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Department of Psychology and Education Sciences

Lectures on learning theories subject

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Prepared by:

Dr. Khemmad Mohammad

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Contents

the first lecture:

the psychology of learning

1- Definition of learning:

Learning from the linguistic point of view is derived from the five-act verb to learn, but from the idiomatic point of view it is a process of semi-permanent change in the behavior of the individual that is not directly observed but inferred from the behavior and is formed as a result of practice, as it appears in the change in the performance of the organism.

Psychologists define learning as a change in an individual's behavior, thinking, or feeling, that is, in behavior or experience. Or he thought or felt it before, then it is a change that occurs when a person faces a new situation, and performs an activity that gives him a new ability, provided that this change is not a result of the natural maturity caused by inheritance.

And Ahmed Ezzat Rajeh defines it as a relative constant change in behavior or experience that results from the individual's self-activity and not as a result of natural maturity.

Connell defines it as a steady change in behavior that is linked to the changing situations in which the individual exists and the individual's continuous attempts to respond to them successfully, meaning that learning is the product of interaction between the learner and the elements of the educational situation. Such an understanding of learning stresses the compatibility between the learner and the environment. (Atiyah, 2016, 33)

There are many psychologists who define learning in terms of external behavior, for example Cronbach defines it as a semi-constant change in behavior

as a result of experience, while Klosemeyer views it as a change in behavior as a result of the form or forms of experience, activity, training or observation. Klein defines it as a semi-permanent change in behavior as a result of successful experience, while others define it in terms of abilities or cognitive processes, as Piaget believes that learning is a change in the experience and cognitive structures of the individual. Janneh defines it as a change in the capabilities of individuals that enable them to perform a specific performance.

As for Biggie, he defines it as a change in perception, behavior, performance, motivation, or a combination of them. And there are those who define it as a change in the processes of receiving and processing information. (Al-Zaghoul, 2010, 37)

Psychologists use the concept of learning in a much broader and more comprehensive sense than its meaning in colloquial language, as it is not only limited to intended school learning or learning that requires study, effort and continuous training, or the collection of information alone without other forms and types of acquisitions, but rather includes everything that an individual acquires from Knowledge, meanings, ideas, directions, emotions, inclinations, abilities, habits, motor or non-motor skills, whether this acquisition takes place intentionally or unintentionally. understandable to them.

The reality is that man is not like an animal, for he is always in need of learning, as animals are born equipped with instinctively certain behavioral patterns known as animal instincts, such as the instinct to build a nest and store food, along with the maternal instinct, the sexual instinct, and the hunting instinct, which suffices it to satisfy its needs and adapt it to its narrow environment. Relatively stable. As for the human being, the learning process begins from the infancy stage and the period of his incubation and care prolongs until he learns and acquires many forms and types of behavior that enable him to

adapt to his complex and changing environment and surroundings that require extreme flexibility to adapt.

The concept of learning is most attached to behavioral scientists who have adopted the behavioral approach (Behaviorism), which is synonymous with learning. Therefore, learning according to this trend is defined as "an apparent change in behavior as a result of practice that is relatively constant" (Touq et al., 2003, 249)

In order for learning to be called learning, it must appear in the form of behavior that can be observed, and is characterized by a degree of stability away from the influence of growth, development, or the use of

Learning is also defined as "modification and change in behavior." This definition focuses on the fact that learning includes: change and modification in the behavior presented by the learner. Relatively, and not temporarily dependent on circumstances, or emergencies.

The conceptual features of learning can be identified according to what is included in the definition as follows:

- change.
- amendment.
- It appears as a behavior.
- Observable.
- It follows from practice positions and experience.
- Relatively stable.

From the previous definition, we find that learning includes the following: (Tawq et al., 2003, 250-251)

First: In order for learning to occur, the individual needs a period of time that may be long or short, until the change occurs: and the time period here is the period that the individual goes through in experience, and to clarify this, learning is inferred by knowing the difference between post-experienced behavior and pre-experienced behavior. If there is a difference between the two, we can conclude that learning has occurred, but if there is no difference between pre-experienced and post-experienced behavior, we can say that the individual has not learned. The following figure illustrates the concept of time and the difference between behavior before and after experience.

Second: Learning must be embodied in the form of behavior, which is the activity that the individual performs: that is, changes must be noticed in the individual's behavior, and not in other aspects, such as physical, muscular, or organic aspects. What is meant by change here is a change in behavior only, as you notice with the eye, or we infer it by other means. As shown in the previous figure, we find a difference in the counting behavior of the child, as he became able to count after he lacked this ability.

Third: The necessity for the individual to go through an experience that he can learn from. It may suffice for him to go through the experience once or to repeat the same experience, and by experience here we mean the learning situation: the learning process necessitates the existence of a learning situation through which the individual is active, whether from a physical or mental point of view. The individual's creation and awareness of the learning situation are required for the learning process to take place. The student, for example, cannot learn from what the teacher says, while Sarhan is thinking of something else that is not related to the topic of the lesson.

The difference between Learning and Teaching:

The words learning and Teaching are commonly used in the field of educational psychology, and we must know the relationship between these two concepts and determine the essential differences between them. We have defined learning as a semi-permanent change in behavior or performance that occurs as a result of experience and training: .

- Determining the behavior to be learned and describing the circumstances or conditions in which this learning takes place and which are appropriate to the behavior that is the subject of learning.

- Control the conditions that affect learning behavior so that this behavior becomes under its control in order to improve it quantitatively and qualitatively.

As for the difference between the two concepts, we direct the following points:

- It is noted that the learning process takes place in an unintentional way, unlike the education process.

-Learning may take a sudden form, while education takes place according to regular steps, from easy to difficult, and from simple to complex.

-The individual learns through learning many things, including what is harmful to him and what is beneficial to him, while education is concerned with achieving educational goals related to the philosophy of society and the psychology of the learner and the nature of knowledge.

- Learning may take place without a teacher, as the individual may acquire many information through self-learning, while the teacher and the issue of defining learning and controlling its conditions are among the important elements of the education process.

In spite of these fundamental differences between the concepts of learning and education, we seek overlap and participation between them, given that learning is a primary goal for any educational process, and it is the objective measure by which we judge each educational process. (Boudieb, 2021, 3)

Learning focuses on the changes that occur to the learner as a result of his education experience or specific lessons that change his attitude from the starting point. The learning process may focus on the following aspects:

- Inducing desirable changes in the cognitive structures or in the number of concepts that the learner develops after passing through specific educational situations.

- An improvement in cognitive, psychomotor, and affective performances due to specific interventions.

- Determine the learning objectives according to the conditions and standards of performance.

-The situation of the learner, and consideration of his personal characteristics in constructing learning situations.

- Changes are relatively permanent.

As for the teaching process, it focused on what the teacher does and what he possesses of characteristics. The teaching process aims to help the learner to improve the students' classroom performance. In order to achieve this, the teacher must possess a set of characteristics and skills. Therefore, the education process means the following:

- A group of class actions carried out by the teacher.

- The training theory adopted by the teacher in his procedures.

- The teaching model used by the teacher.

- The teaching theory adopted by the teacher.

- Characteristics of the teacher's personality. (Touq et al., 2003, 257-258)

2- Learning Characteristics:

-An internal hypothetical concept that cannot be observed, but inferred through its results.

- Relatively always changing, that is, with the exception of instantaneous changes that the individual cannot repeat or repeat in a similar situation, as well as relative to the possibility of forgetting.

-This change must be the result of interaction with the physical or social environment, with the exception of physiological or organic changes resulting from maturity.

(Boudieb, 2021, 2-3) mentions the following learning characteristics:

- Learning includes the change in the behavior of the organism, and in order to measure this learning, we compare the behavior of the organism in different periods of time that count similar conditions, and this means that the learning process takes place within the organism and we can infer it by observing its effects, and therefore we must differentiate between the learning process And learning outcomes, the former can not be observed, while the latter can be observed and measured.

-The changes that occur in the physical characteristics (morphology, physiology), which are due to the role of genetic factors, cannot be considered learning.

- Behavior change includes all types of behavior, whether outward or inward, as it includes apparent movements, as well as various mental processes such as thinking and remembering.

- Learning is required to take place through experience and training, and the term experience is applied to every interaction between the individual and his environment, and the educational experience is that which is built on previous experiences and paves the way for subsequent experiences and modifies them and is in line with the level of growth of the individual, his abilities, aptitudes, inclinations, and the goals and values of society, so experience leads to Behavioral change Training refers to the most organized and repetitive aspects of activity carried out by educational institutions.

3-Learning Conditions:

3-1-Maturity: It is all the sensory, physical and nervous changes that occur in an organism and are governed by the genetic blueprint. This element is important for the learning process, as some types of learning cannot occur or some experiences are gained unless some bodily organs are fully matured. (Al-Zaghoul, 2010, 37)

The relationship between maturity and learning is illustrated by the following points:

-The maturity rate is uniform despite differences in learning conditions.

-The more mature a person is, the more learning he achieves.

-Skills that build on mature patterns of behavior are easier to learn than others.

-The training that the child receives before maturity is harmful and leaves harmful effects on the behavior if it is accompanied by failure in the child in particular.

Natural maturity is a form of growth that occurs as a result of the genetic makeup of the individual. As for learning, as we have previously indicated, it is

a constant and relative change in behavior that results from the individual's self-activity and requires practice and training, but it depends to some extent on the level of maturity that the individual has reached. Walking in children is a result of maturity. You do not know because the child can walk without assistance and training when his muscular and nervous system has reached a degree of maturity that allows him to walk. Experiments have shown that learning to write requires a certain level of physical and motor maturity, and a special level of mental maturity that allows the child to understand the meaning of what he acquires, as Other experiments indicated that it is wrong to start teaching a child to read before he reaches a sufficient degree of maturity that includes a certain amount of visual and hearing acuity and an appropriate mental age for that.

Based on the aforementioned, we conclude that natural maturity is an automatic process determined by genetic predispositions in which all individuals participate. As for learning, it is all that an individual acquires in terms of knowledge, meanings, ideas, attitudes, and abilities... In this sense, learning is synonymous with acquisition and habituation in the most comprehensive sense of them.

Although we have excluded from learning situations those situations resulting from maturity, maturity is a necessary and not sufficient condition for learning to occur. A child cannot learn a motor or mental skill if he does not reach a degree of maturity that enables him to learn. We have already referred to the relationship between maturation and learning in the chapter on development. (Touq et al., 2003, 256)

3-2-Readiness: It is a state of psychological and physical preparation in which the individual is able to learn a profession or experience. Readiness is linked to the factors of maturity and training. Maturity provides the capabilities

and abilities that would raise the readiness of a particular skill so that training works to develop their readiness. (Zagloul, 2010, 37)

The general readiness defined by Gagne (Gagne', 1985) means the case in which the learner is organically prepared to succeed in performing the tasks that are expected to be encountered in the school. This readiness is determined by the age of admission to the Arab school, which is the age of six years.

Whereas, at the age of six years, the child has grown sufficiently to allow him to use his fingers to carry out the process of holding the pen, and then he has the ability of sensorimotor synergy in which the link is made between what he sees and what he writes, in addition to the availability of the child's ability to stay in place One student for a period of not less than forty minutes to attend the class.

As for the special readiness of the learner, it is determined by providing what Gagne (1985) called Capabilities, whose idea includes that every new learning experience requires previous experiences (abilities) or concepts necessary to learn the new experience. Therefore, the teacher should investigate the availability of these experiences among the students before introducing the new experience.

-Thorndike identified three cases of readiness for adopting the idea of physiological readiness for learning, and he believes that these cases are:

-When the learner is ready to learn and progresses to learn, exposing him to the learning experience makes him happy.

-When the learner is not ready to learn and does not have the opportunity to learn, this makes him miserable.

-When the learner is not ready to learn and is forced to receive learning, forcing him to learn makes him miserable.

Piaget defined readiness as the cognitive developmental state in which the learner is called, which allows him to develop his cognitive structures (Cognitive Structure) that he wants to integrate into his cognitive structure. He believes that the readiness to learn is determined by the initial developmental stages that he passes through during his development from the sensory motor stage (from the age of birth) until the abstract stage (ages 14, 15), and in that the importance of the maturity factor appears in determining the readiness factor.

As for Bruner, he believes that readiness is determined by providing the cognitive representations that are available to the individual without concern for the maturity factor, as a hypothetical aroused great interest in this regard, as he assumed that "any subject can be taught effectively, and in an honest mental manner, to any child in any stage of growth. (Touq et al., 2003, 254-255)

3-3-Motivation: Motivation contributes to the occurrence of the learning process in that it increases the individual's efforts and perseverance during the learning process, and directs such efforts towards appropriate learning sources and the use of appropriate procedures and methods. Motivation is defined as a state of internal tension or deficiency that is triggered by internal factors (such as needs, inclinations, and interests) or external factors (such as external reinforcement stimuli: motives), which work to generate specific behavior in the individual, direct this behavior, and maintain its permanence and continuity until the motivation is reduced. Motivation contributes to the learning process in terms of:

a- Generating behavior for learning. Motivation stimulates behavior in order to relieve the tension resulting from the existence of a motive or need for the individual or a goal he seeks to achieve.

B- Directing behavior towards the source of learning, as it directs behavior towards important information and relevant sources that would help in achieving goals and objectives and satisfying motives.

C- Using appropriate procedures and means to achieve learning.

d- Maintaining the permanence and continuity of behavior until learning occurs. (Zagloul, 2010, 42)

It is self-evident that a person learns if he has the desire to do so, and he has the ability to learn and has the opportunity to do so, but the available ability and opportunity are not enough if the learner does not have what motivates him to learn, so do not learn without a motive.

And we see Pavlov's dogs, Koehler's monkeys, and Thorndike's cats, on which experiments were conducted, began their educational activity under the influence of the hunger motive, which left them responding and learning, so psychologists insisted that all learning be based on basic motives, as they also made sure of the many experiments they conducted on animals that the more Motivation is strong the more effective the learning.

As for the motives that motivate a person to learn, they are many. They may be motives related to the subject of learning, such as the child's desire to learn to read because it excites him. They may be non-self motives, but they are closely related to the learning conditions, such as the learner's desire for social appreciation, self-respect, or expression. Motives outside the subject of learning, such as the learner's desire to learn to please his parents or educators.

Motivation is not only necessary to start learning, but it is also necessary to continue it, to avoid it, to overcome difficulties it encounters, and to use it in a new situation, because strong motivation increases alertness, strengthens focus

of attention, delays the onset of fatigue and boredom, and makes the learner more receptive to the advice and guidance directed to him.

Motivation is important in stimulating learning for the learner. Wittig (1981) defined motivation as "any condition that helps drive and sustain the behavior of an organism," since without motivation, the organism fails to perform previously learned behaviour. Motivation performs important functions in learning as it has:

A- The function of moving and activating behavior in order to achieve learning.

B- Directing (orienting) learning to the specified destination, and thus the educational behavior is a purposeful behavior.

C- Maintaining (maintaining) the continuity of behavior in order to achieve the learning to be learned and preparing these functions for learning. (Touq et al., 2003, 255-256)

3-4- Training and Practice:

It is the number of attempts and the time that the individual uses to learn a task, and it depends on the nature of the environment in which the individual lives, which enriches him with experiences and skills, as well as on the nature of the interaction that occurs with the environment in terms of tolerance, acceptance and support.

