JKPI: Jurnal Konseling Pendidikan Islam
P–ISSN: 2655-9692
E-ISSN: 2746-5977
Vol.5, No. 1, January 2024

CHARACTERISTICS OF LEARNING THEORIES IN EDUCATION ACCORDING TO PSYCHOLOGICAL DEVELOPMENT

[*1]Afif Alfiyanto, [2]Warul Walidin, [3]Salami Mahmud
[*1]Universitas Islam Negeri Raden Fatah Palembang,
[2,3]Universitas Islam Negeri Ar-Raniry Banda Aceh
Email: *[1]afifalfiyanto_uin@radenfatah.ac.id, [2]warulwalidin@ar.raniry.ac.id,
[3]salamimahmud@ar.ranry.ac.id

Abstract
This study aims to determine the characteristics of learning theories in education according to psychological development. The method used is a literature review. Based on the researcher's analysis results, it is known that the flow of learning theories has different characteristics, even if the results are emphasized more than the learning process. Examples are 1) the cognitive flow, which emphasizes the learning process; 2) the humanistic school, which emphasizes the content of the lesson; 3) The flow of cybernetics which emphasizes the information system of the material being studied, and many other theories with unique characteristics. The different characteristics of various learning theories are due to 1) different types of learning, 2) learning motivation is low and has many stages, and 3) learning has the nature of skills and abilities and is rational. So to assess whether the opinions conveyed by various experts are accurate based on the flow of learning theory, it can be seen from the unique characteristics appropriate to the learning types.

Keywords: learning theory, education, psychology

Abstrak
Penelitian ini bertujuan untuk mengetahui karakteristik teori-teori belajar dalam pendidikan menurut perkembangan psikologi. Metode yang digunakan adalah kajian pustaka. Berdarkan hasil analisis peneliti, diketahui bahwa aliran teori-teori belajar mempunyai karakteristik berbeda, bahkan hasil lebih ditekankan daripada proses belajar. Contohnya yaitu 1) aliran kognitif yang lebih menekankan pada proses belajar, 2) aliran humanistic yang menakan isi pelajaran; 3) Aliran sibernetik yang menekankan system informasi dari materi yang dipelajari, dan masih banyak lagi teori yang memiliki karakter khusus. Adapun karakter yang berbeda dari berbagai teori belajar dikarenakan 1) jenis pembelajaran yang berbeda; 2) motivasi belajar rendah dan memiliki banyak tahap; 3) pembelajaran memiliki sifat keterampilan dan kecakapan, serta rasional. Sehingga untuk menilai apakah akurat pendapat-pendapat yang disampaikan oleh berbagai ahli berdasarkan aliran teori belajar, dapat diketahui dari karakteristik-karakteristik khusus yang sesuai dengan jenis-jenis belajar.

***Kata kunci**: teori belajar, pendidikan, psikologi*

INTRODUCTION

Psychologists have done a lot of research on learning theories. Various learning theories have been created due to the hard work of research. Criticism of learning theories that already exist and are felt to have weaknesses is always done by experts. New learning theories are also present in the world of life, filling the pages of history in the world of education. Entering the 19th century, psychologists conducted experimental research on learning theory, although, at that time, experts used animals as research objects (Ruhmawan, 2017) The use of animals as research objects is based on the idea that if animals whose intelligence is considered low can conduct learning theory experiments, then it is certain that the investigation can apply even more successfully to humans because humans are more intelligent than animals (Ratnawati, 2016)

In the realm of psychology, the use of animals as subjects for research has been a longstanding practice, and two prominent figures in this domain are Edward L. Thorndike and B.F. Skinner. Thorndike is renowned for his pioneering work in classical conditioning learning theory, employing dogs as test animals in his experiments (Ariesta, 2021). On the other hand, Skinner is famous for developing the concept of operant conditioning and conducted experiments utilizing rats and pigeons as his test subjects (Idayanti, 2014). While these behavioral theories have significantly contributed to our understanding of learning processes, it is crucial to recognize that every theory, no matter its acclaim, has both strengths and weaknesses.

Thorndike's classical conditioning theory is rooted in the idea that associations between stimuli and responses are formed through repeated pairings. His experiments with dogs involved observing how they learned to associate a specific stimulus, such as the ringing of a bell, with a particular response, like salivating. This foundational research laid the groundwork for the broader field of behaviorism and had implications for both animal and human learning. However, it is essential to acknowledge the limitations of classical conditioning. One notable criticism is its simplicity in explaining complex behaviors. While it may effectively account for certain reflexive responses, it falls short in explaining more intricate cognitive processes involved in learning.

