Behaviorism; Psychological Theory of Learning

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Abstract

Learning theory is a very fundamental, systematic and comprehensive understanding of the process of how people particularly students, learn. Learning theory is much influenced by psychological theories. One of them is behaviorism theory. This theory believes that learning is a change in a person's behavior and that behavior can be observable and measured. This article aims to discuss the key concept in behaviorism, important figures in behaviorism, and how it is implemented in learning activity in the classroom. There are four concepts of behaviorism theory that are formulated by different psychologists; connectionism, classical conditioning, contiguous conditioning and operant conditioning. Every concept has different perspective on how the process of behavior change as a result of learning. However, in their implementation of activities, they have the same focus on learning activities; stimulus and response. The discussion of this paper starts with the key concept of behaviorism from different experts. Then, followed by how behaviorism implemented in the learning which can be in the form of teaching activities and assessment. Learning activities that may be the implementation of behavioristic theory include learning using PowerPoint and multimedia, or evaluation of learning that requires true and false answers /yes or no question. This paper is expected to give a clear insight for educators in understanding and implementing behaviorism as psychological theory of learning.

Keywords: behaviorism; key concepts; learning activity.

Education is a change in a person's behavior through social process (Rohr et al., 2017). Based this definition, there 3 important terms that we need to underline, the first is social- it engages different individual participation. The second is process- sequence of actions which are bound together to reach the goal. The third is behavior-.the manner of managing oneself. Psychology is the logical study of mind (Schunk, 2012). Psychology and education has strong relationship. Both of them are deal with the human development in mental and behavior. Further, education is implemented through teaching and learning activities (Chand & Ravi, 2004). In relation to this article, it focuses on the theory of learning on the perspective of psychology

The perspective of learning in education refers to skills and knowledge that have been reproduced and earned correctly. While the perspective learning in psychology has broader view. Learning is changes in behavior that can be observed as a result of a stimulus and response (Behaviorist). Learning is a change in perception and understanding that cannot always be seen as visible behavior (Cognitivist). Learning is a process of forming knowledge that is built by students themselves through the process of social interaction both inside the classroom and outside the classroom (constructivist). And learning is a process to achieve self-actualization and self-understanding optimally (Ireson, 2008).

Based on those various definition of learning in psychology it can be inferred that learning is the manifestation of human development in processing knowledge.

This article only focuses on behaviorism. Behaviorism is the oldest theories of learning (Schunk, 2012)(Laws & Marshall, 2003).

Key Concept in Behaviorism Theory

There are four key concepts in behaviorism theory (Schunk, 2012; Laws & Marshall, 2003):

Connectionism

The prominent psychologist of this theory of learning in behaviorism was Edward L. Thorndike (1874-1949). He hypothesized that the basic element of learning includes the shaping of associations (connection) between perception the stimuli and response that demonstrate behavior. Further he considers that learning often exist by trial and error. Trial and error mean selecting and connecting. If the stimulus get more response, definitely there is connection between the responses to that stimulus. At the beginning given a stimulus will bring a lot of response and change. This is where you have to select the accurate response that matches the purpose of giving a stimulus.

There three laws in connectionism; law of exercise and effect, law of readiness, and law of exercise. Each of which is to be explained in the following.

Laws of exercise and effect

There will be strong connection of stimulus and response if it is resulting positive outcome. In contrast, stimulus and response will have weak connection if it resulting negative outcome. That is the stronger the connection between stimulus and response, the more the subject learns.

Law readiness

There will be strong connections between the stimulus and response if the individual is ready to learn.

Law of Exercise

The more individual do the stimulus (exercise) the better the individual response on it. If the individual keep doing exercise, he/she will learn easily.

Principle of teaching according to Throndike are first; teacher must form the habit in the class. Second, convince that the forming habit will not be broken later after the habit is formed well. Third, do not forming two or more habit at the same time. Fourth, forming the new habit that still relate to the previous habit.

Classical conditioning

Ivan Pavlov was Russian Psychologist that established classical conditioning in learning theory. Classical conditioning in learning theory was derived from his observation on a dog behavior. Based on his observation, he assumed that the dog changing behavior did not occur in natural setting, there is a stimulus and power being associated with the stimulus that engaged the changing behavior.

