

Psychological foundations of learning - An integrative view between behavioral theory and cognitive theory

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Abstract: In this article, we discuss the psychological foundations on which the learning process is based, trying to combine two main theories in educational sciences: behavioral theory and cognitive theory. Relying on one theory does not give us a comprehensive explanation of learning. Combining the two theories allows for the construction of a more comprehensive model. We seek to discuss each theory's view of how learning occurs. Behaviorism views learning as behavior acquired by the learner as a result of the interaction between external stimuli and responses. It can be shaped by training, reinforcement, and punishment. This theory emphasizes the principle of direct observation of behavior and focuses on some practical procedures performed by some scientists, such as classical conditioning (Pavlov) and procedural conditioning (Skinner). From the cognitive perspective, learning is an internal mental process based on processing information, building mental perceptions, and solving problems. This theory pays great attention to how information is received, stored, and retrieved, emphasizing the role of higher brain functions such as attention, concentration, and memory. The article recommends that educators adopt educational strategies that combine the principles of behavioral theory and cognitive theory to ultimately ensure learner motivation and effective learning. Because this integration produces a more balanced educational approach, the learner is regarded as a being who lives in a specific environment influenced by external stimuli, while simultaneously acting as an active participant in constructing their own knowledge, thereby enhancing the use of their mental abilities and potential.

Keywords: Learning, Learning Theories, Behavioral Theory, Cognitive Theory

1. INTRODUCTION

Learning constitutes an essential process in human life. It is the foundation upon which individual development and cognitive, behavioral, and social growth are built. Scientists have sought since ancient times to understand and explain the mechanism of learning in humans. They have provided several explanations, some of which relied on experimental methods. These attempts have led to the emergence of many theories that explain how knowledge and information are acquired and retained in humans through many experiments and tests. Learning theories have provided important explanations about how the learning and teaching process takes place in the field of educational sciences and have explained the mechanisms underlying knowledge acquisition and development in learners. Among the most important of these theories that have left a wide impact in this field, we mention the behavioral theory, which focuses in its presentation on the importance and role of external stimuli and reinforcement in achieving learning and shaping behavior in general. Cognitive theory, which is concerned with mental structure and internal thinking processes and their major role in building and absorbing knowledge. Despite the differences in the views of the pioneers and concepts of each theory, trying to combine them in an integrated vision can give us a deeper understanding of the learning process and strengthen the effectiveness of contemporary educational practices, thus meeting the needs of learners in renewed and diverse educational environments.

1.1 Problem Statement

In the past, individuals learned a lot from their life without any obstacles or impediments. They believed that experience was the primary means of learning about life matters. Parents, craftsmen, and businessmen instructed their children automatically without the need for theoretical support or a scientific method. The children were learning without the educators and those in charge of education feeling the need to learn theories. Indoctrination and traditional methods were the main means of the learning process, with different methods of punishment. The teacher had no choice

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but to teach the students in the same way he had learned since he was a student. (Al-Sharqawi, 2012, pp. 30)

But when the school developed and came to be viewed as an institution established by society to perform the function of education and learning, and learning became compulsory in many societies, many educational problems began to appear and those in charge of education realized that learning in school was not at the required level of competence.

With the emergence of educational research, many questions began to arise regarding the learning process in schools. Consequently, educators turned to developments in psychology and educational theory, finding in them valuable guidance to address numerous problems, answer key questions, and generate new ideas. These theories have given rise to various educational applications, positioning theory itself as a tool for guiding the learning process. They provide the ideas, principles, and foundations necessary to assess the adequacy and effectiveness of learning situations in schools. For researchers to find answers to the many questions that arise when talking about learning, such as: What happens to the learner during the learning process? What is the impact of internal factors (motivation, experiences...) On learning?

