuals even when they are exposed to the same inputs. Emotional differences and personalities ranging from introverted to extroverted also play a major role in

learning. Social stereotypes like gender bias and bias towards certain classes may be internalized ,and result in individuals efforts towards learning .For eg , a girl may feel that she can never be good in numbers and hence may not learn accounts keeping.

Such attitudes undoubtedly affect performance since they indicate how person feels about learning at a particular time. The motivation levels would be indicated by attitudes and will channel the efforts toward success.

Learning Styles

Individuals have different styles of learning. One person's learning style may not be effective for another person. Concrete learners prefer an experience-based approach to learning. They rely heavily on their own feelings and personal judgments. They learn best by imitation after watching others take part in role playing and simulations. They very much like to be involved with the "real thing." For example, suppose you were trying to teach how to operate a fire pump. Concrete learners would prefer to watch you demonstrate the operation. They could then operate the pump by imitating your performance.

Active learners prefer to learn by becoming involved with the subject and taking an active step-by-step approach. They learn best from small group discussions, structured exercises, and problem-solving approaches. Active learners are experimenters who prefer to systematically try out new skills. A trial-and-error way of learning appeals to them. To operate the fire pump, active learners would systematically try out several different ways of operation.

Reflective learners like to observe and reflect (make comparisons and contrasts) before drawing conclusions. They learn best from lectures, films, and reading. Reflective learners prefer to play the role of the impartial observer while watching others. To operate the fire pump, reflective learners would watch others operate the pump and reflect (think) about the different ways of operation. They would then analyze their observations before attempting to operate the pump themselves.

Abstract learners refer a theory-based, analytical approach to learning. They learn best from lectures by experts, theoretical reading, case studies, and activities that require solitary thinking. Abstract learners like to find the "theory" behind the subject matter and analyze the approach to discover what concepts are involved. In operating the fire pump, they would prefer to read about its principles of operation and to analyze the concepts involved in its operation before attempting to operate it.

The input which matches with the persons style of learning would get best results.

Control Forgetting

One of the most common causes of forgetting is disuse. People tend to forget what they don't use. Planning the learning around conceptual bases avoids forgetting Concentrating on concept building by reviewing frequently, providing examples, and providing time for practice what has been learned forgetting can be minimized.

Another cause of forgetting is interference. Interference occurs when the memory of one event hinders the recall of another. This too is avoided when current learning is complete and conceptual. Once there has been sufficient practice to learn the information as a concept, person will retrieve the information more easily.

Meaningfulness Effect

Highly meaningful materials are easier to learn and remember than less meaningful ones. This is true whether meaningful is measured by

1) the number of associations the learner has for the material,
2) by frequency of the association
3) or by familiarity with the sequential order of the concept,
4) or the tendency of the work to elicit clear images.

An implication is that retention will be improved to the extent the user can make meaning of the material to be learnt.

Practice Effect

Active practice or rehearsal improves retention of learnt material, and distributed practice in learning is usually more effective than massed practice. The advantage to distributed practice is especially noticeable for lists, fast presentation rates or unfamiliar stimulus material. The advantage to distributed practice apparently occurs because massed practice allows the learner to associate a word with only a single context, but distributed practice allows association with many different contexts.

Transfer Effects

Transfer effects are effects of prior learning on the leaning of new material. Positive transfer occurs when previous learning makes new learning easier. Negative transfer occurs when it makes the new learning more difficult. The

more that two tasks have in common, the more likely that transfer effects occur.

Organization Effects

Organization effects occur when learners chunk or categorize the input. Free recall of learnt material is better when learners organize the items into categories rather than attempt to memorize the material in serial order..

Abstraction Effects

Abstraction is the tendency of learners to pay attention to and remember the gist of a passage rather than the specific words of a sentence. In general, to the extent that learners assume the goal is understanding rather than verbatim memory and the extent that the material can be analyzed into main ideas and supportive detail, learners will tend to concentrate on the main ideas and to retain these in semantic forms that are more abstract and generalized than the verbatim sentences included in the passage.

Prior Knowledge Effects

Prior knowledge effects will occur to the extent that the learner can use existing knowledge to establish a context or construct a schema into which the new information can be assimilated.