The basis process classical conditioning is the association between the neutral settings with unconditioned stimulus (UCS) and

condition stimulus (US) that engaged the conditions response (CR). Unconditioned stimulus (UCS) is something that naturally and automatically encourages a response without the process of previous learning. Conditioned stimulus (US) is previously neutral stimulus that, as a result of being associated with the unconditioned stimulus, finally comes to encourage conditioned response. While conditioned response (CR) is the reaction toward previous neutral stimulus.
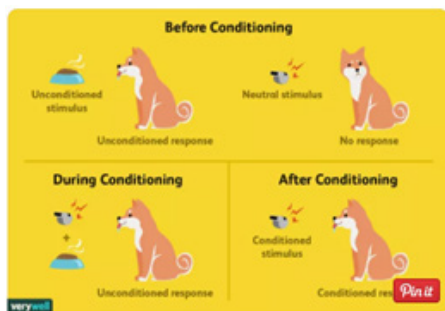

Figure 1. The phase of classical conditioning

There are three phases of classical conditioning:
Phase 1: Before Conditioning
        The occurrence of natural stimulus that engage automatics response, for example when we smell our favorite food, automatically we feel hungry. The automatics response is called Unconditioned Response (UR). At the same period the neutral stimulus (the new stimulus) is also given, but it resulting no response, because the stimulus is just introduced.

Phase 2: During Conditioning
        The pervious natural stimulus or Unconditioned stimulus (UCR) repeatedly given in combination with the neutral stimulus at the same time. In this situation will occur an association between the unconditioned stimulus (natural stimulus) and neutral stimulus. When the neutral stimulus associate with the unconditioned stimulus, the neutral stimulus will be called Conditioned stimulus (CS). As the result, the subject is conditioned to response to the stimulus.

Phase 3: After Conditioning
        The last phase of classical conditioning is a situation where the neutral stimulus/conditioned stimulus (CS) is given separately with the natural stimulus/unconditioned stimulus (CS) which resulting the same response like when it is given the natural stimulus in the first phase. And this kind of response is called conditioned response (CR).

Contiguous conditioning
        The founder of contiguous conditioning perspective was Edwin R. Gutrie (1886 – 1959). According to him learning principle is based on associations of the stimulus and response (Schunk, 2012). Indeed, learning occur if the same stimulus repeatedly given to the subject. For example a teacher in the classroom delivers a stimulus "pay attention please" and the students' are required to be silence. If this stimulus is given repeatedly, the students will keep silent, since at this situation students establish an association between pay attention and silence.

        There are two factors affecting contiguous conditioning, they are habit and habit breaking. Habit occurs when the stimulus is continuously done and students are able to develop the habit (giving the same response) in different situation with the same stimulus. Besides, breaking habit provides negative/weak stimulus that engage inappropriate response but it can replace the unwanted response. Breaking habit can be done through three different methods;

Threshold
Provide weak/negative stimulus that is rejected by the subject gradually - starting from a small amount to a large number so as to produce a targeted response. For example teacher ask the students to customize reading a novel. Instead of asking students to read the novel in a very short time (3/4 days even 1 week) teacher can ask the student to read 2 – 3 pages per day till they are customize in reading, specially novel. By doing this continuously, student will break

the bad habit (not interested in reading novel) to come to the good habit (love to read novel)

Fatigue

Provide a stimulus that is a bad habit continuously until the subject feels exhausted. If fatigue occurs, then the response given immediately will foster good habits.

Incompatible response

Providing two combination of different stimulus that will result incompatible response to the unwanted response. In brief, we provide the two-negative response (according to the subject) which make it possible to produce positive habits.

Operant conditioning

This type was formulated by B.F Skinner (1904-1990). It is the most famous types of behaviorism theory. According to this type learning is behavior that occur as reward and punishment are given to it. In this situation the subject makes an association between a certain behavior/action and a consequence. Basically, this type was inspired by law Effect formulated by Thorndike in connectionism. Then Skinner formulate a new term of it known as Reinforcement. The basic concept of operant conditioning is repetition of reinforcement on behavior that has a pleasant effect and reduction of repetition on reinforcement for behavior that has an unpleasant effect(McLeod, 2018).

Further Skinner formulate three types of reinforcement;

Positive reinforcement

Positive reinforcement is done by strengthening a certain positive behavior through giving reward for the subject. The example of positives reinforcement in the class include the students is rewarded with more credit point when she/he finished the work on time. Another example is by giving verbal praise (excellent, good, etc) or non-verbal (smile, give two thumbs, etc) and give special

present. However, teachers must be able to select form of positive reinforcement that is valuable for the students.

Negative reinforcement

Negative reinforcement is applied by removing the pleasant stimulus (reward) to strengthen a certain behavior. For example, the teacher provides additional time (more than the initial targeted time) in collecting assignments so that students can complete the assignment properly.

Punishment

It is the opposite of reinforcement. It is arranged to remove the unpleasant response or lessen stimulus that engage rewarding. For example, the students will get extra homework if they cannot complete certain activities in the class. It is believed to give specific punishment will change one's behavior.

Indeed, educators should have comprehensive understanding of the four concepts in the behaviorism theory before applied and integrate this theory into the teaching and learning design. Since, it will be affected how teachers design and set the goal of classroom activities.