What is the effect of external factors (amount of practice, material to be learned) on learning? (Al-Sharqawi, 2012, pp. 30-31)

Learning theories have sought to explain how individuals acquire, process, retain, and retrieve knowledge during the learning process. Under various environmental, cognitive and emotional influences along with previous experiences play a vital role in understanding, acquiring and retaining skills or knowledge. (Mustafa H. Gandhi; Pinaki Mukherji,2023)

Attempts to understand human behavior have led to many experiments in laboratories on animals and individuals, and in school situations themselves. The goal is to arrive at principles, methods and theories that achieve better learning for the individual in learning situations. However, researchers in learning psychology have confirmed that there is no single theory that can achieve the previous behavioral goals in the different situations in which the learning process occurs, which has resulted in

different methods and multiple theories. Therefore, in this research paper, we will try to address the behavioral point of view, and its different interpretations of how the learning process occurs, on the one hand. On the other hand, exposure to the cognitive theory's perceptions of the learning process and the various procedures accompanying it, and an attempt to build an integrated vision between the two theories to achieve the maximum learning goals, from which the following questions can be asked:

How effective is it to integrate behavioral theory and cognitive theory into a single model in education?

Does building integration between presenting behavioral theory and presenting cognitive theory lead to achieving learning goals?

1.2 Research Objectives: Through this research paper, we seek to achieve the following goals:

1. An attempt to analyze the psychological foundations on which both behavioral theory and cognitive theory depend.
2. Clarifying the similarities and convergences between the two theories as well as the differences.
3. Seeking to propose an integrated vision between the two theories that combines the two proposals and contributes to strengthening educational practice.

2. Theoretical Framework

2.1 Definition of Concepts

2.1.1 Definition of Learning

Learning in Psychology "An almost permanent change in behavior resulting from experience" (2001-Boron) This definition includes a number of aspects of learning:

A- The change in behavior must be almost constant: changes resulting from illness, hunger, or fatigue are excluded from the general definition of learning. A person who has not eaten for two days has not learned to feel hungry, and a sick person has not learned to run slowly.

B- Change in behavior occurs through experience (the interaction between the individual and the environment): Change resulting from maturity, such as increasing height or changing hair color, is not considered learning, and learning can occur through observation as well as through experience.

(Thorndike, 1983: p. 16)

2.1.2 Definition of Learning Theories

Organized attempts to explain how learning occurs internally, explaining how knowledge is introduced, processed, retrieved, and used in appropriate situations, in addition to studying the factors that enhance learning. The primary goal of learning theories is to understand human behavior in terms of how it is formed, identify its variables and causes, and attempt to explain the processes of change and modification that occur in this behavior with the aim of formulating general principles and laws to control and guide it.

2.1.3 Behavioral Theory

One of the learning theories believes that human behavior can be controlled through rewards and reinforcements in certain environmental conditions. Learning is believed to be affected by a range of factors such as motivation, training, and practice using conditional techniques. (Muhajirah ;2020, p38)

2.1.4 Cognitive Theory: One of the most modern learning theories that relies on the idea of perception, understanding relationships to build knowledge and is concerned with how a person receives, organizes, stores, and retrieves information. (Michel, feder;2024)

2.2 Factors Influencing Learning

The learning process is not an end but a means to achieve established educational and instructional goals. It does not occur in a vacuum or in isolation from other influences; rather, it is shaped by a range of factors that affect its effectiveness. Researchers in educational psychology have mentioned the most prominent of these factors:

1. Maturation: These are biological and physiological changes that occur in an individual's structure without the need for training or learning. These changes are accompanied by almost permanent behavioral changes. Maturity is an important factor for successfully completing the learning process an individual cannot acquire experiences unless he reaches a certain level of maturity, whether mental, biological or social, which enables him to learn about the situation. Otherwise, this situation will frustrate the learner or thwart his attempts.

2. Readiness: The set of characteristics present in an individual's society constitutes a basis that facilitates or hinders learning, as readiness is linked to factors of maturity and training. Maturity provides the capabilities that indicate the readiness of individuals to learn certain skills, while training works to develop and motivate readiness in the learner.

3. Motivation: That internal (subjective) force that drives an individual's behavior and directs him to achieve a specific goal. This force is consulted by factors that stem from the individual himself or from the physical or psychological structure surrounding him.

4. Understanding: Gardner defined it (Gardner): the ability to take knowledge and skills and apply them appropriately to new situations. Understanding is a crucial factor in acquiring knowledge and transferring it from the tangible to the abstract, thus helping to advance the educational process.