Mathemagenic Effects

Mathemagenic effects, coined by *Rothkopf (1970)* , refer to various things that learners do to prepare and assist their own learning. These effects refer to the active information processing by learners. Mathemagenic activities include answering adjunct questions or taking notes and can enhance learning.

SOME OTHER FACTORS AFFECTING LEARNING INCLUDE

- Readiness
- Active involvement
- Feedback
- Simple to complex
- Cultural barriers

– Language, cultural values & practices

1.4.12 Summary

1. Of all the creatures in this world humans are the most capable in changing behaviour through learning. Learning is any relatively permanent change in behaviours or behavioural potential produced by experience or practice. It is an inferred process and differs from performance which is the observed

behaviour / response / action.

2. The temporary change in behaviour due to continuous exposure to stimuli is called habituation.
3. The main types of learning are: classical and operant conditioning, observational Learning, concept learning, and skill learning.
4. Pavlov first investigated classical conditioning in the course on studies on digestion in dogs. In this kind of learning an organism comes to associate stimuli. A neutral stimulus (CS) that signals an unconditioned stimulus (US) begins to produce a response (CR) that anticipates and prepares the organism for US.
5. Using time relation involved in pairing CS and US jour major variations are noted: I simultaneous, delayed, trace and backward. US may be appetitive or aversive. The former elicits approach response while the later elicits avoidance responses.
6. Skinner first investigated operant or instrumental conditioning (OC). An operant is any response voluntarily emitted by an organism. OC is a type of learning in which, response is strengthened ,if followed by reinforcement.
7. In observational learning, also known as imitation, modeling and social learning, one acquires knowledge by observing a model's behaviour. The performance depends on whether the model's behaviour is rewarded or punished.
8. In verbal learning words get associated with one another on the basis of structural, phonetic, and semantic similarity and contrast. They are often organised in clusters.

Evaluate Self

a) Define learning. What are different types of learning?
b) Discuss the nature of learning. what different laws govern learning
c) Describe factors which affect learning
d) Evaluate verbal learning and concept formation.

1.4.13 Key Words

Paired-Associates Learning: This method mimics S-S conditioning and S-R learning. It is used in learning some foreign language equivalents of mother-tongue words. First a list of paired associates is prepared. The first word of the pair is used is the stimulus and the second word as a response. Members of each pair may be from the same language or two different languages.

Serial Learning: This method of verbal, learning is used to find out how participant learn the lists of verbal items, and what processes are involved in it. First, lists of verbal items. i.e. nonsense syllables, most familiar or least familiar words, interrelated words. etc. are prepared. The participant is presented the entire list and is required to produce the items in the same serial order as the list.

Law Of Exercise

This law is based on the old maxim that practice makes perfect. It has been proven that students learn best and retain information longer when they have meaningful practice and repetition. The key here is that the practice must be meaningful. It is clear that practice leads to improvement only when it is followed by positive feedback.

1.4.14 Long Questions

1. Define learning. What are different types of learning?
2. Discuss the nature of learning. What different laws govern learning
3. Describe factors which affect learning

1.4.15 Short Questions

1. Briefly describe the laws of learning.
2. Write a short note on concept formation.

1.4.16 Suggested Readings

Hilgard, E.R. and Bower, G.H. (1975).Theories of Learning: Fourth Edition. Prentice-Hall, Inc. Englewood Cliffs, NewJersey

Morgan, C.T.King, R.A.Weisz et al (1986), introduction to psychology, McGraw Hill, New York

Trial and Error Learning and Gestalt Learning

Lesson Structure

1.5.0 Objective

The student will learn the principles underlying trail and error learning theory. The learner will be able to differentiate between trail and Error learning and Gestalt learning.

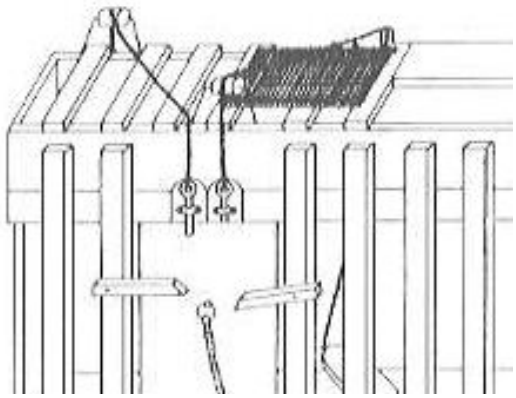
1.5.1 Introduction

Learning has been described, studied and recorded through various theoretical models depending on the school of psychological thought which prevailed at the time of the respective theorist. The two theories that we are going to examine are related to the Behaviorist and the Gestalt era of psychology respectively, and hence have viewed learning as learnt through reward/practice , and through perceptual principles. We will examine them in detail.