Similarly, B.F. Skinner's operant conditioning theory has made substantial contributions to the understanding of voluntary behavior. Through experiments with rats and pigeons in controlled environments, Skinner proposed that behaviors are strengthened or weakened based on the consequences that follow them. Positive reinforcements, such as rewards, increase the likelihood of a behavior recurring, while punishments decrease the likelihood. Operant conditioning has found applications in various fields, from education to animal training. Nevertheless, critics argue that this theory oversimplifies human behavior by reducing it to a series of stimulus-response relationships. Additionally, it has been criticized for neglecting the role of cognitive processes in learning.

As users of learning theories, educators, psychologists, and researchers are tasked with comprehending the nuances, strengths, and weaknesses of these foundational theories to inform effective teaching and intervention strategies. Recognizing the limitations of classical and operant conditioning theories prompts a shift towards a more holistic understanding of learning that incorporates cognitive, emotional, and social dimensions.

One aspect that merits consideration is the ethical dimension of using animals as test subjects in psychological research. While animals have been instrumental in advancing our understanding of learning, concerns about the welfare and humane treatment of these creatures have prompted ongoing debates within the scientific community. Ethical considerations extend beyond the theoretical frameworks themselves and encompass the methods and practices employed in conducting experiments. Researchers must continuously strive to strike a balance between the pursuit of knowledge and the ethical treatment of research subjects, be they human or animal.

Furthermore, the evolution of psychological theories has led to the emergence of integrative models that seek to bridge the gaps between behaviorism and cognitive approaches. Contemporary learning theories emphasize the interconnectedness of cognitive, emotional, and environmental factors in shaping behavior. For instance, social cognitive theory, proposed by Albert Bandura, incorporates observational learning and emphasizes the role of cognitive processes in acquiring new behaviors. This integrative approach acknowledges the limitations of strict behaviorism and highlights the importance of internal mental processes in the learning experience.

As we delve into the complexities of learning theories, it becomes evident that no single framework provides a comprehensive explanation for the intricacies of human or animal learning. Instead, a pluralistic approach that draws upon various theoretical perspectives may offer a more nuanced understanding. This pluralism allows educators and psychologists to tailor interventions and instructional strategies to the diverse needs and capacities of learners.

Moreover, the application of learning theories extends beyond the confines of traditional educational settings. In the realm of applied behavior analysis, a field rooted in Skinner's operant conditioning principles, practitioners work to address behavioral challenges in individuals with autism spectrum disorder and other developmental disabilities. The principles of reinforcement and shaping behavior play a crucial role in designing effective interventions to enhance adaptive skills and reduce maladaptive behaviors. However, it is essential to approach these applications with a critical eye, considering the unique characteristics and individual differences among learners (Andry B, 2023).

In the context of education, the understanding of learning theories informs instructional design, curriculum development, and teaching methodologies. Educators who grasp the principles of classical and operant conditioning can strategically employ reinforcement strategies to enhance student engagement and motivation. However, a rigid adherence to

these principles may limit the recognition of the diverse ways in which students acquire knowledge and skills. An inclusive and learner-centered approach acknowledges the importance of individual differences, cultural influences, and the dynamic interplay between cognitive and behavioral processes.

Muhyatun, (2023) Said beyond the theoretical and practical considerations, the field of psychology continually evolves as new research and empirical findings shape our understanding of learning. Advances in neuroscience, cognitive psychology, and educational research contribute to a more comprehensive and nuanced view of the factors influencing learning outcomes. The integration of neuroscientific insights, for instance, has enriched our understanding of the neural mechanisms underlying memory, attention, and problem-solving, offering a bridge between the biological foundations of learning and behavioral manifestations.

In conclusion, the exploration of learning theories, exemplified by the work of Thorndike and Skinner, illuminates the multifaceted nature of the learning process. While classical and operant conditioning theories have significantly contributed to the field of psychology, they are not without their limitations. Users of these theories, whether educators, psychologists, or researchers, are encouraged to critically assess their strengths and weaknesses and embrace a pluralistic perspective that considers the interplay of cognitive, emotional, and environmental factors. Ethical considerations, particularly in the use of animals as research subjects, demand ongoing scrutiny and thoughtful reflection. As the field of psychology continues to evolve, a dynamic and integrative approach to understanding learning will pave the way for more effective interventions, informed educational practices, and a deeper appreciation of the diverse ways in which individuals acquire knowledge and skills.

