Psychological definitions of learning

People learn. Learning is fundamental to human beings. It is the specialization that we use to become fully human (Fischer & Immordino-Yang, 2008, p. xvii).

In the life of an organism, Learning can be considered as a continuous process. It can be said that, human learns right from his birth to till his death. Consistently, human finds something new, acquiring a new skill to face the forthcoming situations. It is a kind of mental process that modify the behavior, leaves permanent changes in the life of an individual and an organism on the basis of past experiences, respond adequately in a given situation. Woodworth (1952) views learning as a form of exercise and also as a process of development. According to him exercise strengthens the activity that is exercised. But exercise by itself does not add anything new to the individual knowledge. Therefore, the process of acquiring new knowledge is the process of learning.

Learning is thus defined in various ways. Psychological definitions emphasize that learning involves ‘ a change in behaviour or potential behaviour that occur as a result of experience.’ (R. Smith 1993). Harriman 1947 states that learning is a broad term referring to a modification of behavior as a result of experience. According to Kimble (1961) learning refers to a more or less permanent change in behavior which occurs as a result of practice. Russell (1952) says that learning denotes modification of behavior as the result of experience. Hilgard and bower (1975) is that learning refers to the changes in subject’s behavior in a given situation and the change is brought out by his repeated practices in that situation and his behavior change on any

account should not be attributable to the native response tendencies, maturation or any of the states or influence of fatigue or drugs.

To know whether one has learned something or not, Candland (1968) says that learning is an inferred process and one cannot observe directly. If we say that the rat has learned to press the bar more often the measure of its learning is its performance with the bar. This means, one will have to measure the performance and judge that learning has taken place or not. The student says that he has learned everything required for his examination. The evidence of his learning is known only from his performance in the examination. Therefore, the effect of learning is inferred or known by the learner's performance.

American author Peter Senge 1992 popularized the concept of ' learning organisations' in his book *The Fifth Discipline* . He emphasizes the personal, qualitative nature of this kind of learning:

Through learning we recreate ourselves. Through learning we become able to do something we were never able to do. Through learning we reperceive the world and our relationship to it. Through learning we extend our capacity to create, to be part of the generative process of life. There is within each one of us a deep hunger for this type of learning.

Learning is used to describe a process; an attempt is made to account for what happens when learning experiences takes place; it has been called a process of seeking to meet needs and reach goals. Malcolm Knowles's (1973) " consensus" definition reads," learning is process by which behavior is changed, shaped, or controlled".

“ Learning is a …… change that can result when…… people interact with information (materials, activities, experiences). It occurs to the extent that learners are motivated to change, and it is applied in the real world to the extent they take successful steps to integrate the learning into the real world situation” (Mclagan 1978). And also this definition which mentions means to bring change about: “ learning is based on making connections that relate the new to familiar” (Botkin, 1979).

Many psychologists described that learning includes both a concrete (active) and an abstract (intellectual) dimension within the brain, knowledge is organized and structured in networks of related concepts. Kolb (1984) describe the learning cycle which is consistent with that view. He defines that the learning cycle starts when the learner interacts with the environment (*concrete experience*). Sensory information from this experience is integrated and compared with existing knowledge (*reflective observation*). New models, ideas, and plans for action are created from this information (*abstract* hypotheses), and finally new action is taken (*active testing*).

Educational definitions of learning focused on learning as the process by which people acquire skills, knowledge, understanding and attributes. For example, Julia Atkin 1994 describes learning as occurring most readily and effectively when:

…whole brain processing is engaged, and in particular when the process of learning moves from experience to reflection on experience so that a pattern or framework allows the learning to grasp the meaning of the learning in the

mind’s eye and finally learning moves on to a facility to use language, rules, laws, principles for accuracy and efficiency in thinking, doing and further learning.

Learning is a constructive, not receptive, process (Glaser 1991). Constructivism theory of learning holds that knowledge comes through experiences and interaction with the environment, and that the learner uses their previous knowledge as a foundation to construct new knowledge. Consequently, the learner has primary responsibility for constructing knowledge and understanding. For example, in a constructivist classroom, the teacher is no longer the “ authority” but instead is a guide or facilitator who assists students in learning.

New knowledge must connect to, or build upon a framework of existing knowledge (Zull 2002) and Underwood (1979) defines that learning is the acquisition of new responses or the enhanced execution of old ones. The stronger connection between new and existing information, the knowledge will be deeper and the more frequently it can be retrieved and applied in new situations. Savin-Baden and Major (2004) define surface’ and ‘ deep’ approaches to learning . In surface learning, students focus on information without integration, usually unreflective, and often to complete required learning tasks by memorizing information needed for assessments. In deep approach of learning students engage themselves in knowledgeable interaction with content, create link between new ideas to old ones, relate concepts to everyday experience, relate evidence to conclusions, and examine the logic of arguments.