1.5.2 Trial and Error Learning

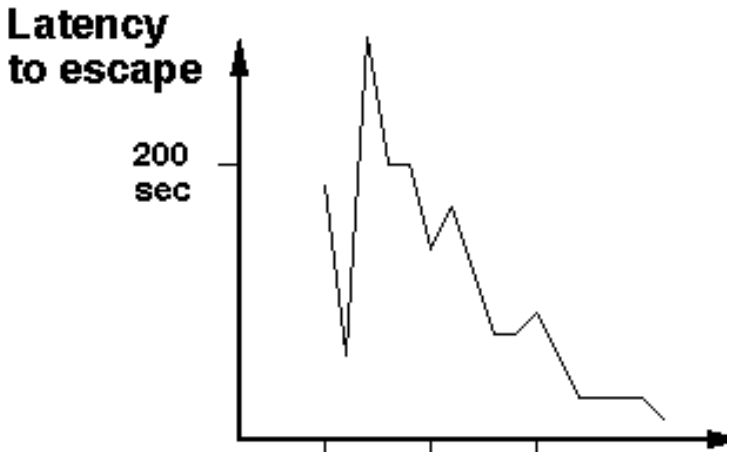
It is associated with the work of E Thorndike who pioneered extensive experimental work while understanding the acquisition and consolidation of behaviors in novel situations in animals the learning theory of Thorndike represents the original S-R framework of behavioral psychology: Learning is the result of associations forming between stimuli(S) and responses(R). Such associations or "habits" become strengthened or weakened by the nature and frequency of the S-R pairings. The paradigm for S-R theory was “trial and error” learning in which certain responses

come to dominate others due to rewards. The hallmark was that learning could be adequately explained without referring to any unobservable internal states.
Edward Thorndike attempted to develop an objective experimental method for the mechanical problem solving ability of cats and dogs. Thorndike devised a number of wooden crates which required various combinations of latches, levers, strings and treadles to open them.



Puzzle box

A dog or a cat would be put in one of these 'puzzle-boxes' and, sooner or later would manage to escape from it. Thorndike's initial aim was to show that the anecdotal/accidental achievements of cats and dogs could be replicated in controlled, standardized circumstance, thus representing trial and error learning However, he soon realized that he could now measure animal intelligence using this equipment and principles of trial and error learning. His method was to set an animal the same task repeatedly, each time measuring the time it took to solve it. Thorndike could then compare these 'learning-curves' (see figure below) across different situations and different species. Latency to escape would be time required by an animal to escape from the puzzle box through repeatedly trying to manipulate by hit and try the latches or levers whereby the box door could open.



Thorndike was particularly interested in discovering whether his animals could learn their tasks through imitation or observation. He compared the learning curves of cats who had been given the opportunity of observing others escaping from a box with those who had never seen the box being solved and found no difference in their rate of learning. He obtained the same null result with dogs and, even when he showed the animals the methods of opening a box by placing their paws on the appropriate levers and so on, he found no improvement. He then gave "trial and error" explanation of learning.

Occasionally, quite by chance, an animal performs an action which frees it from the box. When the animal finds itself in the same position again it is more likely to perform the same action again. The reward of being freed from the box somehow strengthens an association between a stimulus,(being in a certain position in the box), and an appropriate action(through which it had accidentally gained freedom). After much trial and error behavior, the cat learns to associate pressing the lever (S) with opening the door (R). This S-R connection is established because it results in a satisfying state of affairs (escape from the box). Reward acts to strengthen stimulus-response associations. The animal learns to solve the puzzle-box not by reflecting on possible actions and really puzzling its way out of it but by a quite mechanical development of actions originally made by chance.