METHOD

The literature review research method is one type commonly used in scientific research. This method is carried out by collecting various reading materials specifically relevant to the research object to be researched or analyzed. The first step in using the literature review method is to determine the concepts and theories that will be applied in discussing the research topic to be carried out. Next, researchers need to look for sources relevant to the topic, such as scientific journals, books, or related articles (Snyder, 2019).

After that, researchers can analyze the sources that have been found to get a better understanding of the research topic. This analysis includes reading and understanding the contents of these sources and drawing conclusions from the information found. In using the literature review method, researchers also need to pay attention to the quality and validity of the sources used. The sources used must come from reliable sources and have good credibility. In addition, researchers also need to pay attention to the year of publication of the sources used to ensure that the information used is still relevant and up-to-date (Lester et al., 2020)

RESULTS AND DISCUSSION

Theories of Learning in Education

To find out the learning theories that experts have put forward, Syaiful Bahri Djamarah explained as follows (Djamarah, 2008)

1. Learning Theory According to Power Psychology

Psychologists put forward a theory that the human soul has potential. These powers are available to control. Humans only utilize all that power by training it so that its sharpness is felt when used for something. These potentials include knowledge management, remembering, thinking, fantasy, and so on (Hasanah & Haridah, 2023). As a result of this theory, learning is just training all these potentials. To prepare for memory, one must memorize words or numbers of foreign terms and train them by solving simple and complex problems. To increase fantasy power, one must get used to contemplating something with effort. Then, these potentials can grow and develop and are no longer latent (hidden) within (Ratnawati, 2016). The influence of this theory in learning is that science is only rote memorization. Mastery of rote material is usually far from understanding. However, this theory can be used to memorize the formulation of postulates, foreign words, etc. Therefore, according to power psychologists, train all the forces within yourself to succeed in learning (Hanafy, 2014)

2. Response Theory

Response theory is a learning theory that opposes the learning theory proposed by power psychology. Herbert was the one who put forward the response theory (Ningrum, 2017). According to Herbert, the theory put forward by power psychology is not scientific because power psychology cannot explain the life of the soul (Indrawati et al., 2016) Therefore, Herbart put forward his theory, the theory of response. According to him, the simplest element of the soul is response. According to response theory, learning includes repeatedly and clearly as many responses as possible. Many answers mean that they are said to be wise, and a few responses indicate that they are said to be less clever. So a smart person means a person who has a lot of responses stored in his brain. If a number of responses are interpreted as a number of impressions, then learning is the input of impressions into the brain and makes people smart, the impression referred to here is certainly in the form of knowledge obtained after learning.

3. Learning Theory According to Gestalt Psychology

Gestalt is a learning theory proposed by Koffka and Kohler from Germany. This theory holds that the whole is more important than the parts. For example, an observer who observes someone from a distance. The distant person was, at first, just a black spot that seemed to move closer and closer to the observer. The closer the person is to the observer, the more the parts or elements of the person's limbs are visible. The observer can say that the person has a head, hands, feet, forehead, eyes, nose, mouth, ears, clothes, pants, shoes, glasses, watches, belts, hats, and so on (Novalita, 2015)

According to learning theory, the most important thing in learning is an adjustment to get the correct response or response. Learning is not to repeat something that must be learned but to understand or gain insight. Learning with understanding is more critical than just including several impressions of learning with *insight* (knowledge) is a) Insight depends on basic abilities; b) Insight depends on the relevant experience (to what was learned); c) Insight only arises when the learning situation is arranged in such a way that all necessary aspects can be observed; d) Insight is something to be sought, it cannot fall from the sky: e) Learning with insight can be repeated; f) Insight can be used to deal with new situations. There are several principles of learning according to Gestalt theory, including:

a. Learning based on the whole. People try to relate one lesson to another as much as possible. Study materials are not considered separate but are a whole. Learning materials that have long been stored in the brain are connected to study materials that have just been mastered, so they are not separate, stand-alone. That way, it is easier to get an understanding. Round study materials are easier to understand than parts.
b. Learning is a process of development. Children can only learn and plan when they are mature to receive the material. Man is an evolving organism, and his willingness to learn something is determined by the maturity of the inner soul and the child's development due to the environment and experience.
c. Students as a whole organism. Students learn not only intellectually but also emotionally and physically. In modern teaching, in addition to teaching, teachers also educate to form the personality of students.
d. Transfer occurs. Learning is the most crucial first adjustment: getting the correct response. The simple or complex problem is mainly a problem of observation. If one ability has been mastered completely, it can be transferred to master another power. In other words, it can be used to learn different things. Learning mathematics, if mastered, can be used to buy and sell certain materials. Likewise, mastery of Indonesian can be transferred (used) to learn English grammar.
e. Learning is an organized experience. Experience is the result of an interaction between students and their environment. Children hit by fire, for example, this incident become an experience for children. The child feels hot on the fire. His skin peeled off as a result of burning. Children learn from their experience that fire is hot and the fire can burn human skin. Because of that experience, students will not repeat playing with fire. Thus, learning only arises when encountering a new situation/problem. In the face of it will use all the experience it already has. The child analyzes the reorganization he already has.
f. Learning must be with insight. *Insight* is a time in the learning process where a person sees understanding (*insight*) about specific relationships and relationships in elements that contain a problem. For example, a flood event that hits an area is not considered to stand alone, but other causal factors cause the flood event to

occur in a room. That is, flood events are related to other factors.

g. Learning is more successful when it relates to interests, desires, and goals. This happens when it has much to do with what students need daily. In progressive schools, students are invited to talk about projects/units to know the goals to be achieved and be confident of their benefits.

h. Learning takes place constantly. Study not only at school but also outside of school. Therefore, students must learn a lot in and outside school to gain as much knowledge as possible. Students can earn their knowledge/experience at home or in the community. The other party must help him. The school must work with parents at home and in the community in broader social life so that all participate in helping the child's harmonious development.

4. The Learning Theory of R. Gagne

On learning issues, Gagne gives two definitions. First, learning is a process of gaining motivation in knowledge, skills, habits, and behavior. Second, learning is knowledge or skills acquired from instruction. Gagne said that everything learned by humans could be divided into five categories called the domains of learning (Djamaluddin & Wardana, 2019) namely a) Motor *skills*; b) Intellectual abilities; c) Verbal information, d) Cognitive strategies; e) Attitude

5. Learning Theory According to the Psychology Association

The theory of association is also called Sarbond's theory. Sarbond stands for stimulus, response, and bond. Stimulus means stimulus, response means response and adhesive means connected. Stimuli are created to elicit responses and then linked between the two, and an association occurs (Muhammad, 2013) Association theory holds that the whole consists of the sum of its parts or elements. The unification of parts gives birth to the concept of the whole. For example, bicycles. The idea of bicycles is given to two-wheeled vehicles without engines, starting from parts assembled into a single component system according to their respective functions and roles. The features that make up the bike concept include pedals, handlebars, bells, brakes, outer and inner tires, seats, spokes, lights, and chains (Ratnawati, 2016). From the school of association psychology, there are two very well-known theories, namely the theory of connectionism from Thorndike and the theory of conditioning from Ivan P. Pavlov.

a. Theory of Connectionism. Thorndike was the one who put forward the theory of connectivity. From his research, he concluded that the slow release response was again associated with stimulus situations in learning trial and error, trial and error. This is Thorndike's conclusion on animal behavior in captivity (Hermansyah, 2020). The correct response is gradually embedded or reinforced through repeated experiments. Incorrect answers are weakened or revoked. This symptom is called response substitution. The theory is also known as instrumental conditioning because selecting a response is a tool or instrument for obtaining rewards. There are three primary laws of learning, which are derived from his research results.

These three are the law of effect, the law of practice, and the law of readiness.

b. Conditioning Theory. In everyday life, a person must feel something that stimulates his saliva to come out. For example, for mothers who are pregnant and happen to crave to eat sour fruits, when they see sour fruits, of course, their saliva comes out unconsciously. It comes out, of course, reflexively. Or, say, a conditional reflex. For motorists, it will undoubtedly stop when he sees the traffic light light red and move after seeing the traffic light light light green. For swimmers in a swimming race, they will stop after reaching the *finish*. In school, for all students to sound bells at a specific frequency as a sign of entry, rest, or return, they will obey it.

Some of the examples presented above are visible forms of behavior in life. Such forms of behavior occur due to conditioning. Since the conditions are created, it has become a habit. The assembled condition is a condition giving rise to conditional reflexes. This theory, when applied to learning activities, also has many weaknesses. The disadvantages are 1) The experiments in the laboratory are different from the actual situation; 2) A person's personality (goals, abilities, interests, emotions, etc.) can influence the results of the experiment; 3) The response may be affected by an unknown stimulus. In other words, it cannot be foreseen that stimulus is the right that attracts one's attention; 4) This theory is elementary and unsatisfactory in explaining all the intricacies of learning, which turns out to be very complex.