The training factor is considered one of the most important and most important factors in the learning process, as it contributes to raising the motivational readiness of individuals towards learning.

The factor of experience and practice is an important factor in changing behavior. What is meant by experience: the situation that the learner faces in environmental stimuli that he interacts with and a change occurs to him as a result

of this interaction. Therefore, it attaches great importance to environmental conditions, as it determines to a large extent the growth and development of the learner and increases his educational attainment and experience.

Some of them believe that the environment contributes to a large degree in shaping the knowledge repertoire of the learners. This can be explained by the fact that an environment that includes rich features provides its children with opportunities for interaction and growth, unlike an environment that is poor in its features, as it determines the capabilities and aptitudes of its children, and this gives value to the trend known as the value of directed experiences, which is the direction on which Bruner and behavioral scientists build importance in planning The necessary and appropriate experiences for learners. (Touq et al., 2003, 256)

4-Learning theories:

4-1- The concept of theory:

There were many definitions of the theory and differed according to the perceptions and orientations of the researchers. Some of them went to give a definition of the theory in the light of its components. Such as the definition given by "Kerlinger" (Kerlinger), who considered the theory "a set of interacting structures or concepts, definitions, assumptions, and issues that dictate a systematic view: to explain a phenomenon, by finding relationships between variables in order to explain and predict the phenomenon." (Qatami, 2013, 21)

Feigl defines it as a set of assumptions from which a number of empirical principles and laws can be derived according to logical mathematical procedures. (Haider and Hawan, 2018, 12). A theory is generally defined as a set of interrelated general statements that are used to explain specific facts (either as a result of observation or measurement).

These general statements are usually called: axioms of the theory, assumptions/hypotheses of the theory, or principles and laws. The use of any of these terms in theory depends on the fact that these general statements came from logical conclusions (such as assumptions and postulates) and that they are generalizations based on the results of scientific studies (such as scientific laws and principles).

Thus, we conclude that the theory is a mental attempt in which the researcher seeks to organize and coordinate knowledge to answer the question, why? It also organizes and explains how laws, principles and facts are built in a field of study or research. (Al-Adwan, Dawood, 2016, 22)

4-2- Functions of Theory:

Perhaps our understanding of the meaning of the theory increases our awareness of some of the functions associated with the theory, as scientists and educators believe that there are four functions of the theory in education, namely:

- Description: Describe the scope of the phenomenon and the factors that constitute it in an accurate, specific and clear manner.
- Interpretation and understanding: the explanatory ability of the theory of phenomena and a deep understanding of it.
- Prediction: The predictive ability of the theory of phenomena and events.
- Guiding practice: that is, basing the choices and decisions of educators and practitioners in selecting experiences on the principles and foundations of theory in order to improve classroom practices. This means, in the first place, selecting and organizing educational experiences in logical ways that take into account the nature of the subject as a whole, the characteristics of the learner, and the implementation requirements and circumstances on the other hand,

which leads to maximizing the cumulative effect or the educational output of the practice.

These functions contribute to the discovery of new facts, the resolution of pressing and interesting problems from the examination and identification of relationships between separate facts, and finally to the interpretation of facts and observations. (Al-Adwan, Dawood, 2016, 23)

4-3- Defining learning theories:

It is a group of theories that were developed at the beginning of the twentieth century AD, and work remains to develop them until the present time. The first school that focused on learning and teaching theories was the behaviorist school, although the first signs of similar theories began to be implemented in the pre-behavioral stage. Learning theories provide basic principles for understanding the mechanisms and ways in which individuals learn, based on field and even laboratory principles. When comparing these theories, it is clear that each of them may fit a specific didactic situation or a certain type of learners or learning environment. At least the researchers' viewpoints have differed since learning theories emerged into the scientific arena, and the discrepancy between them has increased since education appeared on the surface of modern studies, and at that time a number of theories appeared that differed among themselves in explaining the best way of how learning occurs in humans and the best ways in that. Behavioral theory appeared first, followed by cognitive theory, as well as other ideas that appeared in the field of educational research in particular. It will be clear when explaining the theories by focusing on the theoretical background and the laws formulated in the interpretation of learning as well as their educational applications in the field of education. (Foutia, 2020, p. 10)

5- The reasons for the multiplicity of learning theories:

The issues of learning and its theories deserve the unremitting efforts of psychologists, as they occupy the forefront among the various topics that educational psychology studies.

Salih Hassan Ahmed Al-Dahri (2011) attributed the multiplicity of learning theories and their differences to the following considerations:

- Learning is not perceived directly, but is inferred from observing and measuring the change in behavior through performance. This has led to a multiplicity of theories, based on the behavioral aspect that the theory of interest focused on. Is it the obvious response, the hidden response, or something in between؟

-The basic premises on which each theory is based, is it the stimulus and response (Behaviourists) or the educational situation as a whole (Gestalists). Is the organism positive during learning (Skinner) or negative (Pavlov)? Is the theory limited to the limits of observed behavior, or does it extend to what happens within the learner (Ozubel, Piaget)؟

-The goal that every theory aims at, is the goal is to discover a set of laws and rules that explain learning (learning theories) or is the goal to achieve practical benefit and benefit while not neglecting theoretical principles (education theories).

-Different approaches used in the study of learning. Some theories were based on conducting laboratory experiments in artificial situations (Skinner, Thorndike, Pavlov), while others were based on using the clinical approach and observation (Piaget, Bandura).

-Different theories in answering the following question: What do we learn?, Do we learn a connection between stimuli and responses (behaviourists) and thus

form habits as in motor learning, or do we learn concepts, classifications, categories and symbolic systems i.e. cognitive structures (cognitives), or do we acquire a method of learning such as how Classifying things into categories and forming systems that help perception, memory and discovery (OZOBL).

-The theories differed in the degree of difficulty of the experiments that they used. The policemen used very simple experiments that required the least possible effort from the organism, as one response replaces another response by associating two stimuli and a response.... In contrast to this type of experiment, there are complex experiments that require To clairvoyance and understanding from the living being, where there is a problem in front of him that he responds to a solution, and reveals that his previous means and previous experiences no longer lead him to the solution and that he has to identify certain relationships in the situations and organize them in a specific way that leads him to the goal, and the best example is the experiences of the Gestaltists. (Foutia, 2020, p. 11)

6- Notes on learning theories:

It is taken from psychology in general and learning theories in particular that they depend to a large degree on the results of research and studies on animals to formulate principles, laws and models about human behavior. Fit to explain human behavior. In fact, the picture is not like that, as there are many researches and studies that have been conducted on humans, so that it can be said that the findings of learning theories in terms of principles and laws about behavior are only the product of many studies that were conducted on animals and humans alike. In general, conducting studies on animals is due to the following justifications and considerations:

-The difficulty of experimental control: it is possible to look at man as a phenomenon that exists in itself, which is unique and unique, and is characterized by the multiplicity of its factors and variables to the point that it is difficult to

achieve experimental control in many fields. Hence the need for animal experiments to easily achieve experimental control.

- **Ethical considerations:** Man is an honorable being, and it is not permissible in any way to be the subject of experiments, especially those that may cause him physical or psychological harm. Merely exposing a person to trials is an insult to his dignity, his will and his humanity.

- **The danger of some experiments:** There are some experiments that pose a danger to humans, especially experimental eradication experiments that are based on causing injury or damage to the nervous system or the brain to see the effect of this on behavior and other activities. In addition, exposing a person to electrical stimulation, an injection of chemicals, or an electric shock is considered a dangerous experiment whose members should not be people, which necessitates that such experiments be conducted on animals.

- Psychology is not the only science that uses animals in scientific experiments; There are medical sciences, drug sciences, food industries, physiology, and biology, all of which use animals in experiments. In most cases, the results of such experiments are generalized to humans.

- In some cases where it is not possible for individuals to be the subject of experiments for ethical reasons or because of the danger of experiments, individuals are substituted and animals are used instead, so that conclusions and inferences are made from the results that are reached and measured on human behavior.

It should be noted here that there are many experiments conducted on human behavior in various situations, after making sure that such experiments are not dangerous to humans. The presence of many volunteers to be the subject of experiments also contributed to the implementation of many research and studies.

But when it is required to use individuals of the human race in experiments, this requires obtaining the prior consent of the study members or their parents, noting that the large volume of studies on human behavior can be conducted directly on humans without the need to use animals, because such studies It does not harm or harm them on the one hand, and there is no disrespect to their dignity and humanity. (Al-Zaghoul, 2010, 45-46)

Second lecture:

the classical conditional association theory

1- Introducing Ivan Pavlov:

Ivan Pavlov was born in Russia on the fourteenth of September of the year 1849. His father, who was working as a priest, wanted him to pursue the same profession in which he works. Pavlov joined the church school, and later moved to the Theological Institute to complete his studies for the position of priest.

Pavlov showed good interest in the study of theology, and he was known to be an obedient and diligent student, although he was getting the lowest grades in the subject of behavior. Theology and orientation to study medicine at St. Peter's University and the Military Medical Academy, and his attention focused on the experimental aspects, as he worked as an experimenter at the Military Medical Academy, and he published his first research on the effect of nerves on the muscles of the heart, and this research qualified him to obtain a doctorate degree in medicine.

Pavlov invented scientific procedures through which the digestion process can be tracked in living organisms (without the need to damage the nerves in the digestive system), and he won the Nobel Prize for this scientific contribution in 1904. Ivan Pavlov also paid attention to studying the relationship of the nervous system to the digestive system. While he was in the laboratory, he noticed a passing note that caught his attention and made him change his scientific interests, as he went to study the brain and the learning process in an attempt to understand the role of the activity of the nervous system in learning processes. After the Bolshevik revolution, Ivan Pavlov devoted most of his attention to studying learning processes and understanding the mechanisms of the nervous,

digestive, and salivary systems. It becomes conditional as a result of its association with a natural stimulus (food) in an attempt to explain the learning processes, and as a result of Pavlov's research in this regard, he discovered what is known and formulated what is known as the principles and laws of conditional learning, as reflexive reactions or what is known as the theory of classical conditioning.

In addition to his interests in medicine, scientific research, and the subject of learning, Pavlov had other interests in other fields such as literature, science, philosophy, and music, and he had many hobbies, such as collecting stamps, caring for gardens, practicing swimming, and collecting samples of dried herbs. Pavlov followed a strict regime in his life, whether in diet, scientific research, or other social activities, and he always urged his colleagues on scientific research and strived to obtain feedback from them about his scientific performance.

In building his theory of reflexive conditioning, Ivan Pavlov was influenced by the ideas and research of the Russian scientist Sechenov, where most of the interest of this scientist, author of the book Reflections of the Brain, focused on the study of the functions of organs and contributed to the development of what is known as objective psychology, and through it he tried to explain all psychological processes in terms of the principles of reflection. He believes that all conscious and unconscious psychological processes are nothing but muscular movements or reflexive activities. Ivan Pavlov was influenced by such ideas as he tried to provide a description of the principle of classical conditioning according to purely physiological grounds. (Al-Zaghoul, 2010, 47-49(

During the Russian Revolution, Pavlov was subjected to difficult times, but he continued his research in his laboratory despite the lack of sufficient heating at times. The last period of his life focused on his studies and research on the

brain, and he devoted a lot of effort to trying to understand brain activity. (Kawafha, 2004, 161)

2- Assumptions and concepts of classical conditioning theory:

At the beginning of his scientific career, Ivan Pavlov did not have any interest in psychological aspects and learning processes, and as we mentioned earlier, he was getting the lowest grades in psychological subjects (behavioral science) while he was a student at the Theological Seminary, but later as a result of a passing observation he noticed while he was in the laboratory It aroused his interest and generated a curiosity in him to understand what was happening, and this prompted him to change his interest from studying the processes of digestion to studying the nervous system and learning processes.

Pavlov noticed that laboratory animals (dogs) in some cases stand on their feet and begin to prepare for food and their saliva begins to run, just as food is in front of them despite the absence of it.

Such a remark aroused his interest and he began to wonder why it was happening? Pavlov began by defining the circumstances of the occurrence of this phenomenon, and noted that it occurs in specific cases represented by the presence of footsteps outside (outside the laboratory), and when revealing what these sounds are, it turns out that they are the sounds of the guard's feet who take care of the dogs and provide food for them.

Based on that, Pavlov concluded his main hypothesis about this phenomenon, which later formed the basis for the emergence of the concepts of the theory of classical signs.

Pavlov assumed that dogs learned such a response, which is getting ready for food and salivating (which is originally a natural reaction to food, because by nature he elicits such a response without having to learn it), and they make such

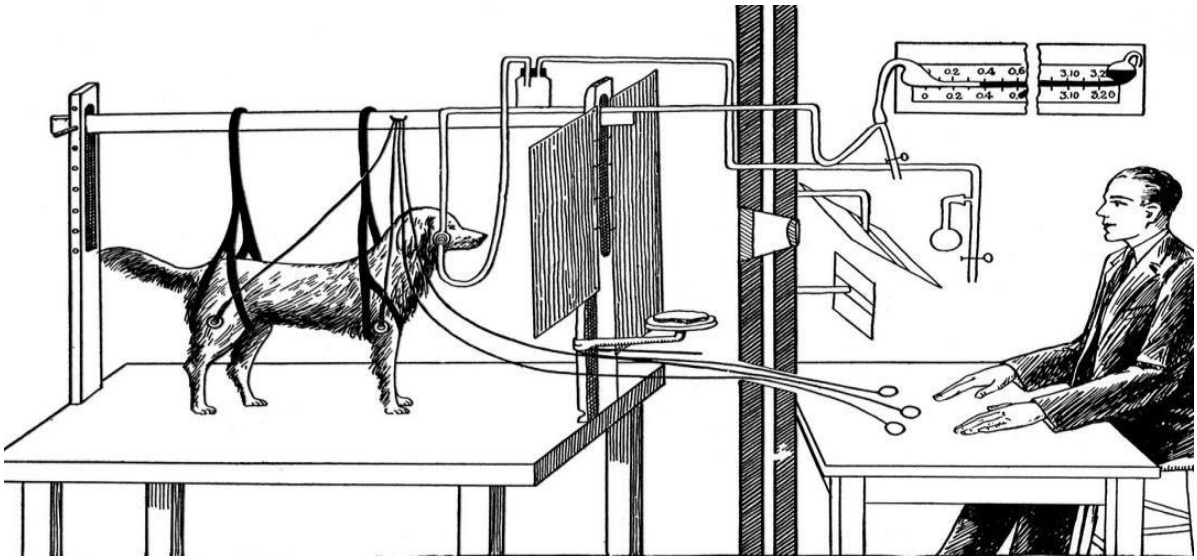
a response when just hearing the sounds of the guard's feet (which is the originally neutral stimulus). As a result of the guard being associated with food a number of times, the "guard" takes the place of the natural stimulus "food" in terms of eliciting the response it causes.