Thorndike formalized this notion into a 'law' of psychology:

"*Of several responses made to the same situation those which are accompanied or closely followed by satisfaction to the animal will, other things being equal, be more firmly connected with the situation, so that, when it recurs, they will be more likely to recur; those which are accompanied or closely followed by discomfort to the animal will, other things being equal, have their connections to the situation weakened, so that, when it recurs, they will be less likely to occur. The greater the satisfaction or discomfort, the greater the strengthening or weakening of the bond.*"

Thorndike's theory consists of three primary laws:

(1) Law of effect - responses to a situation which are followed by a rewarding state of affairs will be strengthened and become habitual responses to that situation i.e. habits in behavior are an outcome of rewards received for such acts.

(2) Law of readiness - a series of responses can be chained together to satisfy some goal which will result in annoyance if blocked i.e. behaviors are not a single event but a set of behaviors generally directly towards a specific end result If these behaviors are interfered with ,at any stage, this 'readiness' is negatively affected and would result in discomfort, anger or frustration.

(3) Law of exercise - connections become strengthened with practice and weakened when practice is discontinued. Thus learning would be dependent on how much is the practice of behaviour. A corollary of the law of effect was that responses that reduce the likelihood of achieving a rewarding state (i.e., punishments, failures) will decrease in strength i.e. the 'effect' of reward is learning to acquire the behaviour while the effect of absence of reward to any response is learning to not exhibit the behavioural acts.

The way his experiment worked was by placing a hungry cat into the box, then observing its behavior as it tried to escape and obtain some food. For the most part, he noticed that the cats obtained the food only by "trial-and-error." On a successive attempt, the mere trial-and-error behavior decreased and the cat would escape quickly. Thorndike studied several cats, and plotted the time it took for them to escape from the puzzle box on successive trials. These learning curves did not suddenly improve, but rather the amount of time the animal spent in the box gradually got to be shortened. From this, the animal did not merely realize what it had to do to escape, but the connection between the animal's situation and the response that gradually freed him was stamped in.

With these observations, Thorndike suggested that certain stimuli and responses become connected or dissociated from each other according to his law of effect. He stated, "When particular stimulus-response sequences are followed by pleasure, those responses tend to be 'stamped in'; responses followed by pain tend to be 'stamped out'." The final interpretation of the law of effect was that the immediate consequence of a mental connection can work back upon it to strengthen it.

This evaluation led Thorndike to conclude that animals learn, solely, by trial and error, or reward and punishment. Thorndike used the cat's behavior in a puzzle box to describe what happens when all beings learn anything. The theory suggests that transfer of learning depends upon the presence of identical elements in the original and new learning situations; i.e., transfer is always specific, never general.

As per Thorndike it could explain all of human behavior in terms of the development of myriads of stimulus-response associations i.e. human behavior as a whole is a combination of multiple layers of stimulus-response associations depending on whether they resulted in rewards and whether they were practiced The strength of connections is related to greater number of associations, and is a measure of the intellectual ability. More connections would require lesser number of 'hit and trial' behaviors .The goal would be achieved with minimum number of errors

Principles of Trial and Error Learning: This learning theory contributed some principles to the field of learning which may be summed up as follows:

1. Learning requires both practice and rewards (laws of effect /exercise)
2. A series of S-R connections can be chained together if they belong to the same action sequence (law of readiness).
3. Transfer of learning occurs because of previously encountered situations.
4. Intelligence is a function of the number of connections learned.

1.5.3 Gestalt Psychology

In 1912, Wertheimer, Koffka, and Kohler began to form what is known as Gestalt Psychology. Gestalt Psychology or Gestalt theory is a theory of the mind and brain that informs that functional concepts of the brain is holistic, parallel and analog with self organizing tendencies or whole is greater than the sum of the parts.

Gestalt Insight Learning : A form of cognitive learning, originally described by the Gestalt psychologists, in which problem solving occurs by means of a sudden reorganization of perceptions.

This learning process is clearly within the sphere of Gestalt psychology. The laws of organization in perception are seen as applicable to learning problems. Gestalt theorists emphasized the psychological rather than the physical environment. Thus trial and error learning and a strict stimulus response view were seen as not fully representing the possibilities of learning Kohler's work on chimpanzees illuminates the point. His results were used by Koffka to challenge in a detailed fashion the theory of trial and error learning to the point that insight was offered as a replacement for it as a means of accounting for the learning process. The trial and error hypothesis assumes that in learning a large number of random movements are made, that the correct responses are gradually learned, and that the incorrect ones are eliminated. A variety of explanations are offered as to why this takes place. During the years in question the differentiation between those responses stamped in and those stamped out was attributed to the respective pleasure and pain that accompanied them.