5. Repetition: It is considered one of the pillars of the educational process in that it is a continuation of the relationship between the stimulus and the response. A person needs to repeat the performance required to learn an experience in order to be able to repeat it. Repetition leads to stability and advancement of experience. (Rawya, 2016: pp. 25-30).

2.3 Elements of the Educational Process

1- Learner: According to Bashir (Abrir), he is a person in a state of learning, and he is a fundamental pillar in the educational learning process. This term applies to children and adults, as it is more comprehensive than the term student.

2- The teacher: The teacher is the key to the educational process. The teacher occupies a prominent role considering the traditional trend.

The ideal teacher is the one who knows as much information as possible and works to charge it in the minds of learners.

In modern trends, the teacher is no longer just a prompter, lecturer, or preserver of conditions, but rather a guide who mixes learning (facilitator), and his role is not limited to the classroom, but rather expands from before entering it to after leaving it, starting with thinking about accomplishing a work with the learner to planning to implementing it.

3- Curriculum (curriculum): The curriculum constitutes one of the most important elements of the educational process, as it has a positive and negative impact, and includes objectives, content, classroom and extracurricular activities, and evaluation tools, and thus its importance is due to it being the means that determines the milestones of the path for both the teacher and the learner, which ensures that the educational process is systematic rather than random or improvised.

2.4 Behavioral Theory

Behavioral theory (Behaviorism) is one of the oldest and most important theories that greatly influenced curricula and teaching methods in the past and in the present days, as it appeared at the beginning of the twentieth century as a reaction to traditional curricula that focused on memorization and indoctrination. It was founded by a group of scholars such as John Watson (John B. Watson), Burroughs Frederick Skinner (B. F. Skinner) and Ivan Pavlov (Ivan Pavlov), who hypothesized that human behavior can be scientifically studied and can be understood, interpreted, and controlled by studying the observed relationships between stimuli (Stimuli) and responses (Responses), regardless of the presence of internal mental processes that are not directly observable.

Behavioral theory holds that learning comes as a result of experience and training, through mechanisms and processes such as classical conditioning (Classical Conditioning) proposed by Pavlov, and procedural conditioning (Operant Conditioning) developed by Skinner. This theory has contributed to the formation of practical educational strategies that have proven effective, such as positive reinforcement, negative reinforcement, punishment, and behavior formation, which has made it gain a prominent position in many educational and training practices, especially in the areas of behavior modification and organizing the learning environment.

Behavioral theory has been subjected to criticism due to its lack of attention to cognitive and emotional factors, but it still maintains a pivotal position in learning achievement, given the clarity of concepts, the ease of applying practices in the field, and the possibility of measuring behavior.

2.4.1 Classical Conditioning (Pavlov): Simple conditioning is one of the basic learning methods, based on the idea of forming a strong link between a neutral stimulus and a natural stimulus so that the neutral stimulus can later lead to the same response that the natural stimulus elicits. It was discovered by the Russian scientist Ivan Pavlov (1849–1936) while he was studying the physiology of digestion in dogs, where he noticed that dogs show a response (drooling) before serving food when they see or hear the experimenter's steps. He initially attributed this to psychological factors, then he studied this phenomenon scientifically.

2.4.1.1 Pavlov's Experiment:

He installed a tube in the dog's temple to measure saliva and linked the idea of serving meat powder (a natural stimulus) to the sound of a tuning fork (a neutral stimulus) where food is served immediately after the sound of the fork, and he repeated this pairing about 30 times, until the sound alone became sufficient to secrete saliva (conditional response). In the end, it was concluded that the neutral stimulus gained the ability to cause a response thanks to (the law of coupling).

2.4.1.2 Bekhterev's Experiment (1913):

Replace food with a non-strong electric shock in the dog's leg. The sound was made followed by an electric shock, and as the process was repeated, the dog began to bend his foot to escape the pain only when hearing the sound. This type is called defense requirement because it is based on a repulsive stimulus.

