

LEARNING MECHANISMS – CONCEPTUALIZATION AND PSYCHO PEDAGOGICAL IMPLICATIONS

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Abstract

Learning is, therefore, an activity of fundamental importance for adaptation to the environment and for psycho-behavioral development.

Learning outcome has an informative nature, which consists in extracting and storing a useful informational content, learning processes, thinking standards and methods set in knowledge: rules, theorems, definitions, laws, principles, etc. and formative nature, which is the ongoing formation and transformation of the cognitive system (operational - action).

School learning is a process that is guided by a model, ie a concrete plan or program of training and verification used by the teacher. This model also includes directing and controlling the pupil/student's actions. From this point of view, we can say that learning is a psychological phenomenon that depends largely on the professor reproducing both structural and functional objective parameters of the pedagogical action.

Key words: learning mechanisms, psycho, cognitive system

INTRODUCTION

For animals, learning takes place within the biological mechanisms or, at the most, in the area of neurofunctional reactions. For humans, however, learning includes all the aspects of personality: biological, neurophysiological, psychological, psychosocial, cultural and value.

Learning is an acquisition that leads to behavior change.

In a broad sense - as a universal phenomenon in the life of organisms - learning is the process of acquiring individual experience behaviour. At this level of analysis, which is biophysiological, the mechanism of learning coincides with the individual's adaptation mechanism, based on conditional bond formation, thanks to which any stimulus acquires, by curing, a certain value, becoming significant. Thus, it becomes an integrating part of the body's organism, triggering a certain reaction. Through this, the animal 'learns', which means acquires a new experience in confront with the stimulus and changes the behaviour accordingly.

In a psychological and pedagogical sense - as a process applicable only to humans - learning is an activity for acquiring knowledge and skills in all the sectors of psychic life - knowledge, emotion, will.

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MATERIAL AND METHOD

Learning outcome has an informative nature, which consists in extracting and storing a useful informational content, learning processes, thinking standards and methods set in knowledge: rules, theorems, definitions, laws, principles, etc. and formative nature, which is the ongoing formation and transformation of the cognitive system (operational - action).

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RESULTS AND DISCUSSION

Developing learning strategies depends on the psychological conception on the functions involved in learning.

Associationism, according to which the intellectual, the mental dimension of the child would be a direct and fair reflection of things from the outside, sees learning as a natural fact, a spontaneous fact that would go "by itself", based on chaining external stimuli that form the material to be learned. A special place within this conception is held by exercise.

Behaviorism - some sort of extension of associationism - bases its conduct on instrumental conditioning mechanism. Learning material appears only as a set of visual, acoustic and verbal stimuli, and learning as discriminatory training within the system of these stimuli - training that takes place under the sign of strengthening learning action only after the result. In this view, learning consists of acquiring new behaviors after repeated action of stimuli on the body and fixing reactions. Basically, it is an active assimilation of information accompanied by the acquisition of new operations and skills.

Jean Piaget - for whom the motor of the child's intellectual development lies in the spontaneous maturation of its various functions - considers learning as a process of adequacy of the training material at that level of operation for which various structures of intelligence are matured in one or another age stage.

Broadly speaking, learning is responsible for the subject's intake of the social experience and personality formation (Allport).

Mechanisms/models of learning. Samuel Ball concludes that there is no infallible way of learning or teaching. The aims of education are multiple. Effective teaching methods are also multiple. The teacher who wishes to provide, facilitate and control adequately the learning of her/his

students must have all the theoretical information needed regarding models of learning, which enables him/her to understand those aspects of learning in the classroom on a particular model explains best and surprising link between a model and others.

Classical conditioning. Classical conditioning (first described in the late 19th century by Ivan P. Pavlov, Russian physiologist and Nobel laureate) was introduced in pedagogy by John B. Watson, founder of behaviorism. He conducted an experiment with a 11 months old child, who every time saw a guinea pig, reached the hand to catch it. In the experiment, the guinea pig (conditioned stimulus) was presented first, followed by the production of a loud noise (unconditioned stimulus) right in the child's back. After several such combinations, the child exhibited obvious fear (conditioned response) towards the white guinea pig that, before, the child liked to cuddle.

Practice has shown that teachers and textbooks are not always associated with positive emotions, positive emotions that students should, naturally, live at school. However, positive emotions - such as happiness or hope - which, naturally, would be triggered by conditioned stimuli (the teacher's words or printed courses) found at the base of positive motivation, which makes the learning process to be continued beyond the limited situation of the classroom or lecture hall. Sometimes, these conditioned stimuli (professor and manual/course materials, the environment in general) can trigger negative emotions such as fear or anxiety.

Contiguous associations. Contiguity is a principle of association, discovered by Aristotle, according to which perception or representation of an object or phenomenon causes the remembering of other objects or phenomena in the same space or simultaneous with the first. I.P. Pavlov showed that the physiological mechanism of association by contiguity is the conditioned reflex.

The model of contiguity was highlighted by Edwin Guthrie (1952). According to this model, any movement or behavioral element which closely follows a particular group of stimuli tends to attach to that group of stimuli. Thus, if a child from the first class notices some signs on paper and is told that the signs represent the word mother, next time the child sees the signs, will tend to associate them with the word mother.

Reinforcement (instrumental conditioning)

Edward Thorndike (1874-1949) was one of the experts who expressed the idea that learning (reactions associations to stimuli) depends on what happens after the reaction (if reinforcement occurs or not). His ideas on the reinforcement effect can be observed in the effect law, according to which: when forming a modifiable connection between stimulus and response, and it is followed by satisfaction, the connection is strengthened. Learning

(change that occurs in behavior) occurs when a reaction which had a low probability of forming before learning has now a higher possibility of forming. It is a proven fact that reinforcement facilitates learning (eg laudatory assessments of teacher positively influence school performance of learners).