To Koffka, learning is not a gradual mechanical process, but involves the same principles as perceptual Gestalten. Koffka rejected trial and error as an explanatory principle for learning He pointed out that the customary puzzle boxes and mazes

were apparatuses that forced the animals to learn by trial and error because no other approach was possible under these circumstances. The results of trial and error learning studies, were seen as an outcome of the laboratory procedure. He modified the lab procedures whereby, an obstacle between the animal and the goal must be provided, but it should be of such a nature as to allow intelligent, insightful behavior, if the animal is capable of it. This was the case with Kohler's procedures. The intelligent relations or connections leading to the goal were made open to the animals' observation, and the resultant was insight learning and not "trial and error" learning. Insight took the place of practice or repetition as the crux of learning in the Gestalt description of learning.

Lets examine these experiments in detail.

Köhler went of Canary Islands to study intelligence and problem solving ability of great apes in 1913. When World War I began and he was unable to leave until 1917 He conducted most of his studies on insightful learning during this period. The accepted theory for explaining at the time was Thorndike's Law of Effect with emphasis on trial and error and reward. . He was dissatisfied with the behaviorists' explanation for learning, which he found too limiting, and so he sought to develop his own theories. To Köhler's way of thinking, mental processes had to be an essential component of learning, even though they had been criticized as being unscientific speculation or hypothesis by the behaviorists. To press his point, Köhler took advantage of a primate research facility on Tenerife to study chimpanzee behavior.

Köhler showed that his chimps could solve complex problems by combining simpler behaviors they had previously learned separately. This was illustrated by Sultan, the brightest chimp in his laboratory. Sultan had learned to pile up boxes and scramble on top of them to reach fruit suspended high in his cage, and to use sticks to obtain fruit that was just out of reach. So, when Köhler presented Sultan with a novel situation, fruit suspended even higher in the air, the chimp first attacked it unsuccessfully with sticks, in trial-and-error fashion. In apparent frustration, Sultan finally threw the sticks away, kicked the wall, and sat down. According to Köhler's report, the animal then scratched his head and began to stare at some boxes nearby. Suddenly, he jumped up and dragged a box and a stick underneath the fruit, climbed on the box, and knocked down his prize with the stick.

Remarkably, Sultan had never before seen or used this combination of responses. This suggested to Köhler that the animals were not mindlessly using conditioned behaviors but were learning by reorganizing their perceptions of problems. He ventured that such behavior shows how apes, like humans, learn to solve problems by suddenly perceiving familiar objects in new forms or relationships—a decidedly mental process, rather than a behavioral one. He called this insight learning

An experiment of Köhler's with chicks, performed during these years, simple in nature though it is, brings out clearly what the Gestalt psychologists were trying to demonstrate. Two shades of gray paper on which grain was scattered were exposed. Hens were trained to take grains from one of these papers, a darker shade of gray than that of the other paper. If they pecked at a grain on the darker paper, they were permitted to swallow it; if they pecked at a grain on the lighter paper, they were driven away. After hundreds of trials, they learned finally to peck only at grain on the darker paper.

So far this is only preliminary to the experiment itself. The crucial series of trials was now inserted. The darker gray paper of the learning trials was used again, but now it was accompanied by a sheet of a still darker gray, instead of the original lighter sheet. If the hens pecked on the original gray they were responding to specific brightness, as such; if they pecked at what now was the darker paper, they would be reacting to a total situation or Gestalt, that is, to a relation of lighter-darker.

As a rule, the hens pecked at the darker gray, not the particular one on which they had learned to peck. This was a relative response in which "darker of two" was the clue, not the specific gray. The hens reacted, not to a specific element in the learning situation, but to the pattern or Gestalt.