Therefore, we conclude that the simple condition is to learn new responses by linking neutral stimuli to natural or repulsive stimuli, so that the neutral stimulus acquires the ability to produce the desired response. (Al-Sharqawi, 2012, pp. 33-34)

2.4.1.3 Basic Processes in Classical Conditioning (Laws of Conditioning):

1- Extinction: If the conditional stimulus appears repeatedly for a period of time without being reinforced by the natural stimulus, the conditional response gradually weakens and resolves, and eventually it turns off, meaning the conditional response does not appear. If the bell rings repeatedly without food being served, the amount of saliva decreases

somewhat until it stops completely. (Ghabari and Abu Shaira, 2009, p. 120)

2- Reinforcement: Learning does not occur unless the condition for reinforcement is met, and this occurs as a result of the sequence of the situation as follows: conditional stimulus, natural stimulus, response at appropriate time intervals.

3- Discrimination: When a conditioned response is formed in association with a particular stimulus, stimuli that differs from it and are not followed by reinforcement do not evoke the conditioned behaviour.

4- Automatic retrieval: It involves presenting the conditional stimulus after a period of rest, so the learned conditional response reappears again after the extinction occurs (Hanan Al-Anani, pp. 2008 171-172).

2.4.2Operant Conditioning Theory (Skinner):

We note that Pavlov's theory of classical conditional learning holds that the focus of the educational process is the connection between the stimulus and the conditional response, as many psychologists have believed that there is no response without a stimulus.

But scientific experiments have shown that there are many behaviors issued by living organisms that are not linked to a specific stimulus. We find that many manifestations of spontaneous behavior issued by a living organism are the result of its internal needs and motives, and much of the voluntary behavior was learned in the presence of certain motives and rewards.

The American psychologist Skinner gave great attention to this type of conditioning, which he called procedural conditioning. In order to understand learning through procedural conditioning, we first need to distinguish between two types of behavior: procedural and responsive:

Responsive behavior: A direct response issued in response to a specific stimulus (drooling...)

Procedural behavior: It is issued by the organism not in response to specific external stimuli, but rather it is issued automatically and aims to obtain specific rewards and results.

Example: Observations of a cat placed alone in a closed room reveal that it may walk around, explore by smelling objects, or pick up and play with a

ball. Such behaviours are not elicited by specific stimuli; instead, they appear to occur spontaneously and automatically.

Most types of voluntary behaviour in organisms are operant in nature. The stimuli associated with them are not always identifiable, and we often acknowledge their existence only to explain the behaviours we observe. Examples include writing a word, turning on the TV, reading a book, lighting a cigarette, or going to the theatre. These are all observable behaviours, yet the stimuli or drives that prompt us to perform them are not always apparent. In fact, if we tried to answer this question, we would find it difficult to identify the direct triggers for these behaviors. It may be more accurate to say that the trigger present during the occurrence of these responses is merely a circumstance accompanying them, rather than a direct cause. This is evident from the fact that the same behaviours may occur in other situations where those triggers are absent. (Ghabbari Abu Shaira, 123-124)

2.4.2.1 Skinner's Experiments:

Skinner chose to conduct his research on animals, notably mice, because their behavioural patterns are less complex than those of humans, enabling more precise control, manipulation, and reorganization of experimental conditions as required. Skinner's experiments were many, as he conducted them in a device that was later called (Skinner's box), which is a glass box in which there is a floor with metal wires connected to an electric current used for punishment. On one side of the box there is a crane and on the other side there is a food store used for reinforcement. The device also has a control panel through which the method of reinforcement, its type and the color of the lighting were controlled to distinguish between stimuli. It also includes components that record the number of responses made by the animal and the frequency of reinforcement. In addition, a cumulative recorder tracks periods of inactivity when the mouse produces no response and provides information about the strength of the response. (Al-Atoum et al., 2017:144)

2.4.2.2 Rat Experiment: A hungry mouse was placed in the box, noting that the box contained a lever (neutral exciter), and while the mouse was inside the box, it was making random exploratory movements, including pressing

the lever When the mouse pressed the lever, a ball of food would come down to him (accidental reinforcement), because the pressure on the lever at the beginning of the experiment was unintentional (spontaneous), and since the amount of food was not sufficient to satisfy him, he remained in a state of searching to satisfy this motive He began to link the adjustment on the lever to the descent of food, so his random movements decreased and the behavior of pressing the lever became intentional (a means) to obtain food (a booster), and then he learned that the response to pressing the lever leads to the descent of food.