On reinforcement techniques, especially on modeling, it mainly relies programmed learning. Reinforcement means for the student to know that it is on the good track in completing subjects that form the learning sequence. The program leads the student gradually from reduced knowledge of a concept to an almost complete knowledge of a concept. A possible explanation could be that a reduced increase of the level of understanding is analogous to a reduced reinforcement in the learning sequence. A positive contribution in the field of programmed learning has been brought by Skinner, the scholar behind the most widespread view on reinforcement. He expressed the general idea that teachers are relatively inefficient because they are doing randomly what they could have done systematically.

Research has shown that the stimulating learning model, called curing, is particularly useful in both acquiring new skills and consolidating the existing ones. It is particularly important for dominating behavior in the classroom. Its usefulness is extended by the fact that it interacts with other learning models, which will be discussed further.

The reinforcement model is called also instrumental conditioning or operant conditioning because the reactions or the behaviour of the student are the 'instruments' for modifying the ambiance. So, through these reactions, he 'operates' a change in the environment. Imitation or modeling or learning by observation

The first researchers who have paid attention to this model (NE Miller and J. Dollard have dedicated an entire paper to this subject: Social learning and imitation, published at Yale in 1941) tried to show that imitation itself, at least in part, is a type of a learned behavior. Students tend to imitate and that is why the teacher must serve effectively in the classroom as a model for learning by imitation. Later research found that, for example, aggressive teachers have usually more aggressive pupils, pupils who in comparison with those who are not punished by teachers, exhibit a more aggressive behavior. Aleen E. Bergin - considers modeling as a significant innovation that was developed in applying the concepts of learning for behaviour transformation.

Model behavior is also directly influenced by rewards and punishments and probably felt indirectly by the observer. Thus, for example, direct positive reinforcement increases the possibility of correlation between the behaviour of the model and the observer. Moreover, rewards and punishments given by the model to himself can influence in the same way

the self-control reactions of the observer and can influence him to adopt similar systems of self-compensating and self-punishment.

Generalization. Broadly, generalization occurs when students themselves capture a likeness in meaning between initial and subsequent statements, the same reaction to various stimuli.

Although this is an important mental operation, generalization without restriction leads, in most cases, to many errors in the student's behavior, errors with undesirable effects. If the response is unique (one and the same) to various stimuli, then it can happen very easily. To prevent such situations, the student must learn not only to react uniquely to various stimuli, but also know when not to react uniquely. So, for this type (model) of learning through generalization it is necessarily to add also learning through discrimination.

Discrimination. Just as generalization, discrimination is considered an applicable learning model only after they have acquired some basic concepts. Discrimination arises from the different reactions to similar stimuli. The discrimination is based on the inhibition of differentiation. It is acquired when a reaction to a stimulus is reinforced and the same reaction to a similar stimulus is not reinforced. It is observed that the more stimuli resemble each other, the more difficult it is to express a degree of discrimination towards them. Students' ability to discriminate is affected by at least two variables: the development/maturation stage and "touch type".

Learning concepts. The term of concept derived from the Latin term *conceptum* and means pondered, thought. Resulting from successive generalizations, the concept eliminates as much as possible concrete, sensitive features and reduces to a general scheme. It condenses general and essential traits for a class of objects or relationships. The concept has been defined as a classification of stimuli that have common characteristics, or, in other words, the right concept with the highest degree of generality. A concept is learned when the person can make rational classifications and understand what common features are at the base of classifications.

To the extent to which the uptake of the concept involves understanding (the ability to indicate, verbally or otherwise, a good reason why experiences are classified in a certain way), learning concepts could be considered as the first model of learning, considered so far, specific only to human beings. There is a hierarchy in concept formation. A higher grade concept can be understood only if the student has already mastered the lower grade concepts and can perceive the relationships between them. The conceptual type of learning is closely linked to memory and information theory. Concepts help organize experiences, help remember these experiences and, later on, facilitates learning. Once the concepts are learned, they can serve as organizers of progress, facilitating learning and retaining

of new knowledge. Learning concepts depends on the learning processes described above (classical conditioning, associations by contiguity, imitation or modeling or learning by observation, generalization and discrimination) and, in turn, forms the basis for higher learning. Appropriate concepts linked form principles.

Learning principles. The concept of principle implies a fundamental thesis that serves as a starting point in proving theorem in a field of research; a general law of nature or universal proposition that can replace such a law, applicable to a large class of objective systems and their transformations, without reflecting the specific properties of these systems.

Robert M. Gagné defines the principle as a chain of concepts that form what generally is called knowledge. The concept is the unity, the principle is useful networking of conceptual units.

CONCLUSIONS

The problem is an obstacle or a cognitive difficulty involving an unknown (or more), which in confront with the repertoire of past answers from a previous experience appears insufficient or inadequate. Solving the problem means overcoming the obstacle (difficulty), recombining previous experience data according to requirements of the problem. A problematic situation involves a cognitive conflict created between known and unknown, solving requiring repeated probing, so an effort of will. Therefore, problem-solving behavior occurs when the pupil/student experiences difficulties in achieving a goal. Solving problems at the human level is best achieved when using a principle. Solving by trial and error is a slow process, and new knowledge that can be generalized to other similar problems do not occur necessarily. Learning by solving problems can be relieved, at least temporarily, by providing information, skills, attitudes, concepts and basic principles. Important for the problem-solving process is also specific exercise in logical operations.

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