The Implementation of Behaviorism into Learning Theory

Developing learning theory and practices is still very much influenced by the movement of learning psychology, namely behavioristic. This movement emphasizes on shaping behavior that appears as a result of learning (Baum & Heath, 1992). In this theory, the position of learner is a passive individual, because of the existence of a stimulus and response relationship. Certain responses or behaviors can be formed because they are conditioned in certain ways only by using drill or habituation methods. Behavior will arise due to reinforcement and behavior will disappear due to punishment (Demirezen, 1988).

Various elements are affected the implementation of behavioristic learning

theory in the learning activities, among them are student characteristics, essential of the materials, learning objectives, teaching media and learning facilities available. Based on behavioristic theory, learning is arranged and implemented rely on the permanent knowledge. It has been accurately designed, and so teaching is the process of transferring the nature of the knowledge. It is assumed that students will have the similar understanding with what is being taught by the teacher. This theory believed that the process of learning is failed if the students do not give exactly the same answer/reaction (response) to the objective the teaching and learning activity. But, if the students show exactly the same response to the stimulus as the knowledge learned, the learning process is success. In this theory, the mind functions to remain the existing knowledge which is structured through the process of thinking which is able to be examined and arranged. To sum up, the characteristics of the knowledge determine the result of thought process. (Hatfield, 2003) &(Faryadi, 2007).

Behavioristic consider that something has been accurately structured and organized, then students must be controlled using the strong rules and well established in advance (Faryadi, 2007). Habit and discipline become very crucial in learning process, as the result learning is more associated by implementing the rule of discipline. Behavioristic theory is also characterized by giving reward and punishment. Reward will be given if the response (behavior) indicate success in learning. In contrast, punishment will be given if response (behavior) indicates failed in learning. Failed is if the students are not able to show the similar response as a reaction to the stimulus designed. Whereas if the students show the expected reaction (response) to the stimulus, it is called success in learning.

According to behavioristic learning theory, learning objective is emphasized on the expansion of knowledge through "imitative" activity, that involves students to express knowledge that has been learned in various form of evaluations including tests, report, and quizzes. (Faryadi, 2007). Learning materials are presented in isolation without giving an opportunity to show creativity, its activities are more likely to follow a sequence from a specific unit to large unit. Learning follows the curriculum sequence firmly, so as learning activities are constructed more on textbooks which emphasize more on re-expressing the contents of the textbooks.

Today, the application of behavioristic theory develop in learning activities by the use of PowerPoint and multimedia (Berlyne, 1975),(Robert & Potrac, 2014) &(O Neill et al., 2005). In learning with PowerPoint, learning tends to occur in one direction. The material is delivered in the form of PowerPoint has been arranged in detail. Meanwhile in learning with multimedia, students are expected to have the same understanding as the developer, the material is arranged in a detailed and strict plan and definite procedures. The training given also tends to have one correct answer. Feedback on learning with multimedia tends to be given as reinforcement in every question, this is similar to the learning program that Skinner has developed (Collin, 2012) where Skinner develops a learning model called "teaching machine" that gives feedback to students when giving correct answers in each stage of the test question, not just feedback at the end of the test.

Another learning activities as the application of behaviorism theory is by providing imitative or demonstrative learning which facilitate learners to imitate (Ireson, 2008). For example, handwriting and series of procedural knowledge; both of the activities require learners to perform physical skills and cognitive process.

Now, in term of assessment, behavioral assessment is the application of behaviorism theory. Behavioral assessment is that assessment should to emphasis on observed behaviors in different of situations (Shernoff & Kratochwill, 2018). In other words, behavior

evaluation emphasizes passive responses, discreet competence, and typically uses a 'paper and pencil exam. Further, behavior theory view evaluations that require a true answer, for example true or false questions type. The answer means that the learner has accomplished the process of studying. Finally, learning assessment is used as a distinct aspect of learning practices which is typically carried out during learning activities, with emphasis on individual assessments.

Conclusion

To sum up, behavioristic theory explains that learning is a change in a person's behavior. Someone considered learning if he is able to show changes in behavior. This theory focuses on providing input in the form of stimulus and output in the form of response. This theory does not pay attention to what happens between stimulus and response.

In addition, according to behavioristic theory, reinforcement is a very important factor in learning. If the number of reinforcements is increased (positive reinforcement), the response will be stronger. Likewise, if the number of reinforcements is reduced (negative reinforcement) then the response will also strengthen. The application of this theory to learning emphasizes the activities of imitating and emphasizing the same results in imitations.

Despite the fact that this theory receive some critics on its limited applications, but it is still beneficial for the consistency of learning theory, particularly for learning aspects that are permanent and learning that has learning objectives that have been narrowly organized.

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