2.4.2.3Second Experiment: A pigeon was placed inside the box, which contained two discs: the first was red and labelled with the symbol (A), and the second was of a different colour and labelled (B). The required response was to peck at the red disc. Each peck on this disc was reinforced by a grain of wheat, while pecking at the second disc was not reinforced. The purpose of the experiment was to strengthen the behaviour of pecking the red disc, while extinction occurred when the pigeon stopped pecking the disc that did not yield reinforcement. (Al-Atoum et al., 2017: pp. 144-145)

2.5The Difference Between Respondent Behavior and Operant Behavior

Operant Behavior	Respondent Behavior
The stimulus is relative	The stimulus invariably leads to a response (100%).
The relationship between the antecedent stimulus and the response is probabilistic	The relationship between the stimulus and the response is deterministic.
Controlled by consequent stimuli (reinforcers/punishers).	Controlled by antecedent stimuli
Most human behavior is operant in nature	Respondent behavior represents only a very small proportion of human behavior
Defined by the effect it produces on the environment	Defined by its form and magnitude.
The learner is active	The learner is passive
The teacher's role follows the behavior	The teacher's role precedes the behavior

(Al-Atoum et al., 2017, p. 146)

2.6Key Concepts of the Theory

Reinforcement: Skinner is considered the first to come up with the concept of reinforcement, which is an extension of Thorndike's law of effect, and reinforcement is an event that comes after the behavior (response) and leads to the possibility of its repetition in later circumstances similar to the circumstances in which the behavior occurred.

Skinner identified two sources of enhancers:

First: External source boosters that come in several types

Primary enhancers: These are the physiological needs of the organism (food, drink, clothing)

Secondary or social reinforcers: These include expressions of praise, commendation, protection, and love.

-Symbolic enhancers: These include signs, symbols, images, stories, and certificates of appreciation....

Second: Internal reinforcers: These are represented by the state of satisfaction and spirit that the membership feels as a result of satisfying the need. They are divided into two types:

A- Positive reinforcement: increasing the probability of behavior appearing as a result of adding or appearing a desired stimulus (reinforcement)

Example: Behavior (pressing the lever) = result (food ball coming down). The probability of the pigeon pressing the lever increases as a result of obtaining the food ball (we notice that the ball came after the behavior and not before it, which made it repeat the following times, as the pigeon began pressing the lever whenever it was hungry in order to obtain food.

B - Negative reinforcement: It is an increased probability that the behavior will occur as a result of (removing or withdrawing) to avoid an unwanted stimulus

Example: Behavior: Taking an aspirin pill = Result: Getting rid of pain The probability of taking an aspirin pill will increase as a result of getting rid of the headache (we note that getting rid of the headache came after the

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behavior and not before it, which is what made the behavior of taking an aspirin pill repeated the following times).

Punishment: An event that comes after the behavior (response) and leads to the possibility of the behavior not being repeated (decreased) in circumstances similar to the circumstances in which the behavior occurred. It is also divided into two types:

Positive punishment: decreased appearance of unwanted behavior (punished)

Example: Behavior: The child screams = Result: The mother hits the child. The possibility of the child screaming will decrease as a result of the mother hitting him (we notice that the child's hitting came after his screaming and not before it, and it is what made the screaming decrease in the coming times, as the child began to stop crying because of the hitting).

Negative behavior: It is a decrease in the probability of the behavior occurring (as a result of removing or withdrawing) a desired stimulus.

Example: Running away from school = result: deprivation of weekly allowance. The student will be less likely to escape from the principal as a result of being denied escape.

2.7Cognitive Theory: Cognitive theory is one of the most important modern trends in explaining the learning process, as it focuses on the internal mental processes that the learner performs while receiving, processing, storing, and retrieving information. Unlike behavioral theories, which were concerned with studying only apparent behavior, cognitive theory came to confirm that understanding learning requires studying the processes that occur within the "mind" such as attention, perception, understanding, memory, and problem solving.

2.7.1. Piaget's Theory

Jean Piaget's theory of cognitive development is regarded as one of the earliest to explain how human cognition progresses over time. It constitutes a key domain within the study of human growth and development.

The following is a detail of this theory. Piaget states that humans inherit two basic tendencies:

Organization, i.e. the tendency to arrange and compose processes into interconnected system or systems.