No one is born with the ability to function competently as an adult in society that’s why learning is important. To understand the learning experiences that lead to transfer, Byrnes, (1996) defined as the ability to extend what has been learned in one context to new contexts. Educators hope that students will transfer learning from one problem to another within a course, from one year in school to another, between school and home, and from school to workplace. Assumptions about transfer accompany the belief that it is better to broadly “ educate” people than simply “ train” them to perform particular tasks (e. g., Broudy, 1977).

Early research on the transfer of learning was guided by theories that emphasized the similarity between conditions of learning and conditions of transfer. Thorndike (1913), for example, hypothesized that the degree of transfer between initial and later learning depends upon the match between *elements* across the two events. The essential elements were presumed to be specific facts and skills. By such an account, skills of writing letters of the alphabet are useful to writing words (vertical transfer). Klausmeier, (1985) posited that transfer from one school task and a highly similar task (near transfer), and from school subjects to nonschool settings (far transfer), could be facilitated by teaching knowledge and skills in school subjects that have elements *identical* to activities encountered in the transfer context. Transfer could also be negative in the sense that experience with one set of events could hurt performance on related tasks (Luchins and Luchins, 1970).

Learning theories establish link between classroom teaching and students relationship. Snowman, McCown, & Biehler, 2012 studies that modern operant conditioning theory is based on B. F. Skinner’s principle that “ all

behaviors are accompanied by consequences, and these consequences strongly influence (some might say determine) whether these behaviors are. Additional specific components of the operant model that are important for classroom teachers include shaping, chaining, extinction, punishment, and schedules of reinforcement. The operant model has greatly influenced K-12 education and resulted in a variety of teaching models and techniques (Huitt, 1998). These include the use of behavioral objectives, contingency contracts, applied behavior analysis, mastery learning, programmed instruction, and early forms of computer-based instruction (Omrod, 1999). In similar way, based on social learning theory, Schunk, 2012 implicated that classroom teachers include helping students develop self-efficacy, or confidence in their abilities to “ learn or perform behaviors at designated levels” ; understanding the effectiveness of modeling (or demonstrating) new skills students are expected to learn; and helping students develop self-regulatory behaviors “ by teaching such techniques as self-instruction, self-monitoring, self-reinforcement, and self-imposed stimulus control” (Omrod, 1999)

Poineers in learning theories such as Ivan Pavlov and John B. Watson explains learning on the basis of associating or connecting stimuli through a process “ in which a neutral stimulus becomes conditioned to elicit a response through repeated pairing with an unconditioned stimulus” (Schunk, 2012). Classical conditioning is often used to explain the development of emotional responses, especially fears and anxiety. Therefore, an important implication of this paradigm for teachers is that students should experience academic learning in environments that elicit pleasant rather than unpleasant emotions (Omrod, 1999).

Laws of Learning and its education implication:

Edward L. Thorndike in the early 1900's propounded " Laws of Learning," that seemed generally applicable to the learning process. These laws are three in member; (i) readiness, (ii) exercise, and (iii) effect.

Law of Readiness:

It points out that we cannot learn anything unless we are prepared for it. An individual acts or learns more effectively with greater satisfaction, when he is ready to act or to learn, than when not ready. Woodworth uses the word mindset for the readiness. Thus readiness is mental set which means that a child can learn his lessons when he is inclined to work at them. It is the most important duty of the teacher to develop in citizens a readiness to learn their lessons.

Law of Exercise:

According to Thorndike Law of Exercise have two aspects (i) Law of Use and (ii) Law of Disuse. The Law of Use states, " When a modifiable connection is made between a situation and a response, that connection's strength is, other things being equal increased." Similarly, the Law of Disuse states, " When a modifiable connection is not made between a. situation and response, over a length of time, which connection's strength is decreased." Accepting William James's views, Thorndike wrote:

Intellect and character are strengthened not by any subtle and easy metamorphosis, but by the establishment of particular ideas and acts under the law of habit …. The price of a disciplined intellect and will is eternal

vigilance in the formation of habits …. Habit rules us but it also never fails us. The mind does not give us something for nothing, but it never cheats. (Thorndike 1906)

In education principal of use and disuse are very recognizable. We learn and retain by use and lose and forget by disuse. Practice or drilling is found more effective when it is associated with pleasure and purpose. It is also true lack of practice weakens the quality of what we have learned. Therefore, the teacher should promote drill, practices of desired response, purposeful and interesting to form appropriate habit in order to ensure better learning.

Law of Effect

According to Thorndike, the principle of effect is the fundamental law of teaching and learning. The law states that " When pleasant or satisfying consequences follow or attend a response, the latter tends to be repeated. When painful or annoying consequences attend a response it tends to be eliminated." That is the bond between the situation and response strengthens with satisfying results and weakens-with the displeasure and discomfort.

An activity which is accompanied by feeling of pleasure, satisfy our goals and purpose is more effectively learnt, whereas an action which are unpleasant and annoying is not properly learned. Thorndike found that this law has directly implication to education. The system of rewards and punishments in school and colleges is based on this law. If the child obtain satisfaction from his correct responses, and his lessons should be such as would enlist a child's interest and awaken a zeal for immediate achievement.