Pavlov considered that the main learning mechanism is conjugation, and by conjugation he means: the temporal juxtaposition of the occurrence of two stimuli together a number of times where one acquires the characteristic of the other and becomes able to elicit the response caused by the other stimulus. Food is a natural stimulus that elicits a salivary response in dogs naturally, which is An innate, reflexive, uneducated response, while the sounds of the guard's steps are originally a neutral stimulus that has no effect on the dog's behavior (unable to elicit a response), but as a result of the coincidence of this stimulus (the sounds of the guard's feet) with the presentation of food (the natural stimulus) to a number of Many times, dogs have learned to respond with a drooling response to the mere hearing of the guard's footsteps. Thus, the sounds of the guard's feet became a conditional stimulus capable of eliciting the response caused by the natural stimulus.

The conditional stimulus (the sounds of the guard's feet) has become a mere alarm signal or evidence through which the animal infers the occurrence of the natural stimulus (food), and thus we find that this stimulus has acquired the characteristic of food and is able to cause the response that it elicits even in the absence of it. To test the validity of his hypothesis about the role of pairing in shaping conditioned responses to neutral stimuli, Pavlov conducted many experiments on dogs, and these experiments fall into two categories: appetitive and aversive conditions. In one of the appetite-stripping experiments, Pavlov was able to condition the response of salivation to the sound of the bell, as he brought a hungry dog and presented it with the sound of a bell (mh) and then followed

with food (mgsh), and as a result of the repetition of the pairing process between them, the sound of the bell became a conditional stimulus capable of eliciting The conditioned response is drooling. (Al-Zaghoul, 2010, 49-50)

Figure No. (01): shows the experimental situation of classical conditional learning



2-1-Theoretical concepts:

2-1-1- Natural stimulus: This stimulus is known as the unconditional stimulus because it is by its nature capable of provoking a response, as this response is not required to be learned, and this stimulus is defined as any effective event that can occur that leads to the occurrence of a reflexive reaction that is characterized by stability and constancy . at the individual. Pavlov used food powder in his experiment as a natural stimulus, because this stimulus naturally leads to a drooling response in the dog, in order to adapt many neutral stimuli such as the sound of the bell, light and other stimuli.

2-1-2-The natural response: It is also known as the unconditioned response because it occurs naturally in response to a stimulus that causes it. Examples of

this include: animals secreting saliva when they see food, closing their eyes when blowing on it, keeping their hands away from hot things, and so on. Such responses are innate, unlearned, and are reactions to their own stimuli. They are reflections of their own motivations.

2-1-3The conditioned stimulus: it is known as the unnatural stimulus, and it is originally just a neutral stimulus that has no ability to cause any response in the living organism. The organism may learn to respond to this stimulus through interaction processes, and according to the conditioning theory, this response is learned. According to the principle of conjugation, that is, through its presence several times with a certain natural stimulus, and as a result of its simultaneous presence with this stimulus, it acquires its characteristics and becomes able to evoke the response that it causes. Thus, when the neutral stimulus acquires the characteristic of the natural stimulus, it becomes a conditioned stimulus. The response produced by this stimulus is known as the conditioned response.

2-1-4-The conditioned response: It is known as the abnormal response, which is the learned response to the conditioned stimulus as a result of its association several times with a specific natural stimulus. The natural stimulus is less powerful than it, and its latency period may be longer or shorter than the natural response. (Al-Zaghoul, 2010, 55-56)

2-2- Laws of Theory:

2-2-1-Conjugation:

It means the temporal juxtaposition of the occurrence of two stimuli, one of which is neutral and does not elicit any response from the organism, and the other is natural, characterized by its ability to provoke a natural reaction (the "response"). As a result of this pairing and its repetition several times, the neutral stimulus becomes conditioned, that is, it becomes able to evoke the response

resulting from the natural stimulus, and such a response is known as the conditioned response.

The strength and durability of the acquired conditioned response depends on a number of factors, as follows:

-The neutral stimulus must be at the level of intensity: so that it falls within the range of the sensation threshold of the organism, and it must be characterized by the ability to alert.

- The sequence of presenting the stimuli: the neutral stimulus must precede the natural (unconditioned) stimulus because the occurrence of this stimulus after the natural stimulus does not lead to the occurrence of the conditioned response. The origin is that these two stimuli occur simultaneously or that the conditioned stimulus precedes the natural stimulus. Pavlov compared four types of states in terms of their ability to cause learning of conditional responses to conditional stimuli. These types are:

A- Affective conditioning: This is what is known as sequential conditioning. In this type, the conditional stimulus is presented and removed before the natural stimulus is presented, without overlapping between them.

b- Delayed conditioning: In this type, the conditioned stimulus is presented and then the unconditioned stimulus exhausts it, where a kind of overlap occurs between them, where the natural stimulus (GSH) appears before the conditioned stimulus (MSH) disappears. Deferred conditioning is divided into two types: short-term deferred conditioning, where the time interval between the conditioned stimulus and the natural stimulus is fractions of a second; The second type is long-term delayed conditioning, over a period of one or two seconds. This is considered delayed conditioning, as experiments indicate that it is the best type of condition for learning the conditioned response to the conditioned stimulus.

C- Simultaneous conditioning In this type, conditioned and unconditioned stimuli are presented together at the same time without any time interval between their presentations. This type is weak in learning the conditioned response to the conditioned stimulus.

D- Retrospective conditioning: In this type, the unconditional stimulus is presented first, followed by the conditioned stimulus. This type of conditionality may be effective in some genres.

2-2-2-Repetition: Repetition leads to the issuance of the correct learned response, and the organism can learn through repetition to avoid wrong responses that do not lead to the goal, which appear with the appearance of the stimulus. By repetition, the individual can learn many behaviors or issue responses that were not originally natural.

2-2-3- Consolidation: It occurs as a result of the association of the conditioned stimulus with the natural stimulus many times and repeatedly.

2-2-4- Extinguishing: This concept refers to the cessation of the learned conditioned response to the conditioned stimulus as a result of presenting it a number of times without being followed by the natural stimulus (the unconditioned stimulus). The occurrence of extinguishing is an indicator of the occurrence of erasure in the learned conditioned response, and this often occurs as a result of the conditional stimulus not being paired with the unconditioned stimulus multiple times. (Al-Zaghoul, 2010, 59)

2-2-5The law of automatic retrieval: The extinction of the conditioned response as a result of presenting the conditioned stimulus without reinforcement with the unconditioned stimulus is not final. The conditioned response reappears if the conditioned stimulus is presented after a period of latency, despite the absence of any reinforcements. Or reinforcements to revive it, and this means

that the emergence and decay of the response does not mean its complete disappearance.

2-2-6The Law of Cessation: It is the opposite of the principle of alertness, and it means the failure of a stimulus that has already been conditioned (conditioned) to elicit the conditioned response as a result of stopping presenting the unconditioned stimulus with the conditioned stimulus. Conditioning is important because it means that the organism has learned how to prevent these stimuli from reaching the reinforcement stage. (Manhuri, 2006, 492)

3-Educational applications of the theory of classical conditioning:

Many psychologists, especially those interested in human learning, are reticent to apply all the principles and foundations of the simple condition theory to human behavior. Because most of these principles came as a result of studies and research in animal laboratories. However, advanced studies in human conditional behavior have shown that it is possible to rely on some of these principles in their application to human behavior, especially in controlling behavioral attitudes rather than considering them as foundations for behavior, which helps to facilitate the learning of some knowledge and skills. (Al-Sharqawi, 2012, 46)

The principles of classical conditioning can also be used in many practical aspects, educational situations, and behavior modification programs, as represented in the following aspects:

- Formation of cases of love and hate, which often result from the formation of conditional associations, either positive or negative, so that hatred is formed as a result of seeing a person or place associated with something hated, and this is repeated more than once, as this generates feelings of hatred or the formation of good habits and attitudes towards things and topics through Associate these

objects with pleasant activities or reinforcement stimuli, as well as form and reinforce certain social and academic behavioral patterns by pairing them with reinforcers.

-Benefiting from the principle of extinguishing or erasing by erasing some behavioral habits by associating these habits with individual stimuli. For example, the mother may resort to anointing her nipple with a substance once alone to extinguish the breastfeeding behavior of the infant.

- Benefiting from the principle of generalization and discrimination by teaching some educational tasks such as learning letters, numbers, names and shapes.

- Benefit from the principle of repetition by re-explaining or developing some aspects of linguistic behavior by recognizing things and naming them by linking the word with the image, the word, or the speech with a reinforcer.

-Benefiting from the principle of reverse conditioning by treating pathological fears by removing the link between the fear stimulus and the fear response using the procedures of progressive desensitization of the fear response.

-Formation of many behavioral patterns and habits of individuals through the use of the idea of tapes, and this is represented by associating such patterns and habits with reinforcing stimuli.

-Erase many unwanted behavioral patterns and habits through the use of repellent conditioning procedures. There are bad habits such as finger sucking, nose picking, messing with things and breastfeeding that can be erased through peers with repulsive stimuli, and such behaviors can be stopped by engaging individuals with other stimuli.

- Teaching names and vocabulary by associating pictures of these things with their names or the words that denote them, while reinforcing these responses.

Principles of generalization and differentiation can also be used to help individuals form concepts.

The third lecture:

Instrumental Conditioning Theory (Trial and Error)

1-Introducing the author of the theory, Edward Thorndike (1874-1949)

Edward Thorndike was born in the US state of Massachusetts in 1874, and his scientific interest began at the beginning of the twentieth century with the study of animal intelligence, as he showed interest in the subject of learning, and his research in this regard had a profound impact on the educational process. Thorndike was influenced by the ideas of William James about the role of psychology in the educational process in terms of preparing teachers. He promoted these ideas in many of his articles that he published in many psychological and educational periodicals at the time. In one of his famous articles published in the first issue of the Journal of Educational Psychology in 1910, Thorndike explained how psychology can contribute effectively to improving the educational process and raising its level.

Thorndike viewed psychology as the science of animal and human capabilities, characteristics, and behavior. He believes that this science shares some sciences such as anatomy, physiology, sociology, anthropology, history and other sciences in terms of their focus on the study of the human body and its mental nature.

His first interests in learning began between 1913 and 1914. He published his first book under the title of Educational Psychology. This book is in three

volumes, in which he explained some of the laws of association such as the law of training and the law of effect, and specified their educational uses in the field of teaching processes and teacher preparation. He reached these principles through the results of his experimental and statistical research that was based on Basic observation and problem solving. (Al-Zaghoul, 2010, 72)

In addition, Thorndike studied human intelligence, he developed the theory of multiple intelligence, in which he sees that intelligence is the outcome of the interaction of a number of overlapping capabilities among them, and in which intelligence is explained through the quality and number of neural connections between stimuli and responses, and to measure intelligence designed a measure of intelligence known as CAVD . (Ali, 2001, 75)

2-Thorndike's experiment in instrumental conditioning:

Thorndike put a hungry cat in a cage that contains a lever that leads to pressure on it to open the cage and get out of it and eat a piece of fish outside it, and thus we find that the cage, hunger and food have formed a problematic situation for the cat, which is supposed to do some behavior to get rid of this situation. Thorndike noticed at the beginning of the experiment that the cat showed many random attempts such as meowing, jumping, scribbling, climbing and sitting in an attempt to get rid of this problematic situation. to the cage, and noticed that the time it took the cat to open the box the second time was less than the first time.

Repeat this procedure a number of times and notice that the number of random attempts the cat has started to gradually decrease, so that the cat gradually abandons some attempts. With the passage of time, he abandoned all wrong attempts and kept only the last attempt, which was to press the lever. In light of the results of this experiment and other experiments, Thorndike concluded that the cat learned the correct response through trial and error, that is, it learned to

give up the wrong responses and keep only the appropriate response? (Al-Zaghoul, 2010, 76)

Figure No. (2) shows Thorndike's experiment in instrumental conditioning

3-Laws of Theory:

3-1- The practice or training law:

Thorndike believes that the habit link between the response and the stimulus increases in strength with practice and weakens by non-practice. He assumes that the associations between a specific stimulus and a response become stronger with practice. That is, by repeatedly using such associations when facing that exciting situation, and in return, the associations between a stimulus and a response are weakened by neglect or non-use. In this sense, this law includes two parts:

A- The law of use, which means that the repetition of the practice of a certain habit increases its strength; That is, the link between stimulus and response is strengthened by use and practice.

b- The law of neglect, which means that not repeating the practice of a certain habit weakens it; That is, the link between stimulus and response is weakened by neglect and lack of practice.

According to this law, it can be said that the strength of the bond between a stimulus and a response increases with use so that it reoccurs when facing the situation to which it is associated, while such a bond weakens and diminishes with time as a result of not exercising it.

The question that arises here is: Is it necessary that the practice of association itself is an indicator of mastery and improvement of learning? Thorndike assumed at the outset that the practice of associations leads to strengthening them, which leads to improving the degree of learning, while not practicing them leads to weakening learning. In fact, such an explanation did not appeal to many psychologists, because it enshrines the principle of mechanism or mechanism in learning and confirms the negativity of the organism. In this regard, Barton wondered about what we actually practice, and this consequently led to Thorndike's attention to this issue as he reformulated this principle in light of the law of effect. The practice of the association strengthens it and leads to improved learning if it is followed by supportive and corrective feedback.

It should be noted here that this principle contributed to the development of the ideas of one of the theories of forgetting, which is known as the theory of decay or abandonment and atrophy, which considers that information is forgotten because it is not practiced, as its effects fade gradually over time, while the information that is practiced remains alive so that it facilitates The process of remembering and retrieving it. (Al-Zaghoul, 2010, 78-79)

3-2- Law of Effect:

This law focused on the existence of a specific link that can be modified between a specific situation and its response in particular, so if this link is accompanied by satisfaction, then it becomes stronger, and vice versa. If it is accompanied by failure and discomfort, hence Thorndike's view that the last movement of the animal's behavior is responsible for opening the door of the cage, followed by the arrival of the animal to food that satisfied its need, and this law is often used within the template (reward and punishment), so we resort to encouraging The child is praised when he does a good job, and we punish him when he does a disgraceful act. Praise is a satisfactory condition for the child, and punishment is also a satisfactory condition. Reward and punishment here are natural. (Khoury, 1996, 41)

The law of effect can be viewed as the results of the behavior or attempt made by the organism regarding the exciting situation it faces, as it is a feedback for this attempt. Attempts that achieve their purpose result in a state of satisfaction and satisfaction. Such an attempt is preserved and its association with the exciting situation is strengthened, while the attempts that fail are abandoned and its connection to that situation weakens. Not satisfactory for the hungry cat. As for the response to pressing the lever, it was preserved because it enabled him to open the door and eat the fish, and this in itself is an effect of this response that resulted in a state of satisfaction and satiation.

To illustrate this principle, let us take the following example:

If a person wants to install a specific device, we notice that he shows a number of attempts so that signs of distress and discomfort appear on him when such attempts fail, and this is what prompts him, therefore, to abandon it and not use it again, as he resorts to another attempt, and if he succeeds in Installing the louds, we find that he feels comfortable and satisfied and tends to keep this

response and use it in the next times when he wants to install this device, that is, he does not resort to implementing the wrong responses, but rather he immediately goes to the last successful response. Thus the law of effect can be formulated as follows:

-A response to a specific situation is repeated if it was successful due to the state of satisfaction and satisfaction that resulted from it. In other words, the associations between certain stimuli and responses are strengthened if they are followed by a state of satisfaction and satisfaction.