Adaptation is the tendency to conform to the environment.

Learning, according to Piaget, is an individual, internal activity through which the learner attempts to understand reality and adapt to it (return to a state of balance) through the processes of assimilation and adaptation. It is a transcendence and negation of the disturbance caused by the problem situation.

Just as digestion turns food into a formula that the body can use, mental processes turn experiences into a formula that the child can use to deal with new situations. Just as biological processes must remain in a state of balance and regain their balance whenever this balance is disturbed, mental processes also seek balance through the process of restoring balance. Restoring balance is a form of self-regulation that children use to achieve coherence and stability in their perception of the world and their understanding of inconsistency in goodness.

Adaptation is an individual's tendency to conform to his environment and includes two processes that complement each other: Assimilation and Accommodation. In order to understand these two processes, it is first necessary to understand another basic concept according to Piaget, which is Schema. A schema is an organized pattern of thinking or behavior formulated by children as they interact with their environment, their parents, their teachers, and those of their age. Schemas may be behavioral (example: How to throw a ball) or cognitive (make sure that there are many different types of balls), and the child may adapt either by interpreting experience so that it fits the existing scheme in his cognitive construction), or by changing the existing scheme to fit the new idea (alignment), take for example a child walking with his father and this child sees a butterfly, the child will say to his father (Dad, look at this bird), This condition is called representation because the child changed the characteristics of the butterfly to suit his mental schema, which tells him that everything that flies is the bird, and thus balance and knowledge occur. Then he now corrects the child and says to him (no kid), then a state of imbalance will occur, and the father continues (This is not a bird, this is a butterfly), and this state is called

alignment because the child changed his cognitive plan to suit the shape present in the environment, and thus the state of balance returns (Ghabari and Abu Shaira, 81:2009-82)

2.7.2 Stages of Cognitive Development (Piaget)

2.7.2.1. Sensory-Motor Stage (birth to ~2 years)

This stage of cognitive development begins from birth until the end of the second year of life. In this stage, the child represents the world around him through sensory processes - mechanisms such as seeing, hearing, grasping and sucking. However, these systems begin to develop as the child develops, enabling him to replace reflexes with voluntary actions, thus forming more complex actions. His thinking here focuses on tangible things, and what is absent from his senses is absent from his thinking. This stage ends when the child is able to form a mental image and think about things even if they are not present in his circle of senses. Or it can be said that at this stage the child's ability to control his body movements increases and he learns to coordinate sensory information (Asia Abdullah 2007: pp. 108-109)

2.7.2.2. Preoperational Stage (ages 2–7)

This stage is called the pre-operative stage because the child's logical mental processes or laws of thinking do not develop. This stage extends from the beginning of the second year (2) to the seventh year (7) of life and is characterized by the growth of internal mental representations and the use of internal mental images and symbols, and the development of the concept of the survival of things despite their absence from the senses.

At this stage, the language factor appears, which contributes to the development of the child's thinking and enables him to express his needs, feelings and thoughts. This stage enables the child to visualize mentally, interact with others, and develop cognitive abilities such as understanding, reasoning, and imagination. Nevertheless, the child's thinking remains limited to direct experiences and is largely egocentric, as he is not yet capable of recognizing or appreciating others' perspectives. (Asia Abdullah 2007: 122)

2.7.2.3. Concrete Operational Stage (ages 7–11)

Piaget described this stage as involving mental processes or actions that intertwine to form systems enabling individuals to think logically. These processes are closely connected to sensory experiences, as perception through the senses provides the foundation for reasoning and understanding.

Children over the age of seven are usually able to mentally reverse actions, but their thinking is limited to things that actually exist in the present and that they tell directly, and therefore this stage is called the stage of physical processes, and the nature of this stage can be explained by the child acquiring the concepts of retention and survival of things.