These and similar results were interpreted by Kohler as evidence of 'insight' -the seeing of relations. These Gestalt occur in the process of solving problems. There is an activity on the part of learner which is a continuous whole in which everything falls into place. There is continuity, a direction toward a goal, and closure. The insightful solutions they displayed are interpreted as making for closure of the gap in the animal's psychological field. Capacity for perception of relations varied in different animals and thus became an indication of intelligence.

As per Kohler insightful problem solving is dependent on taking the total situation and reorganizing it through logical inference to reach a solution. Gestalt psychologists did not argue that trial and error learning played no role in insight. Rather they argued that the trial and error took place on a cognitive level. Gestalt psychologists continued to emphasize the processes of thinking. In 1945 Wertheimer published "Productive Thinking." It was in this book that he argued for learning as a process of restructuring.

(i) He demonstrated this by giving children problems teaching them different ways to solve them, either rote or insightful

(ii) Insightful learning involves appropriate organization of the psychological environment to recognize structural requirements of the situation, not simply a strong of associations, but rather a process of inference. Thus learning should be done in wholes as should teaching. Teachers should present topics as integrated

wholes. The aspects of a problem should be presented only in relation to the whole. This would be conducive to the occurrence of insight.

If you are shown the following sequence of number 1 4 9 1 6 2 5 3 6 4 9 6 4 8 1, it is difficult to remember. If you realize that the numbers are squares 1 4 9 16 25 36 49 64 81 you will have no difficulty remembering them. Thus the inferences at the cognitive level of reorganizing the environment in a meaningful way would result in learning.

Problems with Gestalt approach to learning: Although the experiments were elaborate and the explanations convincing, some problems remained

(i) The psychological environment, which is basic to insight, is difficult to define independent of the behavior it is supposed to explain. Further the theory could explain behaviors but was not able to predict behaviors which is equally significant in learning (ii) Insightful learning is in fact dependent on past experiences which suggests that associative learning plays a crucial role in insight. They may not be two distinct processes but may be working in a continuum.

1.5.4 Summary

There are no real discrepancies between the trial and error learning theory and the Gestalt learning theory. When an animal learns a new kind of problem, he solves it according to a behaviorist learning theory model by slow painful plodding trial and error. However, if he has experience with a large number of problems of a single type or class; the trial and error is replaced by the Gestalt learning theory model so that the individual problems are eventually solved insight-fully. Thus trial and error learning theory and insight learning theory may be merely two phases of a learning model, an initial phase and an ending phase, although they have developed and maintained separate entities .

Self Check Exercise

1. Explain the principles underlying Trial and Error learning.
2. Describe the laws of learning proposed by Thorndike. What are its implications?
3. Differentiate between trial and error learning and gestalt learning.
4. How does learning happen through insight?
5. Illustrate the contributions of gestalt school to the field of learning

1.5.5 Key Words

Gestalt Insight Learning - A form of cognitive learning, originally described by the Gestalt psychologists, in which problem solving occurs by means of a sudden reorganization of perceptions.

Law of effect - responses to a situation which are followed by a rewarding state of affairs will be strengthened and become habitual responses to that situation i.e. habits in behavior are an outcome of rewards received for such acts.

Law of readiness - a series of responses can be chained together to satisfy some goal which will result in annoyance if blocked i.e. behaviors are not a single event but a set of behaviors generally directly towards a specific end result If these behaviors are interfered with ,at any stage, this 'readiness' is negatively affected and would result in discomfort, anger or frustration.

Law of exercise - connections become strengthened with practice and weakened when practice is discontinued. Thus learning would be dependent on how much is the practice of behaviour. A corollary of the law of effect was that responses that reduce the likelihood of achieving a rewarding state (i.e., punishments, failures) will decrease in strength i.e. the 'effect' of reward is learning to acquire the behaviour while the effect of absence of reward to any response is learning to not exhibit the behavioural acts.

1.5.6 Long Questions

1. Explain the principles underlying Trial and Error learning.
2. Describe the laws of learning proposed by Thorndike. What are its implications?

1.5.7 Short Questions

1. Differentiate between trial and error learning and gestalt learning.
2. How does learning happen through insight?

1.5.8 Suggested Readings

Thorndike, E. (1932). The Fundamentals of Learning. New York: Teachers College Press.

Zimbardo,P G, Johnson R L, Weber A L.(2005). Psychology: Core Concepts. Boston: 5/e Allyn & Bacon/Longman.

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