-The implementation of a response to a specific situation is weakened if it fails due to the state of disturbance and distress that resulted from it. In other words, the associations between stimuli and certain responses weaken if they are followed by a state of distress and discomfort.

Although Thorndike did not use the terms reinforcement and punishment directly and explicitly when talking about the state of satisfaction and dissatisfaction, they can be seen as reinforcement or punishment outcomes. He did not use the concept of reinforcement or punishment in his interpretation of the law of effect, but rather interpreted the results of the attempts with physiological indications according to the principle of achieving pleasure and avoiding pain. On the other hand, Thorndike believed that the state of dissatisfaction affects behavior with the same force as the state of satisfaction, but in the opposite direction, that is, it weakens behavior to the same extent that the state of satisfaction strengthens that behavior, and this led to the emergence of some severe criticism on this issue, which It prompted him to conduct many experiments on the law of effect and its effect on behavior, and he concluded that the state of satisfaction has a deeper impact on behavior than the state of dissatisfaction, and depending on that, Thorndike modified his interpretations of

the law of effect so that he canceled the second part of it in his subsequent formulations of the principles of his theory. (Al-Zaghoul, 2010, 77-78)

The satisfaction resulting from the correct response leads to the possibility of repeating the action, i.e. repeating the response. This is because it strengthens and supports the neural links between the stimulus and the response, and the discomfort does not necessarily weaken these links. When the student performs the homework as desired, the teacher rewards him. The effect arising from this gratification is a feeling of satisfaction or pleasure, and this last feeling becomes reinforced or Supporting to strengthen the link between the performance of homework and the teacher's appreciation for it. (Al-Zayyat, 2004, 192)

3-3- The Law of Readiness:

Readiness refers to the state of readiness or the tendency to implement a learned response to a specific stimulus situation, or the tendency to learn a new response. Thorndike assumed that readiness plays a role in the occurrence of learning processes and the implementation of responses. He believes that such readiness contributes to determining the conditions in which the individual has a tendency to be satisfied and satisfied. The presence of a state of preparation in the organism means that it has a strong willingness to implement the required response, while the lack of a state of preparation leads to the failure to implement such a response.

The law of readiness states that learning becomes possible if the learner's action inclination is triggered. Thorndike believes that without preparation the learner cannot learn. It is the individual's desire to learn. (Glory, 2018:25(

Thorndike has interpreted the principle of readiness in terms of the state of neural connections in terms of their ability to connect or not, as he believes that this readiness may take one of the following three cases:

-If the nerve conduction unit is ready to conduct and is in a state of readiness to implement a response, the presence of what encourages it to do so facilitates the process of conduction and the occurrence of the required response, and this results in a state of satisfaction and satisfaction. In other words, if the organism has a willingness and inclination to do something, and finds what encourages it to do so, then this work will be well executed, and the individual will feel a state of satisfaction and satisfaction.

-If the nerve conduction unit is conductive and is willing to execute or learn a response and there is an impediment to doing so, then conduction will not occur; That is, the response is not implemented, and this leads to a feeling of distress and unease. In other words, if the organism has a strong tendency to implement a response to a specific situation and there are obstacles to that, then the implementation of such a response may not happen, and this leads to feelings of distress, dissatisfaction and frustration.

- If the nerve conduction unit is not capable of conduction and is not willing to perform a response, and there is something that forces it to do so, then the conduction process may not occur appropriately, and this may result in a state of distress and discomfort; That is, if the organism does not have a willingness or inclination to perform a behavior and is forced to do so, then such behavior may not occur in an appropriate manner, and a state of dissatisfaction and discomfort may arise from that, and a state of avoidance and escape may result from that. (Al-Zaghoul, 2010, 79-80)

4-Educational applications of the theory of trial and error:

Thorndike strongly believed that the practice of learning should be scientifically studied. It was clear to him the need for a close relationship between knowledge of the laws and foundations of learning and the practice of learning. That is, the tight link between the learning process, including its foundations and

laws, and the theories and systems on which it is based, and the education process itself in the classroom, which achieves integration between the two directions, the direction of theorizing and rationing, and the direction of application, otherwise neither of them would benefit the other.

Therefore, he believed that the more learning psychologists can discover a lot about the learning process, and the conditions and laws associated with it, the more that should be applied in the field of learning to improve the methods of practicing education in its various aspects.

Thorndike says in that, "The importance of psychology applications in the field of education is more similar to the importance of botany and chemistry to agriculture, and outweighs the importance of physiology and pathology to medicine. Likewise, with regard to the education process, any individual with a degree of intelligence and good behavior can practice the education process well without knowledge and application of psychology, just as the farmer's knowledge of the importance of applications of botany and chemistry in the field of agriculture makes him more successful in his work than the farmer who does not use If these applications are equal in both cases, the teacher will also be more successful in solving school problems if he knows the applications of psychology and human nature (Al-Sharqawi, 2012, 58).

The laws reached by Thorndike had an impact on the field of human learning, as well as their applications in education and psychology. We mention among the most important of these applications:

-The use of trial and error in the field of classroom learning and giving the learner an opportunity to repeat his attempts to acquire the correct behavior. In the field of education, achieving the goal of learning and acquiring school skills or knowledge depends on the attempts made by the learner in the classroom,

because the error in reaching the goal at first glance does not block the door to other attempts to achieve it and the repeated attempts to reach the correct solution.

-Reliance on rewards and proofs that follow the correct responses and performances, which leave a state of satisfaction and approval in the learner's psyche, and lead to the acquisition and fixation of the correct learnings and behaviors and the abandonment of the wrong ones, as achieving the goal provides feedback to stabilize the behavior and strengthen the connection, i.e. keeping the correct responses.

Paying attention to students' preparations for learning as essential to the success of learning. The learner finds learning easy or difficult because of the characteristic of readiness. Since readiness depends on intense desire, and for the results to be fruitful for teachers, it must depend on the intense desire of the student, such as the desire for success or social acceptance.

-Introduction to the lesson helps the learners to understand and assimilate the explanation.

So, Thorndike asks, what is good learning؟

Thorndike answers that we can achieve good education if we observe the following principles:

-To take into account the circumstances of the learning situation in which the student is.

- Keep in mind the desired response to be associated with this situation.

- To be the link between this response and the situation. We do not expect this association to happen miraculously. That is, it requires effort and a period in which the learner exercises this response several times.

All other conditions being equal to situation, we should avoid making any association between response and situation that we expect to be weak and weak.

- Other things being equal, you should avoid forming more than one bond at a time.

-With other conditions being equal in the situation, the associations must be in a certain way that allows them to appear after that, that is, we work to strengthen the link between the response and the situation.

- Based on the foregoing, it is preferable to design learning situations in a way that makes them resemble life situations itself, and to work on creating the responses required by life situations, and thus we achieve through responses the skills required for the educational growth of the individual.

From this it becomes clear to us why Thorndike focuses on performance-based learning because it is more effective in the educational growth of the individual than recitation-based learning. This is in addition to the necessity of graduating in learning from easy to difficult, and from simple units to more complex ones, and giving sufficient opportunities to the learner in the form of trial and error practice in order for him to be able to achieve learning whose effects are clear in relation to the foundations and laws on which the theory is based in learning skills, especially learning Motor skills, without neglecting the impact of the penalty, which is represented in the law of impact, in achieving the speed and effectiveness of learning. (Al-Sharqawi, 2012, 59)

The fourth lecture:

The theory of procedural conditioning

1-Introducing the owner of the theory, Bruce Skinner (1904-1990):

Skinner was born in the US state of Pennsylvania on the twentieth of March 1904. He enrolled at the Hamilton College for the Study of Arts. He obtained a bachelor's degree in the English language. His greatest ambition was to become a professional writer, but he did not find anything to write about, which prompted him to leave this matter and go to Other interests were the study of behavior, due to his interests in the writings of Watson, Pavlov and Thorndike in this regard. He is enrolled in a graduate program in the Department of Psychology at Harvard University.

And he obtained a master's and doctorate from Harvard University, in which he conducted a wide series of experiments on animals and mice, which led to the publication of dozens of specialized academic articles and studies. Skinner is considered a relational psychologist, and he belongs to the same school as Thorndike. (Salim, 2003, 200)

Among the results of his research, he issued his book known as The Behavior of Living Creatures, in which he talked about the laws of conditioning and reflection, and this was represented in two types of conditions: the type based on the presence of the stimulus or what is known as classical conditioning; The second type is based on response, which is known as instrumental learning, and from these ideas emerged the concepts of his theory of procedural learning.

Skinner turned to the study of the behavior of pigeons in addition to the study of the behavior of rats, and he was able, in cooperation with one of his students,

Charles P. Verster, to set tables of reinforcement. He also researched verbal behavior, and issued a book in this regard called Verbal Behavior, in which he reviewed the ideas of William James, and he reformulated some of them. And add to it. Skinner was also interested in the subject of education and tried to apply the principles of his theory in the field of education, devising what is called programmed education and designing the first educational machine in this regard. (Zagloul, 2010, 88)

2-Assumptions of procedural learning theory:

The behavioral theory as put forward by Skinner is based on the following assumptions:

-That with them human behavior learned.

- Reinforcement plays a major role in achieving desired learning.

-Learning takes place when experience is divided into short learning sites that take short periods of time to learn.

-Human behavior is a complex behavior, and in order to be understood, it must be divided into simple parts.

- Human behavior can be subject to understanding, interpretation, control and prediction.

- Learned behavior is observable and measurable behavior.

- The behavior to be learned is determined precisely according to certain criteria. (Nasef and Hana, 1983, 230)

3- types of learning:

Skinner distinguished between two main types of learning. Each of them differs from the other by the difference in the type of behavior that is based on them, and they are:

3-1- Responsive behavior:

It arises as a result of the presence of specific stimuli in the behavioral situation, and the response occurs in this type of behavior as soon as the stimulus appears directly. This applies to responsive behavior, which consists of specific associations between stimuli and responses called reflexes. The individual is born with some of these associations, and then acquires others through the conditional processes that occur in behavioral situations during the different stages of his development.

Schepner specifies that learning response behavior falls under the conditional behavior pattern because it is based on the associations between the specific stimuli in the behavioral situation and the responses. Any new stimulus that appears in the situation is associated with the stimulus that elicited the response. After several times of association of the new (conditioned) stimulus with the previous (unconditioned) stimulus, the new stimulus has the power to recall the unconditioned response, which is the same as the conditional response. behavioral. (Sharqawi, 2012, 60-61)

3-2- Procedural behavior:

Skinner mentions that most patterns of behavior differ from the pattern of response behavior. While response behavior is considered a behavior of association between a stimulus and a response, procedural behavior is completely different from that, because it is behavior that is not associated with predetermined stimuli in the situation, and there is no specific stimulus that

evokes the procedural response as in Responsive behaviour, rather, it is all that is emitted by the organism in the outside world

Hence, Skinner's interest focuses on the responses themselves emanating from the individual, and not on the stimuli present in the behavioral situation, such as the behavior of walking, talking, working, eating and playing. They are behavioral processes consisting of a group of procedural responses, each of which is not linked to a specific person who is considered responsible for these responses, as in response behavior.

This does not mean that «Skinner, denying that procedural behavior is influenced by stimuli. Much of his interest in behavior analysis revolves around procedural behavior methods in the case of controlling stimuli, but it is not total control, as in the case of simple conditionalization and addictive conditioning, rather it is partial and conditional control. Deskinreh represents this with the procedural response to obtaining food. It does not arise from seeing food only. Rather, it is a response that is subject to the level of hunger stimulus and the social conditions of the behavioral situation, as well as many other variables, some of which may be internal, and others external, in contrast to what is found in the knee flexion response, which represents a simple response behavior pattern. This response usually arises from a slight tapping of the knee without regard for other conditions.

In view of this clear difference between responsive behavior and procedural behavior, Skinner considers that it is not useful to look at procedural behavior as mere associations between specific stimuli and responses, as in patterns of response behaviour. Behavior patterns - as issued by the organism without fear of the multiplicity of stimuli that give rise to this behavior, the behavior of the organism depends on the overall pattern of stimuli that exist in the situation, both

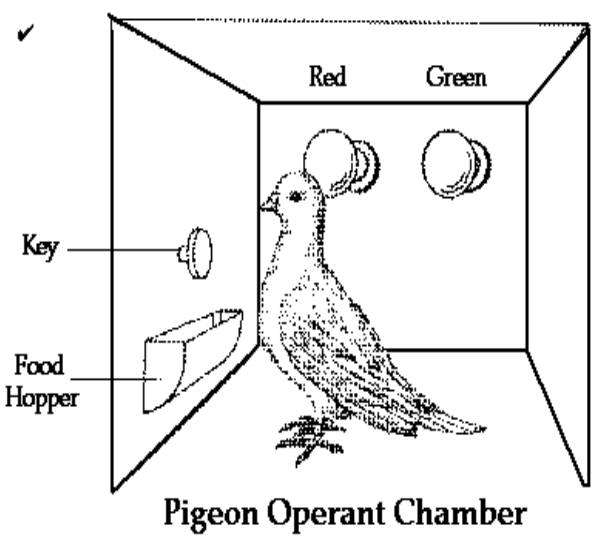
internal and external, and not on the link between specific stimuli and responses. (Sharkawy, 2012, 61-62)

4- Skinner's experiment on operant conditioning:

"Skinner" assumed that procedural behavior is a behavior initiated by the individual with the aim of controlling the environment, and based on this assumption he wanted to test the behavior of the organism in learning procedural behavior.

In his experiment, "Skinner" brought a hungry pigeon, and placed it in a cage with a plate painted with red and green colored circles. Then, "Skinner" monitored the moment when the pigeon raised its head, even by simple degrees, in order to provide food to obtain an initial reinforcement, and to observe the pigeon at the moment In which the red light appears and the pigeon approaches it, even in simple degrees, to provide it with food.

The following figure illustrates Skinner's experiment on procedural conditioning:



Pigeon Operant Chamber

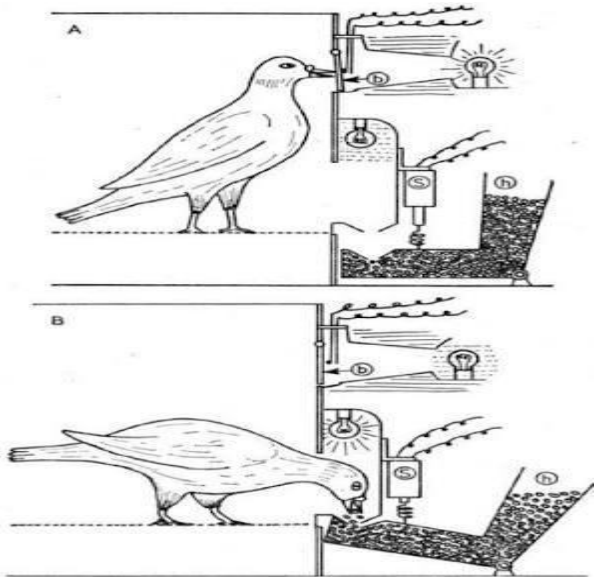


Figure No. (03) shows Skinner's experiment in procedural conditioning

But the question arises: How did the pigeon learn the correct response in the learning situation, despite the presence of many stimuli؟

"Skinner" was able to teach the pigeon to issue the correct procedural response, that is, to click on the red light, and not to respond in the event of clicking on the white or green mark, which is the behavior that was originally neutral, but as a result of the reinforcement it received and the reward for the correct procedural behaviors that it carried out. By raising the head and clicking on the correct light, the pigeon learned the correct procedural response. The reinforced behaviors of "Thorndike" and "Pavlov" led to the acquisition and fixation of correct behavior, and this is what distinguishes procedural conditioning from simple conditioning, so that learning procedural behavior is subject to the process of conditioning in the behavioral situation, ie; Actions that an organism takes to control the stimuli surrounding it, and to show desired behavior that results in reinforcement and reward.