As soon as most children reach the age of seven, they are able to come out correctly, and the water that is poured into a short, wide glass container and transferred to a long, thin container remains the same amount. (Ghabari and Abu Shair, 84:2009-85)

2.7.2.4Fourth: The Stage of Formal Operations

This stage extends from the age of eleven (11) to the age of fifteen (15). It is called the period of abstract, basic, or formal processes because the instructions and mental activities in this period are remarkably close to those observed in basic logic. It is characterized by the child's ability to interact efficiently with verbal assumptions, and to rely little on real, realistic incidents and things in solving problems. By being able to generate all the possible outcomes of an event, it can be said that at this stage most children can make hypotheses and test them mentally without actually dealing with tangible things. They can also deal with problems and develop strategies to solve them. (Asia Abdullah 2007: 115).

2.7.3Some Principles of Piaget's Theory

Problem mode is essential for building learning as the learner builds his knowledge best when faced with situations or facing a real problem.

The learner builds his new experience in light of his previous knowledge (the conflict between previous knowledge and new knowledge).

Error is a condition for learning. It is an opportunity and a situation through which we can overcome it and build knowledge that we consider correct.

2.7.4General Principles of Piaget's Theory

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Active construction of knowledge: Knowledge is not received passively from the teacher or from external sources, but is built through the learner's activity, meaning that the learner participates in the development of knowledge and it depends on his personal experiences.

Learning through interaction with the environment: Individuals learn by interacting with their environment and social surroundings. This means that interaction with others and with the world around them is considered the basis for understanding concepts and knowledge.

Cooperative learning: Learning occurs best when it takes place in a social context, that is, when individuals work together and collaborate to solve problems and understand concepts.

Proximal development zone: This is the difference between what learners can do on their own and what they can do with the help of others. Help may come from a teacher or peers, and it expands the scope of learning.

The active role of the teacher: The teacher is not just a source of information, but rather a guide and a manager. The teacher must help learners build their knowledge by asking stimulating questions, stimulating critical thinking, and providing helpful activities.

. Behaviorism vs. Cognitivism

	Behaviorism,	Cognitivism
Learning	Change in behavior as a response to a stimulus	Knowledge is constructed internally to overcome cognitive disequilibrium
Acquisition	Repetition–memorization–rote recitation	Diversification of learning situations
Role of the learner	Learner is a passive recipient, a “blank slate”	Learner-centered, active, and constructs knowledge autonomously
Role of the teacher	Teacher as the authority and source of knowledge	Teacher as facilitator and guide

Case Study: Art Education

Using the following colors: red, blue, orange, yellow, violet

Task: Color the following drawing in green.

Teacher A (Behaviorist):

By employing direct instruction, the teacher declares: “Green = Blue + Yellow. Now go ahead and color.”

→ Here, the teacher is the source of knowledge and the central actor in the learning process.

Teacher B (Cognitivist):

Provides only the mentioned colors and allows learners to experiment and discover on their own that Green = Blue + Yellow.

→ Here, the teacher acts as a guide and facilitator, while the learner is placed at the center of the learning process.

Contemporary education no longer relies exclusively on a single theory to achieve learning objectives. Instead, it increasingly tends toward integration and complementarity between perspectives and models. One of the most significant areas of integration lies in combining behaviorist theory, which emphasizes stimulus–response mechanisms, with cognitive theory, which emphasizes internal mental processes. This constitutes the central idea of the present article.

3. Justifications for Integrating the Two Theories

To achieve the principle of comprehensiveness of understanding, we need to combine the two theories: behavioral shows how we acquire behaviors and skills, and cognitive shows how we understand, retain, and employ them. We also need to achieve effective learning. Training behavior is not enough if we do not support it with understanding and comprehension, and understanding is not enough if it is not accompanied by practical training and repetition. The urgent need to achieve educational justice requires us to respond to the principle of individual differences. Some learners respond more to behavioral methods, and others interact with cognitive activities. Therefore, it seems that the option of adopting the strengths of both theories is necessary and very useful to achieve the maximum learning goals.

3.1. The Proposed Integrative Model

Behavioral theory seeks to achieve the purposes of learning by formulating

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measurable behaviors through which the learner acquires behavioral skills that ultimately enable him to gain good learning experience, while cognitive theory embodies the goals of learning by formulating cognitive outcomes and understanding concepts so that the learner, at the end of the learning process, reaches an understanding and a comprehension of the reasons and facts behind the formation of concepts, variables and phenomena. The integration between the two theories is achieved by formulating objectives that include both skill dimensions and understanding dimensions simultaneously.