Characteristics of Learning Theories in the Learning Process

Atkinson et al. and Gredler Margaret Bell, quoted by Hamzah, added several learning theories that can generally be grouped into four groups or schools, including (a) behavioristic learning theory, (b) cognitive learning theory, (c) humanistic learning theory, and (d) cybernetic learning theory. The four schools of learning theory have different characteristics. Namely, the behavioristic school emphasizes results rather than the learning process. The cognitive flow emphasizes the learning process. The humanistic school emphasizes the content or what is learned. Cybernetic flow emphasizes the information system studied (Uno, 2008) The study of these schools will be described one by one.

1. Behavioristic Learning Theory

According to the flow of behavior, the view of learning is nothing but a change in behavior due to the interaction between stimulus and response. Or in other words, learning is the change that students experience in their ability to behave in new ways due to the interaction between stimulus and response. Experts who worked in this genre include Thorndike, Watson, Hull, and Skinner.

a. Thorndike. According to Thorndike, one of the founders of the behavioral school, learning is the interaction process between a stimulus (which may be a thought, feeling, or movement) and a response (which can also be a thought, emotion, and action). According to Thorndike, behavioral changes

can be concrete (observable) or non-concrete (unobservable). Although Thorndike did not explain how to measure non-concrete behaviors (measurement is one thing that all adherents of the behavioral school obsess over), Thorndike's theory inspired many other experts who came after him. Thorndike's approach is called connectionism. The experimental procedure was to get each animal out of confinement to food. In this case, when the animal is confined, it often performs various behaviors, such as biting, rubbing its body against the sides of the box, and sooner or later, the animal stumbles on the bar so that the box opens and the animal will be released into the food container.

b. Watson. In contrast to Thorndike, according to the post-Thorndike pioneer Watson, these stimuli and responses must take the form of observable behavior. In other words, Watson ignores various psychological changes that may occur in the learning process and treats them as factors that need not be known. This is not to say that all the psychological changes in the minds of students are unnecessary. All of these are important. However, these factors cannot explain whether or not the learning process occurs. According to Watson, only with such assumptions can one predict what changes will occur among students. Only in this way can psychology and the science of learning be reconciled with other sciences, such as physics or biology, which are strongly experience-oriented.

Based on this description, adherents of the behavioral tradition prefer not to consider things that are not measurable, even if they recognize that these things are essential. The other three experts were Cark Hull, Edwin Guthrie, and B.F. Skinner. Like the first two experts, the latter three used stimulus-response variables to implement their theories. Although these three experts share the same moniker, the founders of the Neo-Behaviourist school, they differ in several ways, as described below.

a. Cark Hull. Cark Hull reveals the central concepts of his theory, which are heavily influenced by Charles Darwin's theory of evolution. For Hull, a person acts to ensure their survival. Therefore, the satisfaction of physiological needs and physical needs is the core of Hull's theory. According to Hull, needs are conceptualized as drives such as hunger, thirst, sleep, absence of pain, etc. Stimuli are almost always associated with these biological needs, although responses can take many forms. This theory, while widely used in various laboratory experiments, has not gained widespread acceptance in the real world, especially after Skinner came up with the idea.

b. Edwin Guthrie. Edwin Guthrie developed a contingency theory that views learning as an associative link between a particular stimulus and a particular response. Furthermore, Edwin Guthrie argued that the relationship between stimulus and response is crucial to learning. Therefore, frequent stimulation

is required for relationships to become more enduring. Furthermore, processes are more robust (even habituated) when responses are associated with multiple stimuli. For example, a person who smokes finds it difficult to quit. This happens because smoking is not only associated with one stimulus (such as the pleasure of smoking), but also with other stimuli, such as smoking. B. Drinking coffee, meeting friends, trying to look smart, etc.

Guthrie also noted that punishment plays a crucial role in the learning process. He says doing a set at the right time can change a habit. For example, a girl comes home from school and throws her dress and hat on the floor. The mother told the son to put on his clothes and hat, and the son was just hanging the hat and clothes on the hanger when he came back into the house. Thereafter, responses to wearing a cycling cap and shirt were associated with the stimulus of entering the home. Later, however, this punitive factor ceased to dominate in behavioral theory. Especially after Skinner continued to popularize the idea of reinforcement.

c. Skinner. Skinner, who came later, was a neo-behaviorist who shifted from the laboratory to classroom practice. Skinner had another opinion, which turned out to be able to defeat the prestige of the theories of Hull and Guthrie. This may be due to Skinner's ability to simplify the complexity of his view and explain the concepts contained in his approach. According to Skinner, Watson's version of the description between stimulus and response to explain behavior (about the environment) is incomplete. The response given by students is not that simple because every inspiration given interacts with each other, and this interaction ultimately affects the reaction produced. While the answer given also makes various consequences that will affect student behavior.