The response initiated by the pigeon, which it learned to do correctly, was not in response to a stimulus and without being pushed by anyone. It was motivated to carry out this behavior with the aim of obtaining food that supports its response to achieve the state of satiation.

Skinner concluded that learning the correct procedural behavior is related to the reinforcement that the pigeon receives, which increases with the repetition of the procedural response. The actions in which the pigeon took place, which was followed by reinforcement, led to an increase in the probability of the response occurring, fixing it, and not extinguishing it.

It is noticeable in this experiment that the procedural response preceded the stimulus and the reward and came before the presentation of the reward.

It did not arise from seeing the stimulus, but rather a response subject to the level of hunger stimulus. Procedural behaviors are not linked to the stimuli that appear in the learning situation, as they express what is issued by the organism in the external world, and its learning or fixation and non-extinguishing depends on reinforcement.

5- Skinner's learning laws:

5-1- Reinforcement:

Reinforcement is defined as any event that follows a behavior so that it works to strengthen the possibility of repeating such behavior at subsequent times; That is, it is the process by which a particular behavior is reinforced.

From this perspective, reinforcement can be viewed as a pleasant condition or a desirable stimulus that is associated with a specific temporal relationship with the behavior, so that it works to maintain the strength of this behavior and increase the possibility of its appearance later. (Zagloul, 2010, 93)

At the beginning of his studies, Skinner relied on reinforcement schedules, and preferred regular reinforcement. Where the boost is given every three minutes. Studies have shown that the shorter the time between reinforcements, the more effective the reinforcement. Timing is very important in terms of schedule, and it is most efficient when it occurs in short intervals. (Hasan, n.d, p:27)

Skinner distinguished between two types of reinforcement that lead to strengthening behavior and increasing the probability of its appearance, and strengthening a response and increasing the probability of its appearance later, namely:

5-1-1- Positive reinforcement: This type is known as reinforcement through addition, because the response becomes stronger when such reinforcement is

added to the organism's environment. In this type, the desired behavior is followed by a reinforced stimulus in order to strengthen the possibility of its recurrence later. The best proof of this is rewarding the student when he answers a question correctly. The reward here came after answering the question and its aim is to strengthen such behavior in the student. (Zagloul, 2010, 94)

5-1-2- Negative reinforcement: This type is known as reinforcement through removal, in which painful or unwanted stimuli are excluded from the environment as a result of the individual's desired behavior. This means, of course, that the individual makes a response in order to avoid painful or unwanted stimuli. Such a response becomes stronger when painful stimuli are removed from the organism's environment. (Zagloul, 2010, 95)

5-2- Punishment:

Punishment can be seen as an unwanted painful or stimulating procedure that follows a behavior so that it works to weaken the possibility of repeating such behavior later. It is an unpleasant situation or a painful stimulus associated with a certain temporal relationship with the response, so that it affects the possibility of its appearance later. The punishment method includes:

5-2-1- Positive Punishment: This type is known as punishment through addition, in which the unwanted behavior is followed by a painful stimulus or an unpleasant situation in order to reduce or weaken the strength of this behavior and reduce the possibility of its recurrence later. This procedure involves adding painful stimuli to the organism's environment in order to weaken the occurrence of a particular response.

5-2-2- Negative punishment: in which a pleasant event or desirable stimulus is removed from the organism's environment as a result of its undesirable behaviour. Specifically, this procedure involves punishing an unwanted response

by removing a desirable stimulus in order to reduce the likelihood that such a response will recur later. (Zagloul, 2010, 96-97)

6- Educational applications of Skinner's theory:

-The behavioral theory in general and the "Skinner" theory in particular contributed to the emergence of the pedagogy of goals, which was adopted as an approach in teaching.

-The use of immediate reinforcement in learning provides learners with immediate feedback. Because of its importance, the teacher must work with the students on one question at a time, so that the students are not allowed to keep making the same mistakes over and over again.

-Skinner was credited with introducing the machine into learning through what he called programmed learning to develop education and the use of technological teaching aids, which depend on the machine and on small steps that give the learner feedback. (Damkhi, 2021, 37-38)

-The use of immediate reinforcement in learning provides learners with immediate feedback. Because of its importance, the teacher must work with the students on one question at a time, so that the students are not allowed to keep making the same mistakes over and over again. (Austin, 2014: 178)

7- Programmed learning:

One of the great contributions made by Skinner to education is the Programmed Learning method. Which is considered the security of the most important clear and tangible outcomes of his theory of procedural conditioning. Skinner was interested - as did Thorndike - in applying his theory of learning to the education process.

Skinner considers - within the framework of his ideas about programming learning - that learning is effective if the following conditions are met:

- To present the information to be taught in the form of small steps.

-To give the learner a feedback freely related to the result of his learning in the situation, meaning that he is given the opportunity to know whether his performance is correct or incorrect.

- The learner should practice the learning process at a speed commensurate with his capabilities.

Skinner saw that these principles are not observed in higher education, and what is more, he found that the prevailing method of teaching is the lecture method, and therefore the application of that method impedes the application of the principles he referred to. Therefore, Skinner proposed an alternative method to the lecture method, which is what he called "Pric Grammed Instructio" that includes the principles on which explicit learning is based. 2012, 79).

8-Teaching the programmer:

The idea of programming the study material and displaying it in educational machines has moved to programming textbooks, or displaying the study material in a film or tape in a programmed format.

Skinner tested the idea in a psychology tutorial he and a colleague designed and developed. The program was presented in the field of educational machines, and after modifying it several times, it was printed in a programmer's book. His program was of the linear type that organizes the study material in the form of a sequential set of questions, or precisely defined phrases, allowing the student's answer to be reinforced, with immediate knowledge of the results. He is also allowed to walk in small steps, so he does not fall into many mistakes: his answers are mostly correct, and he is allowed to walk sequentially towards learning what

the program aims to teach him, and organizes this sequence so that he starts with the student from answers he knows before, and leads him to know new answers As a result of knowing the first answers, until he reaches the final answers, which are the information that the program aims to learn and master.

The programmed teaching method includes the following basic elements:

- Provides an organized series of items that arouse the interest of the student, provide him with small pieces of knowledge gradually, and require responses from him.

- The student responds to each of these items in a specific way.

-The student's responses are reinforced by immediate knowledge of the results, using the necessary hints and prompts

- The student walks through the program in small steps. Thus, he does not make many mistakes, as his responses are mostly correct, despite the gradual diminishing and fading of hints.

-The student's responses are formed on the basis of his previous knowledge.

- The student's mastery of each step of the program leads to making the final result of learning achieved, and each of these steps is called an item or framework. (Sharkawy, 2012, 80)

9- Characteristics of programmed learning and criticisms directed at it:

There are several advantages of programmed learning that can be summarized as follows:

- Programmed learning makes the student active all the time, as the student responds while learning to each frame of the program.

- Programmed education increases the motivation of students towards education due to its use of a number of diverse activities, and given that the student has to practice a specific activity and knows its results immediately.

- The programmed education follows that the student learns at his own pace without affecting the rate of learning of others.

- Programmed education shows whether its response is wrong or correct. This process is called feedback, which supports the correct response and makes the possibility of its appearance after that great.

- Programmed education presents the study material to students in a simplified manner in successive steps, and arranges retreats or frameworks in basic education. C in a way that helps the student to move from easy to difficult, and programmed education helps the student to benefit from what he learned previously and use it to learn more complex things, which is known as the transfer of learning effect.

- Programmed education saves time in the student's mastery of the subject, because the student moves at his own pace and receives feedback directly. (Sharkawy, 2012, 83-84)

Fifth lecture:

Gestalt theory

The Gestalt theory was founded in the early twentieth century by the German scientist Max Wertheimer and his younger colleagues Kurt Kofka and Wolfgang Koehler. The connection between these three scientists began in the year 1910 through their studies on perception, which later led them to form a more comprehensive view represented by the Gestalt theory.

1-The founders of the Gestalt movement:

1-1-Max Wertheimer (1942-1880):

Born in Prague, Germany, he studied law and then suddenly turned to study philosophy with psychology at the University of Berlin, where he obtained a university degree from the University of Frisburg in 1904 and then a professorship from the University of Frankfurt in 1929. Naval submarines, and he was one of the first to immigrate to the United States of America, where he arrived in New York in 1913, and spent the rest of his life there until he passed away, and his years of residence were full of educational research.

1-2-Kurt Koffka (1941-1886):

He was educated in Germany, where he was born, and studied science and philosophy in his youth at the University of Edinburgh (1904-1903). After returning to Berlin, he studied psychology and obtained a degree in 1909. He began working with Wertheimer and Koehler, and in 1911 he began working at the University of Gieshen until The year 1924, during which he worked in the psychiatry unit, in which he was interested in treating speech diseases and nervous breakdowns, and after the end of World War I, American psychology

became aware of the Gestalt movement, and then he asked Kofka to write about Gestalt, so he wrote his book Cognition - An Introduction to Gestalt Theory, in which he presented the concepts The basic principles of Gestalt, and despite the importance of this book, it limited the spread of Gestalt in America, as the book suggested that Gestalt be limited to studying the subject of perception only.

In 1921 he published his book on child psychology (the development of the mind), and it was a great success in America and Germany, then Kofka worked as a visiting professor at Curtel Smith University in 1927, and in 1933 he did studies on the peoples of Central Asia, and then he took over after that writing his book) Principles of Gestalt Psychology

1-3-Levang Koehler (1887-1976):

He was born in the Baltic region and his family moved to northern Germany. He received his education at the universities of Copenhagen, Bonn and Berlin. He obtained his scientific degree from the University of Berlin. In 1913 the Russian Academy invited him to Tenerife, one of the Canary Islands, to do a study on chimpanzees. Then the first international campuses prevented him from leaving the island. Where he stayed for about 6 months and wrote his book (Monkey Mentality), Koehler lectured at Clark and Harvard Universities, and left Germany in 1935 because of his struggle with Nazism. Koehler received the Distinguished Production Award from the American Psychological Association, and Koehler's writings were an excellent manifestation of the Gestalt movement , and he was a fan of the application of physics in the basic areas of psychology. (Jalab, 2018, 34)

2- Gestalt concept:

Returning to the origin of the word "gestalt", we find that it is a German word meaning the whole, form, form, or organized pattern that transcends the sum of

the parts. The gestalt is like all the interconnected parts in an organized and consistent manner, and this interdependence is characterized by dynamism so that each part has its own role, status and function imposed on it by this whole. (Zagloul, 2006, 171)

As Levin defined it as: a general organization whose parts are effectively linked, so that if one of these parts changes, it follows it in the overall general form. (Jasim, 2007, 152)

Al-Zayyat defines it as a coherent or organized whole with a comprehensible meaning that is governed by relationships between its components, and these relationships are what give it the character of the whole and distinguish it from the group. (Al-Zayyat, 2004, 246)

3-The concept of clairvoyance:

Clairvoyance is a mental process, which expresses understanding or mental awareness. It is a mental process that goes beyond sensory perception, which depends on translating and interpreting sensible things and giving them significance and meaning to the sudden mental awareness or understanding of the parts, and realizing the relationships that link the parts in the learning situation, which leads to solving problems that are related to the learning situation.

Clairvoyance is the complete understanding of the Gestalt structure (the whole) by realizing the existing relationships between the parts of the overall form and reorganizing these relationships in a way that gives the meaning inherent in it, and is done suddenly and decisively in one moment and not in a gradual manner or through approximations to the required performance. (Qatami, 2005, 104)

The Gestalt theory is one of the theories that support learning by clairvoyance and learning by exploration. Therefore, students must be encouraged to form relationships between the things around them and then organize these things to achieve their meaning. Therefore, the teacher must conduct various experiments and encourage students to do so in order to achieve the meaning of learning. (Al-Atoum et al., 2015, p. 184)

The field, as the Gestaltists see it, is a dynamic total system in which each part interacts with the other parts and is influenced by the individual. Because the whole, in their view, is more organized and cognitively useful than the sum of its constituent sub-parts. (Hamdan, 1997, 91)

4- Gestalt theory experiments:

The first experiment:

"Kohler" put the chimpanzee in a cage, put the banana outside the cage, and put two sticks, one short inside the cage and the other long outside the cage and parallel to its wall in sight of the chimpanzee, as the chimpanzee cannot reach the banana using the short stick, nor can it reach the banana with the long stick . He can also reach the banana by sticking the sticks together.

"Kohler" noticed that the "chimpanzee" went through a period of groping for the solution through trial and error, once by using the short stick and once by using the long stick, but his attempts failed. The two sticks and the banana quickly and repeatedly, and suddenly, with a degree of strain and ease, he used the short stick to get the long stick and put them together to get the banana. (Al-Zayyat, 2004, 250)

The second experiment:

Koehler used other tools with the chimpanzee, which is placing a set of boxes inside the cage, one on top of the other, and placing bananas in the ceiling of the

room so that the chimpanzee could not rely on his hands to get the bananas. The monkey started with random attempts to reach the solution, and after those attempts, he realized the relationship between the boxes and the bananas, so he started by placing the first box until he put all the boxes that brought him to the goal, and thus he was able to get the bananas.

5-Learning laws of Gestalt theory:

5-1- The principle of form and background: the background floor and the form represent what appears prominently on the background, and according to the principle of form and floor, which is based on: separating the perceptual field into two parts of the form, which is usually predominant or dominant over perception.

A distinction is made between them according to many factors, including external ones, which are related to the extent of differentiation between the figure and the floor, but sometimes the shape overlaps with the floor, so it becomes difficult to distinguish between them, and this is determined in the light of what is subjective and internal. To differ from one individual to another depending on the attention of each individual to the parts and his inclination and interest.

This principle is the basis for the perception process, as Gestalt theory considers that it is difficult to distinguish and perceive shapes without a reference criterion within which the features of these shapes are determined. Things do not exist in a vacuum, but rather fall within a sensory range, and such a range is called a field. The field usually consists of the shape, which is the important, dominant and unified part that occupies the attention. As for the rest of the field, it is called the floor, which is a set of parts that surround the shape and act as a consistent background on which this form stands out. A distinction is made between the figure and the background according to a number of factors, including size, color, location, and the degree of contrast between the figure and the background. . For

example, the words are distinguished on a white page, because the words stand out from the background because they are written in a different color, which is black, so that such words form the shape, while the page represents the background. The diamond is also marked on the black cloth because the diamond is different in color from the color of the cloth. In general, we deal with the various stimuli in the environment as forms surrounded by a group of other stimuli that form the background for it, so that some of them are paid attention to and others are neglected.