Therefore, it is necessary that teachers should associate desirable things with pleasant experience and undesirable things with unpleasant one. Every child should be provided with such learning situations that promotes success and satisfying feeling rather than annoying and unsatisfying feelings.

All human learning is verbal learning and it provides valuable information. “ The concept of verbal learning exists as a field of experimental psychology intent on studying certain verbal associations similar to memorization; verbal learning deals with acquisition of the associations (Terry, 2009). The concept of verbal learning is associated with Herman Ebbinghaus (1885) scientific research on memory. The concept of verbal learning relates to learning techniques proposed by Ebbinghaus. These techniques which have been receiving greater attention of the exprerimenters are: 1) Paired associate learning 2) serial learning 3) Free learning

SERIAL LEARNING

Learning is said to have occurred serially when each item facilitates the recall of the following item. Ebbinghaus 1885 study is treated as a pioneer work in serial learning.

SERIAL LEARNING PHENOMENA

There are three broad phenomena of serial learning that have received considerable attention.

Ebbinghaus 1885, designed experiment to study remote associations thought to be formed during serial learning. Ebbinghaus introduced the idea of remote association and asserted that “ in serial learning every item is

associated with every other item in the list, and that the strength of the association is inversely proportional to the distance between the items."

Lepley 1934 made an attempt to account for remote forward associations in terms of conditioned response concepts. Lepley's hypothesis was extended by Hull 1935 who postulated that each item in a verbal series leaves a stimulus trace in the organism which continues with diminishing strength throughout the remainder of a trial. The items which come later are simultaneous with his trace and through it become connected with remote items. Guthrie 1935 proposed that remote associations are possible because the stimulus item is still being responded to when the remote response item is presented.

Functional Stimulus

Various experimental studies were taken out to determine the role of functional stimulus in serial learning. These studies were reviewed by Underwood 1963. Young 1961 refer to as specificity hypothesis suggests that the functional stimulus in serial learning is the item immediately preceding the response to be given. Thus, each item in this phenomenon considered to have a double function serving both as a response and a stimulus excluding the first and the last items. However, Postman and Stark 1967, and Shuell and Keppel 1967 concluded that although serial learning involved more than a single process, preceding items were among the effective functional stimuli. According to the compound stimulus hypothesis the functional stimulus in serial learning is composed of some sequence of preceding stimulus items. Thus the functional stimulus for D in the list of A-B-C-D might

be BC or ABC. Horowitz and Izawa 1963 obtained supporting evidence to this hypothesis.

Serial position effect

Serial position effect is another phenomenon in serial learning. In serial learning curve the numbers of errors are plotted against the serial positions of the items in the list. Distribution of errors according to the ordinal positions of the items gave rise to two phenomena 1) first is that of bowness of the error distribution, with the concentration of errors being most dense in the middle positions and decreasing progressively in density toward both ends of the list and 2) second phenomena is skewness calls attention to the fact that the peak of the error concentration is commonly not in the middle position of the list but is deflected toward the right of the middle.

Theories of serial learning

According to Ebbinghaus, in serial learning bond between the S-R units is the dominent process. Ebbinghaus attributed the bowness of serial learning curve to the combination of backward and forward associations. Most of the remote associations span the middle of the list and the produces more errors in the middle than at the ends.

Lepley-Hull theory assumes that each stimulus item in the series become connected to each later response by connections analogous to trace conditioned responses. Lapely- Hull attributed the shape of the serial position curve to the influence of inhibitory tendencies developed during

learning, the result of which is to suppress the learning of items towards the middle of the list.

Ribback and Underwood 1950 assume that serial learning proceeds in a forward direction from the first item and in a backward direction from the last item. By demonstrating that learning was more rapid in the forward as opposed to the backward directions, the asymmetry of the serial learning curve was accounted for. Several investigators suggested that the characteristics of learning materials may be the critical factors in producing the position effect (Murdock, 1960; Jensen, 1962).

Jenson and Rowher 1965 viewed that serial learning as a massive form of response integration in which the separate items of the list compose to be integrated elements, just as the letters of a single trigram compose to be integrated elements, just as the letters of a single trigram compose to be integrated elements in the traditional stage analytic approach to response integration.

Deese and hulse 1967 suggested that the asymmetry may be due to in part to the uniqueness of the first item. According to them the serial position effect can be described as the combined result of the end items intra list confusion in the middle and a general imbalance in learning in favor of the beginning of the list. They believe that imbalance may simply be a matter of uncertainity concerning the location of the terminal items.

Voss 1968, 1969 suggested a two stage analysis of serial learning. The subject first tries to learn the items in the list i. e. the response learning

stage. Once an item is learned the next step is to place it along a temporal or spatial dimension.

Horton and Turnage 1970 assumed that the result of serial learning is to provide the subject with an ordered set of items that do not elicit one another as a chain of associates. They emphasized an additional process one that involves an active search of memory for serial information.