Therefore, to understand student behavior completely, it is necessary to understand the response itself and the various consequences caused by the response. Skinner also explained that behavior would only complicate things because the tool would eventually have to be defined again. For example, if it is said that a student performs poorly because this student is frustrated, it will demand to explain what frustration is. An explanation of this frustration will likely require another reason. And so on. Of all the proponents of behavioral theory, perhaps it was Skinner's theory that had the most significant influence on the development of learning theory. Some learning programs, such as teaching machines, Mathetics, or other programs that use the concepts of stimulus, response, and reinforcement factors, are examples of programs that utilize Skinner's theory.

2. Cognitive Learning Theory

For adherents of this school, learning does not simply involve the relationship between stimulus and response. But more than that, learning involves a very complex thought process. This theory is closely related to the Cybernetic theory. Cognitive learning

theory is a learning theory that is more concerned with the learning process than the learning outcomes themselves. In the early days of the theory's introduction, scholars tried to explain how students process stimuli and arrive at specific responses (the influence of behavioral flow is still visible here). However, gradually this attention began to shift. Their attention is focused on how new science is assimilated with the knowledge that students have previously mastered.

According to this theory, science is built in an individual through continuous environmental interaction. This process does not run intermittently or fragmentedly but through a flowing, steady, thorough process. Like someone who plays music, this person does not understand the block notes displayed on the sheet music as information that stands independently of each other but as a whole that fully enters his thoughts and feelings. As you read this, it is not incomplete alphabets that can be permeated and chewed in mind, but words, sentences, and paragraphs all together, flowing, rushing together. In practice, this theory is manifested in the stages of development proposed by Jean Piaget, meaningful learning by Ausubel, and free discovery of knowledge by Jerome Bruner.

a. Piaget

According to Jean Piaget, one of the adherents of a strong cognitive school, the learning process consists of three stages, namely (1) assimilation, (2) accommodation, and (3) equilibration (balancing). The process of assimilation is unifying (integrating) new information into cognitive structures already in the student's mind. Accommodation is the adjustment of cognitive systems into new situations. Equilibration is the continuous adjustment between assimilation and accommodation. For someone who already knows the principles of addition, if the teacher introduces the principle of multiplication, then the process of integrating the code of branch (which is already in the mind of the student) with the focus of expansion (as new information), this is called the process of assimilation.

Suppose a person is given a multiplication problem. In that case, this situation is called accommodation, which means using (application) the multiplication principle in a new and specific problem. For a person to continue to develop and increase his knowledge, the person concerned maintains mental stability. A balancing process is needed. This process is called equilibrium, the balancing process between the external and inner worlds. Without this process, a person's cognitive development will falter and run irregularly (disorganized). In this case, two people with the same amount of information in their brains may have different equilibration abilities. A person with good equilibration skills will be able to ―organize‖ this range of knowledge in good, clear, and logical order. While colleagues who do not have such good equilibration abilities will tend to store all existing information less regularly, this person also tends to have a complicated, illogical, convoluted line of thinking.

According to Piaget, the learning process must be adapted to the stage of cognitive development that students go through, in which case Piaget divides it into four stages,

namely the sensory-motor stage (when the child is 1.5 to 2 years old), the pre-operational stage (2/3 to 7/8 years), the concrete operational stage (7/8 to 12/14 years), and the formal operational stage (14 years or more). The learning process experienced by a child at the sensory-motor stage differs from that experienced by a child who has reached the second stage (pre-operational) and another experienced by other students who have earned a higher setting (concrete operational and formal operational). Generally, the higher a person's cognitive level, the more organized (and abstract) his thinking. In this connection, a teacher should understand his students' development stages and provide learning material in quantities and types appropriate to these stages. Teachers who teach but ignore these stages will tend to make it difficult for their students. For example, giving a group of second graders an abstract concept about mathematics without any effort to concretize the idea will not only be useless but will confuse the students even more.

b. Ausubel

According to Ausubel, students will learn well if the so-called *advance organizers* are well, appropriately defined and presented to students (Degeng I Nyoman Sudana, 1989). Learning progress organizers are general concepts or information that accommodate (include) all the lesson content to be taught to students. Ausubel believes that *advance organizers* can provide three kinds of benefits, namely: 1) Can provide a conceptual framework for learning material to be learned by students; 2) Can serve as a bridge that connects what students are learning ‒at the moment‖ with what students will learn; 3) Able to help students to understand learning materials more efficiently.