Anyone who contemplates behavioral theory will find that it adopts teaching strategies that rely mainly on reinforcement, repetition, and practical training to achieve learning goals and reach the highest levels of mastery, while cognitive theory focuses on strategies that enhance the use of the learner's cognitive abilities such as discussion strategy, problem solving, and the organization of information. This is what prompts the learner to make use of his mental abilities so that the process is more effective. Integration here is achieved by defining the cognitive concept to be taught and simplifying it for the learner to form a mental image of how it was formed or developed, and then repeatedly training the learner through practical practices, which contributes to achieving stability and achieving the goal.

Behavioural theory relies on observation techniques to assess the learner's ability to achieve predetermined objectives through actual performance, and to compare these results with the established standards in the field. While cognitive theory, in this context, adopts a different perspective, focusing on the learner's ability to understand and internalize the concept and acquire the principle that enables him to solve similar problems. Integration between the two theories is achieved by measuring actual performance in the field and evaluating weaknesses to obtain the desired performance, as well as adopting cognitive interpretation at the same time until integration occurs between the practical aspect and the cognitive aspect.

The teacher gains a high position in the learning process, and his role is pivotal and necessary. In this context, behavioral theory believes that the

teacher's role is to direct learners' behavior to achieve learning goals.

According to behavioral theory, the teacher is no longer just a prompter, lecturer, or controller of learning conditions, but rather a guide and mentor of learning. His role is not limited to the classroom but extends beyond it—to the stages before and after instruction. It begins with planning the task collaboratively with the learner, continues through its implementation in the classroom, and concludes with follow-up and evaluation after completion. As for cognitive theory, it also gives the teacher a prestigious position and assigns him a number of effective roles. According to cognitive theory, the teacher is not just a source of information and experiences but plays a direct and motivating role in helping learners gain understanding and construct knowledge. His role is to help learners build their knowledge by asking motivating questions, stimulating critical thinking, and providing helpful activities. Knowledge is not received passively from the teacher or from external sources, but rather is built through the learner's activity, meaning that the learner participates in developing knowledge and it depends on his personal experiences, and the goals of learning are achieved through the teacher's adoption of cooperative, interactive, and learner-centered teaching methods. The integration between the two approaches is achieved by guiding learners in knowledge acquisition methods and applying them practically across all stages of thinking, planning, and implementation. On the other hand, working to activate the role of the learner, enhance his position and motivate him to build knowledge using the various methods mentioned, such as mental activation, involving him in the cooperative and interactive learning method until the ultimate learning goals are achieved in the end.

Behavioral theory sees the learner as the basis of the learning process. He receives guidance from the teacher and seeks to implement responses that are consistent with the learning objectives. The learner is considered successful when he produces the greatest number of required responses in the classroom. Therefore, he depends on what he receives from the teacher, and his role is somewhat limited. While according to cognitive theory, the learner should move beyond passive reception of information to become an active constructor of knowledge, through preparation, information

gathering, questioning, and problem-solving. The use of cooperative and activation methods should be encouraged because of their great benefits in building and shaping cognitive experiences. Integration and consolidation between the perspectives of behavioural and cognitive theories represent an effective approach to achieving the learner's fullest potential. The learner is prepared to acquire knowledge from the teacher and, at times, develops positive responses toward it. He demonstrates the initiative to seek knowledge and access scientific material directly through interaction and active participation. This enables him to acquire knowledge independently and become an active agent in achieving meaningful learning outcomes.

4. CONCLUSION

There is no doubt that integrating behaviourism with cognitivism creates a balanced educational model. It enables educational policymakers in our country to adopt the positive principles proposed by behavioural theory to enhance the educational process principles that have proven effective in various contexts and curricula. These include training, reinforcement, and conditioning, while avoiding certain shortcomings such as neglecting internal mental processes, viewing the learner as a passive recipient of knowledge, and ignoring the meanings the learner constructs about knowledge and about the self. Likewise, adopting the positive principles of cognitive theory, which focus on the learner's mental abilities such as attention, concentration, memory, thinking, perception, and information processing promotes meaningful understanding and deep comprehension. Combining the two approaches leads to education that ensures both mastery of essential behavioural skills and deep understanding of content and ideas.

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