But in some cases where the shape overlaps with the background, and it is difficult to define the separating borders of the shape, as in the case of vague or homogeneous shapes, we often find it difficult to distinguish the shape from the background, so that at first our perception of it is on the overall level and then the perception of individuals is distinguished and differs From one individual to another depending on the process of attention that these individuals give to some parts. Some may consider that part of it is the inspiration and consider it as the figure, and the rest of the other parts as the background. (Al-Zaghoul, 2010, 178)

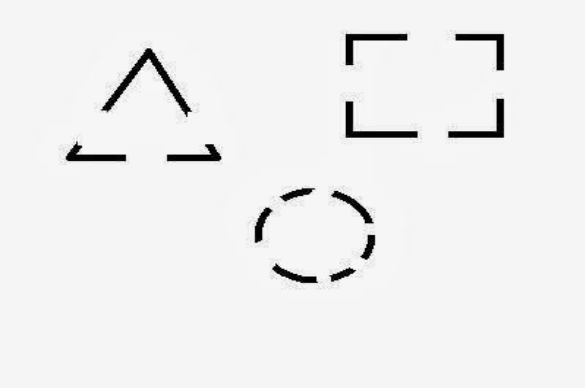
5-2- The principle of closure: The principle of closure refers to one's tendency to see integral numbers, or to close the line concretely when empty spaces appear in a regular pattern.

This happens when the shape has an unclosed part and its regularity in one context, which makes us tend to perceive these semi-closed things as closed units more than perceiving them as open forms, which is faster in the individual's tendency to form the overall picture and the tendency to close it because of its closeness From closure and the formation of the overall picture of the form.

The human perceptual system is characterized by dynamism and the ability to reorganize sensory perceptions to form what is called a good whole that is characterized by consistency, harmony and stability. In general, we tend to

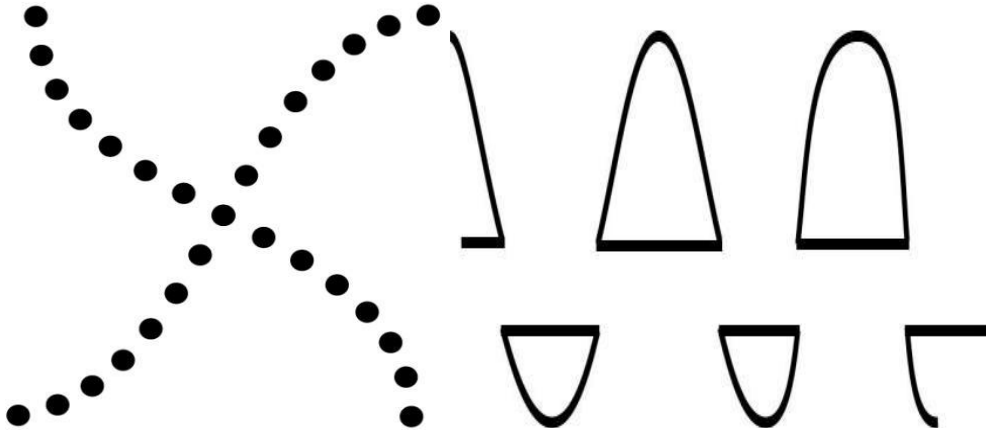
perceive things that are characterized by completeness and stability more easily than those that are incomplete or incomplete. Closed or complete spaces form harmonious units that are perceived more easily than open or incomplete spaces, and a coherent linguistic phrase is more easily understood than an incomplete or incoherent clause. Due to the holistic nature of perception, individuals usually try hard to fill in the missing voids and open spaces and work to fill in the gaps in them with the aim of reaching a state of stability or perfection (forming a good whole) in order to interpret and understand it. For example, we find that the musician listens to the piece of music as a whole and tries to discover the gaps in it or any defect in it, and strives to fill the gaps in it, in an attempt to produce it in a more consistent and harmonious manner. Also, when we read or listen to incoherent phrases, we often try to reorganize the relationships between its parts in order to reach every good that has meaning and function. In the case of missing phrases, we seek to complete them so that they become meaningful to us. In general, according to this principle, we strive to realize the existing relationships between parts or ideas in an attempt to reach a good whole or meaning. (Al-Zaghoul, 2010, 182)

The law of closure can be represented in the following form:



5-3- The Principle of Continuity: Elements arranged in a straight line or a smooth curve are considered as a group, they are interpreted as more connected

than elements that are not on the line or curve When parts of a perceptible linear pattern are covered or hidden, our brains tend to mentally communicate Along the path you've planned. According to this regularity, the individual tends to perceive a group of things that go in the same direction as a continuation of something, while things that do not share a direction with it are perceived as outside the scope of continuity. Sensory stimuli or experiences that relate to each other in a context emerge in human consciousness in an organized, continuous form, such as single-size shapes such as letters of the alphabet, multiples, or lines that relate to each other, and single-size shapes, etc. in one context...



5-4-Principle of proximity: This principle states that we perceive objects that are located close to each other and belong to the same group.

For example, a triangle consists of three sides and three angles combined within a space. We cannot perceive a triangle when there are separate parts of three lines placed in any position or three individual angles. However, the convergence of the parts gives significance and meaning to the stimuli present in the perceptual field. The presence of three black dots on a white piece of paper that is far apart does not indicate otherwise. The closeness of the dots in the perceptual field gives them an indication and meaning that they are a triangle.

This principle states that objects and subjects that are close to each other in time or space, we tend to perceive as belonging to the same group, forming a unified whole. This principle indicates that things tend to gather in perceptual configurations according to the degree of their temporal or spatial proximity. In the reality of practical life, we do not deal with separate events or stimuli, but rather with groups of events or stimuli that share a certain interdependence, such as the time or place of occurrence. Therefore, storing and retrieving them in memory is easier than other events that are not linked in terms of temporal or spatial occurrence.

This principle is very close to the principle of juxtaposition that Aristotle referred to when he talked about the process of forming associations in memory, and it is also similar to the principle of conjugation in the theory of classical conditioning. (Al-Zaghoul, 2010, 181)

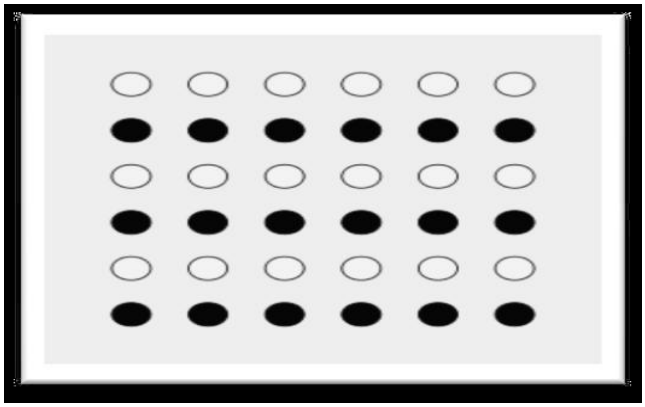
5-5-The principle of similarity: Similar things are more perceptible and their similarity in the perceptual field helps to quickly perceive them if we compare them to forms that differ from each other, as the individual tends to perceive them as one organized form, and faster than his awareness of things that differ from each other. each other.

The individual tends to group similar things together in color, size, shape, and orientation. He recognizes shapes that have some symmetry, or are similar to each other as a unified group. Its participation in a set of characteristics or in certain characteristics makes the individual more inclined to perceive it as a total unit.

The Gestalt theory believes that there is another important factor affecting the storage of information in memory other than the principles of association and repetition, and this is represented in the similarity between situations and stimuli,

so the process of storing and retrieving information from memory. It involves the process of making use of similarities.

According to this principle, things that share certain characteristics such as color, shape, and size tend to be perceived as belonging to one group; And such things form a unified, organized and coherent whole so that it is easy to retrieve the elements of this form easier and faster than the things that you realize that they do not belong to this whole. (Al-Zaghoul, 2010, 180)



6- Educational applications:

•Using the total method of learning, training methods and curricula preparation.

•Preparing educational situations in a way that helps the learner to realize the holistic meanings contained in them and not to divide educational experiences into small units so as not to lose their meanings.

•Using the method of solving problems in teaching, which includes preparing the educational environment in a way that helps the learner to discover existing relationships in educational situations, with the need to provide some directions and instructions to the learner and help him to organize the perception and thinking process.

• Learning by clairvoyance: Gestalt theory is one of the theories that support learning by clairvoyance and learning by exploration. Therefore, students must be encouraged to form relationships between the things around them, and then organize these things to achieve their meaning. Therefore, the teacher must conduct various experiments and encourage students to do so in order to achieve the meaning of learning.

Sixth Lecture:

Constructivist Theory

1-The emergence of the constructivist theory:

At the end of the last century, the educational field witnessed a great development in scientific education, which resulted in a major shift in the knowledge structure of the learner. Al-Khalili (1995) mentioned that in the past twenty years, educational research witnessed a shift from focusing on external factors that affect learning, such as the teacher's variables (his personality , his enthusiasm, his reinforcement), the school, the curriculum, to the internal factors, i.e. what is going on inside the mind of the learner, such as his previous knowledge, previous wrong concepts, his motivation to learn, his thinking patterns, i.e. the transition from superficial learning to meaningful learning. This transformation coincided with the emergence of the so-called theory Cognitive, such as the constructivist theory, and replacing it with the behavioral theory.

In view of the increasing interest in teaching and learning processes, many theories have emerged that are concerned with education and the interpretation of the mechanism of learning and cognitive growth. These theories have been classified into two categories identified by Faiza Al-Kilani (2001) in the following: Behaviorism, whose supporters believe that the educational process occurs as a result of external influences that lead to responses by the learner, and learning for these theories is a modification in the behavior of the individual, that is, these theories care about the apparent behavior of the learner, and do not care about what happens inside the mind of the learner. These theories include Skinner's theory, Pavlov's theory, Thornddark's theory, and Gagni's theory. As for the second category of theories, it includes those theories that are concerned

with studying the mental processes that occur within the mind of the learner, and are known as cognitive theories. These theories were concerned with the cognitive structure of the individual, and did not focus on his apparent behavior. Among the most important of these theories is the constructivist theory, which defines learning as an active process of building knowledge, and it is a search process in which the learner finds a relationship between the new that he encounters and the concepts he had. (Ghazi Al-Matrafi, 2007: 38)

The constructivist theory is interested in answering the following question: How do you acquire knowledge؟

Several philosophies related to the subject of knowledge emerged, such as: mental, experimental (sensual), critical, and constructivist philosophy. The owners of mental philosophy believe that the mind, with its innate initial preparations and prior principles, is the only means of certain knowledge, and Descartes says that the mind is the source of certain feeling.

As for the owners of empirical (sensual) philosophy, they believe that knowledge is reached through the senses, and that all knowledge is due to sensory experience, and John Locke believes that the mind is born as a blank page, and sensory experiences are the ones that step on it (lines of knowledge). Critical thinkers such as Kant argue that reason and sense combined are the source of knowledge.

The constructivist theory arose not long ago, as it has deep roots in the past, as the ideas of the constructivist theory did not start from a vacuum or from scratch. The ears have been reassembled, coordinated and built in a new format by authors such as: Vico, John Dewey, Jean Piaget, Glassersfeld, and others. (Hassan Zaitoun and Kamal Zaitoun, 1992: 10-11)

Although the constructivist movement appeared in the field of teaching science with the article by Driver and Easley, it is a general philosophy with a long history. It began with the views of the Italian philosopher Giambattista Vico, who believes that God is the creator of the world, and thus he is more deserving of knowing it. What individuals can do is to construct their ideas about the world, and the human mind knows only what it constructs by itself, and thus ideas differ from one individual to another.

This was followed by the philosophical vision presented by the German philosopher Kant, which assumes that mental judgments include preliminary synthetic judgments prior to experience, that is, that the mind creates knowledge, according to images that are formed within it, and then the pragmatic doctrine appeared at the hands of William James and John Dewey, who Introduce the idea of functional instrumentation, meaning that

Knowledge is a functional tool used in solving problems that we face in practical life.

This was followed by the emergence of the Swiss scientist Jean Piaget, founder of the science of knowledge formation. Although the constructivist perspective dates back to Giampezia Vico, Piaget is considered the first constructivist, because he said: Knowledge is built in the learner's mind and develops in the same way that biological ones develop, and therefore he used some biological terms such as assimilation and harmonization when interpreting human learning.

Finally, von Glaser Sfeld presented the constructivism, which is mainly due to Piaget, but it redefined the concept of knowledge, as having an adaptive function, and tends to be utilitarian, and thus knowledge is actively built by the learner, and it is not a discovery of a reality independent of the person and this

knowledge is confirmed and supported by both theoretical and practical work. (Mona Abd al-Hadi, 2005: 359–360)

Jean Piaget is considered one of the most influential, productive and contributing psychologists in the twentieth century in the field of psychology, especially in the subject of cognitive psychology. Jean Piaget was born in Neuchâtel, Switzerland, in 1896. His father was a specialist in the study of medieval history. Since his childhood, Piaget showed a clear passion for studying natural history and biological sciences, and he was very interested in the way in which nature performs its functions, to the extent that his first scientific article was published when he was thirteen years old. He worked at the age of eleven in a historical museum and became an expert in the field of historical museums, as he continued to work until the age of fifteen. He attended the University of Neuchâtel and obtained a bachelor's degree in biology at the age of eighteen. At the age of twenty-two, he obtained his Ph.D. in biology from the same university.

" John Piaget" is originally more of an evolutionary epistemologist than a psychologist, and it is known that John Piaget was very interested in the study of cognitive theory (epistemology). At that time, his mind was occupied by many questions about the meaning of knowledge, how it was acquired or the way it was acquired, and what is the method by which the individual acquires knowledge. Piaget saw that these questions should be answered by tracking the cognitive development of children since their birth. Therefore, Piaget spent nearly sixty years looking at the issue of thinking of children of different ages, including his own children, and analyzing the way their knowledge about the world around them grows. Using the clinical approach, which relies on the use of several empirical methods (based on observation and testing) to gather information about this thought process.

2 -Defining constructivist theory:

The definitions of the constructivist theory differed according to the constructivist theorists on a specific meaning or definition of it, due to the different visions that reflect the intellectual currents to which they belong.

Cobren defines it as “building on the knowledge that the student has and learning is focused on the student, whereby students have to build their own knowledge.” (Cobren, 1993:51)

Joseph Novak defines constructivism as "the idea (perception) that humans construct, or the process of constructing meaning within their ideas and experiences as a result of an effort to understand or derive meaning from them." (Abdullah Khatiba, 2005: 340)

And Prout and Flodden defined it, "that constructivism is a philosophical position concerned with the mental construction of the learner, and the constructivist theory is a theory of knowledge and learning or the theory of meaning-making, as it provides an explanation or interpretation of the nature of knowledge and how human learning is formed, and it also confirms that individuals build their understanding or their new knowledge through interaction with what They know and believe from thoughts, events, and activities they have experienced before".