Therefore, the teacher's knowledge of the subject content must be excellent. Only then will a teacher be able to find information that, according to Ausubel, is very abstract, general, and inclusive, accommodating what will be taught. Besides that, the logic of thinking of teachers is also required as well as possible. Without sound thinking reason, teachers will find it difficult to sort out subject matter, formulate it in short formulations, and sort material by material into a logical and easy-to-understand sequence structure.

c. Bruner

Bruner proposed a theory called free discovery learning. According to this theory, the learning process will run well and creatively if the teacher allows students to find a stream (including concepts, ideas, definitions, and so on) through examples that illustrate (represent) the sources. In other words, students are guided inductively to understand a general truth. To understand the concept of honesty, for example, students first do not memorize the definition of honesty but study concrete standards of honesty. From those examples, students are guided to define the word honesty.

The opposite of this approach is called expository learning (learning by explaining). In this case, students are presented with general information and asked to explain this

information through specific and concrete examples. In the example above, students are first defined as honest. Students are asked to look for concrete examples to illustrate the meaning and word from that definition. This learning process proceeds deductively. In addition, Brunner suggests the need for a learning theory to explain the principles for designing effective learning in the classroom. In Brunner's opinion, learning theory is descriptive, while learning theory is prescriptive. For example, learning theory predicts the maximum age a child can learn addition while learning theory outlines how to teach multiplication.

3. Humanistic Learning Theory

For adherents of humanistic theory, the learning process must originate and boil down to humans themselves. From the speed of learning theory, this humanistic theory is the most abstract, the closest to the world of philosophy than the world of education. Although this theory strongly emphasizes the importance of the content of the learning process, in reality, it talks more about education and the learning process in its ideal form. In other words, this theory is more interested in learning in its most perfect condition than in learning as it is, as we usually observe in the everyday world. Naturally, this theory is very electrical. Any idea he can use as long as the goal of humanizing man (achieving self-actualization and so on) can be achieved.

In practice, this theory is manifested in an approach proposed by Ausubel called meaningful learning (Ausubel's idea was also incorporated into the cognitive stream). This theory is also embodied in the views of Bloom and Krathwohl in the form of Bloom's taxonomy. In addition, four other experts who also belong to the body of this theory are Kolb, Honey and Mumford, and Habermas, each of whose opinions will be discussed below.

a. Bloom dan Krathwohl

In this regard, Bloom and Krathwohl show what students might master (learn), covered in three areas, namely 1) cognitive, i.e., a) knowledge (remembering, memorizing); b) comprehension (interpreting); c) Application (using concepts to solve a problem); d) Analysis (describing a concept); e) Synthesis (combining parts of a concept into a whole concept); f) Evaluation (comparing values, ideas, methods, and so on).

Bloom's taxonomy, as we already know, inspired many other experts to develop theories of learning and learning. At a more practical level, this taxonomy has helped practical education to formulate learning objectives in a language that is easy to understand, operational, and measurable. Of the several taxonomies studied, perhaps Bloom's taxonomy is the most popular (at least in Indonesia).

In addition, Bloom's theory is also widely used as a guideline for making exam question items, even by people who often criticize the taxonomy. Educational experts have not corrected the criticism of the classification of abilities by referring to cognitive aspects. The taxonomic classification of cognitive aspects has not proposed six levels which

include (1) knowledge, (2) understanding, (3) application, (4) analysis, (5) synthesis, and (6) evaluation through educational experts that occurred from piter W. Airasian Kathleen A. Cruikshank, Richard E. Mayer, Paur E. Pitrich, James Raths, and Merlin C. Wittrock with editors Orin W. Andesen and David R. Krathwolh in a book entitled A taxonomy for learning, Teaching and Assessing published in 2001 revised aspects of cognitive ability by assessing two dimensions, namely (1) the dimension of knowledge and (2) the dimension of cognitive processes. In the dimension of knowledge it contains objects of science composed of (1) knowledge of facts, (2) knowledge of concepts, (3) procedural knowledge, and (4) metacognitive knowledge, while in the dimension of cognitive processes, it contains six levels which include (1) remembering, (2) understanding, (3) applying, (4) analyzing, (5) evaluating, and (6) creating.

b. Habermas

Another psychologist was Habermas, who believes that learning is strongly influenced by interaction, both with the environment and with fellow humans. With this assumption, Harbermas groups learning types into three parts, namely, 1) Technical Learning, 2) Practical Learning, and 3) Emancipatory Learning. In technical learning, students learn how to interact with their natural surroundings. They seek to master and manage nature by learning the necessary skills and knowledge. In practical learning, students also learn to interact, but at this stage, what is more, important is the interaction between them and the people around them. Students' understanding of nature does not stop as a dry understanding and detached from humans at this stage. However, understanding nature is relevant when it comes to human interests. Meanwhile, in emancipatory learning, students try to achieve the best possible understanding and awareness of an environment's cultural change (transformation). For Habermas, this understanding and awareness of cultural shift are considered the highest stage of learning because this cultural transformation is regarded as the highest goal of education.

4. Cybernetic Learning Theory

Perhaps the most recent of all known learning theories is cybernetic theory. This theory developed in tandem with the development of information science. According to this theory, learning is information processing. At first glance, this theory is similar to cognitive approaches concerned with processes. The process is indeed essential in cybernetic theory. However, even more, important is the information system that is processed. It is this information that will determine the process. Another assumption of the cybernetic theory is that there is no ideal learning process for all situations suitable for all students. Therefore, one student may learn one piece of information through one learning process, and another may discover that same information through a different learning process.

In its more practical form, this theory has, for example, been developed by Landa (in an approach called algorithmic and heuristic), Pask and Scott (with the division of students

of the whole type or wholist and serial type or serialist), or other approaches that are oriented to information processing

a. Landa

Landa is a cybernetic psychologist. According to Landa, there are two kinds of thinking processes. The first is called *the algorithmic* thinking process, a linear, convergent, straight-thinking process towards one particular target. The second type is *heuristic* thinking, which is divergent thinking, leading to several targets simultaneously. The learning process will run well if what you want to learn or the problem to be solved (or, in more technical terms, the information system to be discovered) is known for its characteristics. One thing is more appropriate when presented in a regular, linear, sequential order. Another thing is more appropriate when presented in open form and gives students the freedom to imagine and think.

For example, for students to understand a mathematical formula, it may be more effective to present a percentage of information about this formula algorithmically. The reason is a mathematical formula usually follows a step-by-step sequence that is already regular and leads to a specific target. However, understanding one broad and many concepts has interpretations (e.g., the concept of birds). So it would be better if the students' thought processes were balanced in a diffuse direction (heuristics), hoping their understanding of the concept is not single, monotonous, dogmatic, or linear.

b. Pask dan Scott

Other cybernetic members are Pask and Scott. The serialist approach proposed by Pask and Scott is the same as the algorithmic approach. However, an overarching way of thinking is different from a heuristic. The overriding way of thinking is thinking that tends to jump forward directly to the complete picture of an information system, like looking at a painting, not the details we observe first, but the whole image at once and then to a minor part. An approach oriented to information management emphasizes several things, such as short-term memory, long-term memory, and so on, which relate to what happens in our brains when processing information. We see the influence of the school of Neurobiology is felt here. However, according to this cybernetic theory, for the learning process to run as optimally as possible, the workings of our brain need to be understood, and the environment that affects the mechanism also needs to be known.

CONCLUSION

Most psychological theories make learning problems central, although sometimes not explicitly stated. Still, study learning theories have different views and characteristics, which causes pressure to be put on various aspects and features, so sometimes there is a conflict between ideas. If you pay attention, the contradiction is only a pseudo-conflict because reality must place the various conceptions in a more comprehensive system. In assessing or inferring the opinions of these learning theories, one should not view them as contradictory and consider one to be correct and the other wrong. The differences between the characters of various learning theories are due to differences in

the types of learning investigated. Learning is gradual and low, and some are gradual and high; some learn on a biological level and some on a spiritual level; Some education is skill or skill, and some are rational. So in assessing whether or not the opinions expressed by various learning theories are accurate, we must look at them in terms of specific characteristics that correspond to the types of learning they investigate. What is essential for educators is to take advantage of each theory and use it in practice according to the situation and material learned and taught because we know that the various ways of learning proposed by the different learning theories, to some extent, apply to humans as well.

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