The Dictionary of Education Sciences, Al-Farabi and others (1994), defined the following definition of constructivism: “an adjective that refers to all theories and perceptions that stem from the principle of interaction between the self and the environment through the mutual relationship between the knowing self and the subject of knowledge.” (Ghazi Al-Matrafi, 2007: 46)

Lorsbak and Tobin (1992) define constructivism as “a theory of knowledge used to explain the process of ‘how do we know what we know” (Ibrahim Al Momani, 2002: 23).

Bloom and Burrell (1999) define constructivism as "a reception process involving learners' reconstruction of new meanings within the context of their immediate knowledge with their prior experience and learning environment." (Majdi Aziz Ibrahim, 2004: 362)

As for the definition of constructivism by constructivists or theorists of constructivism, no specific definition was set for it, as many researchers indicated that constructivism could have different meanings for different people. However, for example, (Mohsen Mahmoud Abdel-Razzaq, 2001: 18) mentioned the following definitions:

Von Glasserfeld (1988), who is one of the largest and most prominent contemporary constructivist theorists, knew that constructivism "is a cognitive theory that focuses on the role of the learner in the personal structure of knowledge," that is, it emphasizes that knowledge is not received passively, but is built actively. .

As for Crowther (1993), he mentioned that "when individuals pass through a new experience, they adapt it to themselves through previous experience or knowledge they were exposed to".

Al-Khalili (1995) mentioned the definition of Watzlawik, who is considered one of the contemporary constructivist theorists, that constructivism is defined as "that philosophical position that claims that what is called the truth is only a mental construct for those who believe that they have investigated it and discovered it. In other words, what they reach and name it In fact, it is nothing but an innovation that is done by them without awareness that they are the ones

who invented it in the belief that it exists independently of them, and these innovations (mental perceptions) become the basis of their view of the world around them and their actions towards it. (Ghazi Al-Matrafi, 2007: 46)

Al-Khalili (1997) defines it as "a philosophical approach that assumes that learning takes place internally for the learner, since he is the one who builds knowledge by reshaping his intellectual and cognitive structure". (Salim Muhammad Abu Odeh, 2006: 65)

(Kamal Abdel-Hamid Zaytoun, 2002:212) believes that constructivism is a process of receiving the current knowledge structures, through which learners build new knowledge structures and meanings through active interaction between their current knowledge structures, their previous knowledge, and the learning environment.

The researcher believes that there is no fundamental difference between the previous definitions of the concept of constructivism, and the previous definitions agree on the following:

- The learner is the center of the educational process.
- Learners use their previous ideas and experiences to understand and interpret their new experiences and information.
- Learners collectively build their new knowledge.

It can be said that the constructivist theory is a philosophy based on building knowledge by the learner himself in an effective and meaningful way through his previous experiences. Basically, it emphasizes the active role of the learner in the presence of the facilitating teacher and the helper in constructing meaning properly in an environment conducive to learning.

3- Epistemological features of constructivism:

Zeitoun and Zeitoun (1992) summarized the epistemological features of constructivism as follows:

-Constructivism is an epistemological vision that sees reality as built by the epistemic subject... which means that knowledge is never just an image or a copy of reality, but results from building reality through the activities of the knowledgeable.

-That the activity of (the knowing self) is essential for building knowledge, so that some advocates of constructivism have considered that the activity of the learner and knowledge are one thing, as he says that knowledge is the activity of the learner. Hence, constructivist theorists reject the principle of knowledge transmission as a means of acquiring it.

-The criterion for judging the knowledge of the builders is not in its conformity with it, but in its being practical in the sense that it works to facilitate the knowledge of the individual.

- The knowledge of the builders is instrumental, as for them it is a tool for solving the problem.

- Knowledge does not exist independent of the knowing self, but rather is linked to it and accompanies it, in the sense that it is contextual (i.e. related to experience), and then we may not be exaggerating if we say that no two persons are alike in their knowledge of a specific thing, because each There is what we can metaphorically call a cognitive fingerprint that distinguishes it (Abdullah Khataybah, 2005: 121-122).

4-Piaget and the constructivist theory:

Theorists of constructivism begin their talk about "Piaget" and constructivism by emphasizing that "John Piaget" is originally more of an evolutionary epistemologist than a psychologist, and it is known that John Piaget was very interested in the study of epistemology (epistemology). At that time, his mind was occupied by many questions about the meaning of knowledge, how it was acquired or the way it was acquired, and what is the method by which the individual acquires knowledge. Piaget saw that these questions should be answered by tracking the cognitive development of children since their birth. Therefore, Piaget spent nearly sixty years looking at the issue of thinking of children of different ages, including his own children, and analyzing the way their knowledge about the world around them grows. Using the clinical approach, which relies on the use of several empirical methods (based on observation and testing) to gather information about this thought process.

Piaget developed an integrated and unique theory about children's cognitive development. This theory has two main interrelated parts. The first is called: Logical Determinism, and the second is called: Constructivism. The first part is concerned with Piaget's assumptions about logical operations and his classification of the stages of mental development of the child. Based on these processes, it is divided into four basic stages: the sensorimotor stage, the stage of visual thinking, the stage of sensory operations, and the stage of formal operations. The principle of constructive knowledge in the sense that the individual is a builder of his knowledge. (Hassan Zaytoun, 2003: 82-83)

5- The stages of mental development according to Piaget:

5-1-The sensorimotor stage:

It begins at birth and continues until the age of two. At this stage, the child is capable of two things: sensation and movement only. During this stage, the child does not have any knowledge of the outside world surrounding him. He builds knowledge through sensory perception and kinetic actions, as he forms a mental blueprint for every movement he makes. Since birth, the child shows innate reflexes and total responses to external stimuli. That is, his total interaction with external stimuli.

At this stage, the child appears in the concept of absence, as things disappear before his eyes and he realizes that they do not exist.

5-2- Pre-procedural or pre-operational stage:

This stage extends from the second year until the seventh year of the child's life, and the child's thinking at this stage is unable to perform mental operations, but the child of this stage begins to use symbols and play, and symbolic thinking expands at this stage and results in the formation of mental schemas.

However, the child develops kinesthetic intelligence, so he realizes that the hidden things are there, and the acting allows the child to find the hidden things. As the child in the second year develops mental representation, which is the ability to keep an image in his mind. He moves from the stage of absence to the presence or continuity of something as a result of the growth of his cognitive abilities, and this development affects his emotions that are less intense, such as crying over the mother as soon as she disappears from his sight.

The concept of continuity or survival makes him realize that things and events still exist even when they cannot be seen, heard, or touched directly. Until

this kind of understanding is achieved, the thing that is out of sight remains out of mind, and thus becomes non-existent.

At this stage, the problem of reversibility appears, as the child remains incapable of understanding reversibility and does not develop mental operations at this stage.

The problem of retention appears before the age of (06 years), as the child denies the stability of the quantity by moving it from one container to another, and the problem of retention appears in the child in quantities, weights, sizes, and even numbers. He also shows self-centeredness, which is a state of mind characterized by the inability to distinguish between imagination and reality, the subject, the subject, the ego, and the other. Piaget believes that it is an epistemological condition resulting from a deficiency in the child's general perceptions. Therefore, at this stage, the child appears in some behaviors resulting from the state of self-centeredness, such as lying behavior due to the inability to distinguish between fantasy and reality, and theft resulting from the inability to distinguish between his own ownership and the ownership of others. Children at this stage are also distinguished by: Animation, which means extinguishing life on inanimate objects.

5-3- The macroscopic procedural stage or the sensory operations stage:

It starts from the age of seven until twelve, and at this stage the child becomes able to perform mental operations, such as introspection and induction, as long as they are based on tangible experiences.

Piaget identified eight mental operations that a child can perform at this stage, which is the ability to form a hierarchical system. And the achievement of the sequence system and the ability to replace, the mastery of symmetrical

relations, the ability of the multiplication sequence, the achievement of one-sided symmetry and the ability to achieve the stability of retention.

The child moves from a state of self-centeredness to social centralization, and thus is able to get rid of many problems resulting from self-centeredness, such as theft, lying, selfishness, vitality, jealousy...

5-4- The formal procedural stage or the abstract operations stage:

This stage begins at the age of twelve, and the thinking of children in this stage is characterized as hypothetical thinking, and this hypothetical thinking is characterized by two main characteristics: having a complete compatibility system, which enables the individual to isolate and control the variables in a phenomenon, and the second is the ability to hypothetical reasoning that enables the individual to solve problems.

There are five characteristics that characterize the child's thinking at this stage: proportional inference, variable control, associative inference, probabilistic inference, and harmonic inference. (Abdullah Khatibah, 2005: 341-342)

6-1-The constructivist conception of acquiring knowledge according to Piaget:

The constructive perception of knowledge acquisition can be clarified by exposure to the most prominent concepts that help clarify this perception.

6-1-Types of knowledge:

Piaget distinguishes between two types of knowledge, the first is formal knowledge, and refers to knowledge of stimuli as their literal meaning, and knowledge of forms depends on recognizing the general shape of stimuli, and does not follow this knowledge from mental simulation. As for the type of

knowledge, it is procedural knowledge, which is the knowledge that involves arriving at reasoning at any level, and it follows mental simulation.

6-2- Adaptation:

Adaptation is viewed as an innate tendency that is born with humans and enables them to adapt and coexist with the environment by modifying their behavioral patterns in response to the demands of the environment. It is a general biological readiness for a person that helps him to live in a specific environment, and enables him to diversify his ways and methods of thinking according to the different opportunities for interaction and the age stages that he passes through. At a time when the ability to organize works inside the individual, we find that the ability to adapt works outside, where through this process the individual works to achieve a kind of balance with what is going on in terms of variables in the environment with which he interacts, thus allowing him the opportunity to live and survive and based on From Piaget's point of view, the mind is not just a blank page on which knowledge is imprinted, or a mere mirror that reflects what is perceived. It is not a passive recorder, but is characterized by activity and activity. Individuals interact actively and effectively with the environment, and these interaction experiences result in developments in cognitive functions and activities.

Adaptation is the ultimate goal of homeostasis, and involves the changes that an organism undergoes in response to the demands of the environment. Adaptation occurs through two complementary processes:

6-2-1-Representation:

The process of assimilation includes the modification of new experiences in proportion to the cognitive structures existing in the individual. It is a process of changing these experiences to become familiar. When we assimilate an

experience, this means that we modify this experience to suit what is actually in our activities and knowledge structures.

6-2-2- Adaptation:

The concept of adaptation refers to the process of changing or modifying the existing cognitive structures of an individual to suit external experiences. According to this process, the individual seeks to adjust his experiences and ways of thinking to fit with the external reality, as it is a process opposite to the process of assimilation, and it is complementary to it at the same time.

When the process of adaptation takes place, this means generating new cognitive structures, or modifying previous cognitive structures (Hassan Zaytoun, 2003: 85-86).

6-3-Mental Structures:

Piaget believes that the child is born with a set of innate mental structures that are similar to innate reflexes, and he called them schemes, and they undergo a process of continuous change, which leads to the formation of new mental structures. Cognitive learning is nothing but growth or modification in cognitive structures that are in a state of continuous change during childhood and adolescence.

6-4- The Self-Regulation Process (Budget):

The process of self-regulation means the process in which the new information is combined with the existing information in the knowledge structure of the learner. This trigger or that problem. And when he does not have the necessary cognitive structures for that, he becomes in a state of mental consultation or disorder, as Piaget calls it, a state of imbalance. To form new knowledge structures. Piaget considers that the process of self-regulation is one

of the most important factors that work on the child's cognitive development, as the continuous modification occurs in his cognitive structures.

Piaget postulates that there are two basic processes that occur during the process of self-regulation:

Assimilation: It is a mental process responsible for receiving information from the environment and placing it in mental structures existing in the individual, thus the child acquires new experiences and interprets them according to his mental structures. It is a way in which the brain adapts to learning difficulty.

Harmonization: It is a mental process responsible for adjusting these cognitive structures to suit new stimuli. The harmonization process leads to a state of adaptation, and then the individual returns to equilibrium again.

Assimilation and alignment are two complementary processes that result in correcting and enriching cognitive structures and making them more capable of generalization and concept formation. (Hassan Zaytoun, previous reference: 87-91)

7-1- Principles of cognitive learning for constructivists:

7-1- Learning is an active, continuous and purposeful constructive process:

This assumption contains in its flanks a set of learning contents represented in:

7-1-1- Learning is a constructive process:

This means the learner's creation of new cognitive structures (cognitive systems) that organize and interpret his experiences with the data of the perceptible world surrounding him, and thus the learner has a conceptual framework that helps him give meaning to his experiences that he went through.

New systems, and this does not mean that learning is a mechanistic cumulative process of knowledge units, but it is a process of organic creation of knowledge that allows the rebuilding of knowledge structures anew.

7-1-2- Learning is an active process:

This means that he makes a mental effort to discover knowledge by himself. This is done when he encounters a problem, so in the light of his expectations he proposes certain hypotheses to solve it, and he tries to test these hypotheses and may reach a conclusion (new knowledge). However, he may review this result, trying to impose new assumptions, and this means that in order for the activity to be educational, it must be constructive, that is, the learner builds knowledge on his own. (Hassan Zaytoun, previous reference: 96-98)

7-1-3- Learning is a purposeful process of guidance:

Purposeful learning is when the individual pursues goals that contribute to solving a problem he is facing, answering confusing questions, or satisfying an internal self-discipline towards learning a subject. These purposes direct the learning activities and act as a self-motivating force for him and make him proceed in the path of achieving his desired goals. From this we benefit from the importance of defining the learner's purposes from the reality of the learner's life, interests and needs.

7-2- The best conditions are created when the learner is faced with a real problem:

Builders emphasize the importance of learning tasks or learning problems being real, that is, related to the child's life experiences, so that learners see the relationship of this knowledge to their lives, in addition to the importance of problem-based learning, as it helps learners with what they learn and develops confidence in their abilities. The learning process includes the individual

rebuilding his knowledge through a process of social negotiation with others: that is, the individual does not build his knowledge about the data of the empirical world felt through his own activities only, but knowledge is also built with others through negotiation between him and them, and this imposes on us a certain perception of Classroom learning environment that allows learners to exchange knowledge with each other.

7-3-The prior knowledge of the learner is a prerequisite for building meaningful learning:

The learner's prior knowledge is a prerequisite for constructing meaning, as the interaction between the learner's new knowledge and his prior knowledge is one of the important components of the meaningful learning process. New knowledge is built in the light of prior knowledge, but there are images of prior knowledge that affect cognitive learning and acquire many names such as Gut Knowledege, Knowledge Naïve, or Knowledge Intuitive, which is knowledge that children acquire self-acquired through their interaction with the environment, so we find that children build They themselves have cognitive systems that they use to interpret the phenomena and events of the environment in which they live in order to give meaning to their experiences. These automatic or self-cognitive systems may be inconsistent with the prevailing scientific approach, in the sense that they are inconsistent with the data of modern science, and this phenomenon is known as misconception or alternative perceptions. Alternative Conceptions.

7-4- The essential goal of the learning process is to create adaptations that are compatible with the cognitive pressures exerted on the individual's experience:

It means that a person adapts to cognitive pressures, by making changes in the cognitive structures (or cognitive schemas), i.e. schemes, to adapt to the

new elements of experience. What the individual goes through and has a disorder called cognitive pressure, and the goal of constructive learning is to bring about compatibility and adaptation to the learner's cognitive pressure. (Hassan Zaytoun, previous reference: 99-106)

Based on the foregoing, the constructivists emphasize learning based on meaning, that is, learning based on understanding, where the student uses his information and knowledge in building new knowledge that he is convinced of. Accordingly, students must be encouraged to build their own knowledge, and the teacher must help them to make their own ideas clear, and sometimes present them with events that challenge these ideas and provide them with opportunities to use these ideas in multiple situations, and the role of the teacher is not limited to imparting knowledge, but must work to activate it and eliciting and facilitating and directing the learning process. (Ghazi bin Salah al-Matrafi, 2007: 54)

8- Social Constructivist Theory:

Lev Vegotsky (1896-1934), the Russian psychologist, is considered one of the greatest pioneers of social constructivism. Interest in it increased during the last decade of the twentieth century and the beginning of the third millennium AD. Social constructivism is based on the fact that the meaning-making process takes place through language in education. Knowledge is formed through social interaction in a different way. Vygotsky focused on the roles played by society in the development of the individual. Thus, social constructivism shifted the focus of attention to the social experience of the learner.

The emergence of social constructivism came as a result of the criticisms directed by a number of researchers to cognitive constructivism, due to its neglect of some aspects affecting the learning process and knowledge building. They explained that the learning process includes a number of factors, such as: cultural factors - linguistic factors - interactions with others - interaction with others. the

teacher. Therefore, they demanded that constructivism should include placing the social aspect in an important place in the learning process, and that learning should be within the framework of social nature.

In doing so, building concepts, knowledge, skills, and values according to social constructivism is done through social discussion and negotiation between the teacher and the students between the students and some of them as a socio-cultural process to direct the students' estrangement and soften the meaning. During co-action and generation of individual psychological functions.

Hence, social constructivism stresses the role of the other in building the concepts and knowledge of the individual and emphasizes the occurrence of fruitful exchanges between individuals with each other, where the learner builds his knowledge through social interactions based on mutual understanding through linguistic communication and the use of writing, and this interaction helps the growth of the cognitive structure of the individual. individual and its continuous development. (Al-Deeb, 2017: 170-171)

9- The foundations on which social constructivism is based:

Social constructivism was based on several foundations, the most important of which are: (Ernest, 1994, p62).

- Social learning is more active than individual learning, as the individual learns positively among a group of individuals such as his colleagues - the teacher - the parents.

- Social learning helps to build knowledge. Individual learning is less in acquiring knowledge and skill than learning based on social interaction, which in turn helps to build knowledge.

- The individual must learn how to be a social learner, as the individual not only learns knowledge and language, but also acquires a skill about teaching himself how to benefit from the social environment surrounding him.

- Learning social content must be done through social interaction, as this includes communication skills.

- It emphasizes the organized knowledge that has accumulated and is still accumulating - through eras - and complements each other, just as they criticize each other, and just as they contradict each other, when modern theories in various fields nullify the theories that preceded them in previous times.

- Social constructivism asserts that the multiple knowledge systems are nothing but human mental constructs and that the image in which knowledge was formulated - and is still being formulated - in all knowledge systems was done in accordance with many requirements or restrictions, including: governance policies, the prevailing ideology in society, And the religious and moral values that are believed in by those who stand - and are fighting - to make and generate knowledge, and the tendency to impose power, and to preserve the self-economic interests of those who formulated or formulate knowledge, and to preserve their social status.

- One of the requirements of social constructivism in seeing the origin of human knowledge is to take into account in education that knowledge is not transferred from generation to generation, or from teachers to learners; Rather, learners build their knowledge in light of the intellectual and social contexts, and not through purely epistemological tools. Therefore, the knowledge chosen for learning and teaching in all areas of life must be appropriate for the development of the current social context, updating it according to the new knowledge, and in the contexts and climates that encourage learners to build new knowledge, and

cooperate with them to employ it in that context. This, and one of the giants of contemporary social construction pioneers Kenneth Gergen.

Accordingly, many researchers tried to develop a vision of the form of social constructivism based on the principles of constructivism when both Piaget and Vygotsky, as they built two main strategies:

The first: It relies on fundamentalist constructivism with the addition of interactive social patterns within the classrooms, as it considers that the individual style is the basis while recognizing the secondary status of social interaction.

The second: adopts integration and interaction between the cognitive and social patterns, as they form a single framework within the individual by combining the individual's personality and social interaction between him and others, and emphasizes the role of the social dimension in individual processes.

Here, teachers of social constructivism see themselves as mediators between the student in the case of prior knowledge and their social life world, and they try to build an appropriate study environment that works to increase the understanding and development of the student's complex skills. The meaning is useful and builds the boxes of the individual's previous knowledge, and for this reason the role of the teacher is the role of the mediator.

10- Characteristics of social constructivist theory:

The social constructivist theory has several characteristics, including:

-The learner is not seen as being negative and influencing him, but is seen as being absolutely responsible for his learning.

- The learning process entails active processes in which the learner has a role, which requires the construction of meaning.

- Knowledge is not outside the learner, but it is built individually and socially.

-The teacher comes to educational situations with his concepts, not only the knowledge of a particular subject, but also his views on teaching and learning, and this in turn affects his interaction in the classroom.

- Teaching is not the transfer of knowledge, but requires the organization of attitudes within the classroom.

11- Principles of social constructivist theory:

Individuals learn more as a group than each of them individually.

- Full cognitive development requires social interaction.

- The emphasis of social constructive learning on building knowledge, as individual learning is less in acquiring knowledge and skill than learning based on social interaction, which in turn helps to build knowledge.

-Focusing on the individual being a social learner, as the individual not only learns knowledge and language, but also acquires a skill about teaching himself how to benefit from the surrounding social environment.

-Information and ideas do not have fixed meanings for all educated individuals, but they differ from one individual to another depending on the difference in the previous experiences and knowledge structure that each individual has.

- Prior knowledge is a prerequisite for building meaningful learning; Where the learner builds his knowledge in light of the interaction between his new knowledge and his previous experiences. (Qumaz Jamila, 2021: 58)

12- Educational applications of constructivist theory:

- Cognitive theory contributed to the development of pedagogy and the emergence of modern pedagogies in the field of teaching based on the principles of cognitive theory such as the pedagogy of error and the pedagogy of competencies.

-Piaget's theory contributed to the trend of modern pedagogy towards adopting a teaching approach based on strategic learning, which is learner-centered learning, which depends on the role of the learner in creating his own knowledge in which he relies on cognitive representations and his cognitive structure.

- The developmental studies of "Piagi" benefited the authors of the school curriculum in taking into account the learner's cognitive privacy in the different stages of learning and skipping the curriculum according to the characteristics of the learner's cognitive growth. Such as relying on sensible things in the stage of sensory thinking and abstracts in the stage of abstract thinking, and building educational curricula in the light of the cognitive privacy of the learner and overcoming it in the light of cognitive privacy such as relying on sensible things in learning in the stage of sensory thinking and on abstracts in the stage of abstract thinking.

The seventh lecture:

The theory of causal attribution

1-Introducing the theory:

The American scientist Weiner (1985) developed the theory of causal attribution, which has become a well-known and widespread theory in terms of addressing student motivation towards success and avoiding failure by attributing students' achievement to internal and external causes and sources, and believes that students' beliefs about the reasons for their academic success or failure, It mediates between his awareness of the achievement task and their final performance. Students' beliefs about the reasons for their academic success or failure is of great importance in understanding achievement performance.

Weiner's theory aims to clarify the impact of motives on the experiences of success and failure and to explain and predict behavior in the areas of achievement. In other words, the attribution theory does not concern itself with the nature of the action or the event itself, and if these causal factors are characterized by relative stability in repeated situations of success or failure, they affect the subjective probability of success in similar future situations.

Early developments of Weiner's causal attribution theory began with identifying the four main reasons an individual attributes his or her success or failure: ability, effort, task difficulty, and luck. And the characteristics of the orientations of these reasons that were identified and that affect the behavior were known, with their linking to the emotional reactions issued by the individual, which are considered as his motivation for the behavior as well. (Youssef Qatami, 2005, 319)

2- The concept of causal attribution:

The term attribution is realizing or inferring the cause, i.e. attributing and attributing the cause to a specific source, when the individual performs the process of attributing in order to understand or predict and control the world around him or in order to justify his actions and behavior or in order to enable him to achieve psychological and social harmony in the environment in which he lives.

The term attribution refers to individual perceived reasons for an event or outcome, and it is the center of research in that the ways in which the individual arrives at causal explanations and implications for these explanations, in other words, this theory focuses on the way people answer the question why what happened? (Qatami, 2012, 189)

The causal attribution relates to the student's belief and interpretation of the factors responsible for his success or failure in the various tasks, whether these factors are internal related to him, such as mental ability or exerted effort, or external factors related to circumstances of luck, chance, the help of others, or the difficulty and ease of the task. If these explanations are characterized by relative stability with the repetition of the situation, they have a significant impact on the student's performance in the subsequent achievement situations, and this effect varies according to the variation of those factors. (Bahi and Shalaby, 1999, 41)

3- Basic assumptions of attribution theory:

Weiner proposed the basic formula for the attribution theory, which is based on several assumptions, including:

-We try to determine the reasons for our behavior and the behavior of others; It is because we are driven to seek information that helps us determine the relationship between cause and effect.

-The reasons we give to explain our behavior are not random, but there are rules and controls that can explain its reasons to us.

-The reasons we identify for the results of our behavior affect our emotional and non-emotional behavior in the long run. (Ghubari et al., 2012, pp. 192-193)

Weiner also believes that success and failure in completing tasks is attributed primarily to four factors:

-Ability: Attributing success and failure to ability has important applications in education. This is because students' assumptions about their abilities depend on past experiences, and in this kind of attribution we can explain phobias of mathematics, problems with reading, and our dislike of science. These explanations can also be generalized to other academic subjects, and students who question their abilities pose serious challenges to educators, because the history of success and failure of students affects motivation or learning, and upon success, students' sense of self-sufficiency increases, which in turn enhances motivation.

- Effort: Weiner found that students usually do not have an idea of the level of effort they put in to succeed, or that students judge their effort by their activity towards a task. Even in tasks that include real chances of success, successful students believe that they are making more effort than those unsuccessful students, and here it turns out that success increases effort, and effort generates more success.

- Luck: If there is no physical link between behavior and goal achievement, students tend to attribute success to luck, or students who have little confidence in their abilities attribute their success to luck, success in this case does not increase effort, and lack of effort does nothing towards increasing The ability of the student, and therefore the task remains unable to verify.

- Difficulty of the task: the difficulty of the task is judged by the performance of others on that task, and if everyone succeeds in it, this means that the task is easy, and vice versa. Here we have an important fact: if a student succeeds in a task in which others fail, then that student will attribute success to his ability, but if the success of a student in a task is accompanied by the success of others in it, then the source of success will be in the task itself. There is no doubt that the difference in these factors leads to a difference in the behavior of the student in future situations and occasions.

In this context, Weiner (1979) developed a causal attribution model according to the following table:

Table representing the patterns of causal attribution developed by Wiener based on the dimensions of location, stability and control

attribution patter	external		internal	
It can be controlled	a variable	Fixed	a variable	Fixed
	Help others	Teacher bias	instantaneous voltage	usual effort
It cannot be controlled	luck	task difficulty	the mood	Ability

The previous table indicates the classification of attribution patterns into three dimensions, which are location, stability, and control. Accordingly, the internal causes are power, which is stable and cannot be controlled, normal voltage is constant and can be controlled, instantaneous voltage, which is a variable that can be controlled, and teacher bias, which is constant and can be controlled. Doing and helping others is variable and can be controlled.

It is clear from the foregoing that the three causal dimensions of Wiener have an active interactive formula, and it is believed that they have important implications for motivation. to a sense of vanity and pride, which leads to increased motivation.

While failure leads to a decrease in self-esteem, and some stability (fixed / variable) is associated with expectations about the future. When the student attributes his failure to factors such as the difficulty of the subject, he expects to fail in the subject in the future, but when he attributes the learning results to unstable variable factors such as Mood and luck, he expects to hope for changes in the future when he faces similar tasks, and finally he is linked after controlling and not controlling emotions such as anger and shame. With pride, failure at an uncontrollable task may lead to anger, while success may lead to feelings of luck and gratitude. (Ghubari et al., 2012, 194)

4- Educational applications:

A lot of research confirms the ability of learners to develop the efficiency of their method of attribution through training, and training on attribution is the process that includes improving the student's beliefs about the reasons for his failure and success in order to develop his motivation for future achievement, and training programs on attribution are being developed To improve academic behavior For students with reading difficulties, in order to reduce their tendency to attribute failure to factors that can be controlled, however, some experts stress

the necessity of not only addressing the method of attributing failure, but that good training should teach students how to attribute the results of each of failure and success also.

There are many educational applications that the attribution theory can provide, including:

- Enabling students to formulate and achieve their goals: The teacher can enable his students to formulate their goals by following many activities, such as training students to define their learning goals, formulating them in their own language, discussing them with them, and helping them choose the goals that they acknowledge their ability to achieve in proportion to their efforts and preparations. Thus, it helps them to determine the appropriate strategies that must be followed when trying to achieve it.

- Stimulating students' needs for achievement and success: Students' needs for achievement are available to them, but at different levels, and the level of these needs may not be reached by some students to a level that enables them to formulate their goals and make the necessary efforts to achieve them. Therefore, the teacher must direct special attention to these students, especially When they show behavior that indicates their unwillingness to perform their school work, therefore, assigning a student with a low need for achievement and success, making the necessary effort to carry out relatively easy tasks to ensure his success in them, and underestimating the value of undesirable results, can lead to stimulating this student's need To achieve, and to increase the level of his desire to exert effort and success, because success enables him to trust himself and his abilities, and pushes him to make more effort.

- Training students with difficulties: so that their perceptions turn from factors that cannot be controlled (such as lack of ability) to factors that can be controlled (such as lack of effort), which leads to an increase in the performance

of these students, and to more motivation and perseverance and to attributing failure to perform The task leads to a decrease in effort only, and this of course leads the student to increase his effort, which contributes to improving his achievement performance.

- Providing students with academic support: Students do not learn without support or assistance, even when their motivation to learn is high. When students feel in need of help or are going through difficult circumstances, a number of sources must be provided to which they turn, such as the teacher, or additional readings..... Therefore, it is the duty of teachers to support weak students, until they reach a level of motivation that allows them expecting success.

- Showing the pupils' realistic point of view about the components of success: it is imperative that the pupils adopt a certain understanding of success, its criteria and components. Some students set impossible standards for success (such as obtaining a score of 12 in all subjects), and therefore any fall short of this mark is a form of failure. As educators, we need to encourage students to define success as something that happens over time rather than something that happens immediately. We also have to show students that mistakes are a normal and useful part of the educational process.

- Developing means that help students monitor their self-progress: Students are often hasty and expect success overnight. However, the development of skills and knowledge takes a long time, sometimes. Students may notice their weaknesses and failures in their performance, sometimes ignoring the progress and success they are achieving. We have an obligation to help our students focus on getting better. We might give them occasional unscored tests, give them verbal or written feedback about small accomplishments, or provide them with charts to track their own progress. (entry, 2014, 26-28)

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