

Behaviourist Theory / Thorndike's Theory of Connectionism / Trial and Error learning / S-R Bond Theory

Trial and Error is a method of learning in which various responses are tentatively tried and some discarded until a solution is attained.

E.L.Thorndike (1874-1949) was the chief exponent of the theory of connectionism or trial and error. He was an American Psychologist who conducted Stimulus - Response(S-R) theory experiment with the help of animals. Thorndike was the first to study the subject of learning systematically using standardized procedure and apparatus. All learning, according to Thorndike is the formation of bonds or connections between Stimulus- Response.

The Puzzle Box Experiment

Thorndike's Experiment on cat in the puzzle is widely known and often quoted in psychology of learning. The experimental set up was very simple. A hungry cat was confined in a puzzle box and outside the box a dish of food was kept. The cat, in the box had to pull a string to come out of the box. The cat in the box made several random movements of jumping, dashing and running to get out of the box. The cat at last succeeded in pulling the string. The door of the puzzle box opened, the cat came out and ate the food. He promptly put the cat to next trial. The cat again gave a lot of frantic behaviour but it soon succeeded in pulling the string. It repeated for several time, Thorndike noticed as the repetition increases the error also reduced i.e., Thorndike's cat showed slow, gradual and continuous improvement in performance over successive trials. He concluded that learning of cat in the puzzle box can be explained in term of formation of direct connectionism between stimulus and response.

Features of Trial and Error Learning

1. Learning by trial and error is gradual process.
2. For learning to occur, the learner must be definitely motivated.
3. The learner makes random and variable response.
4. Some responses do lead to the goal (annoying response)
5. Some responses lead to the goal. (satisfying responses)
6. With the increase in number of trials the annoying responses will tend to be

eliminated and the satisfying responses will be strengthened and repeated.

7. The time taken to perform the task (to repeat the satisfying response) decreases with successive trials.

The experiment sum up the following in the process of learning:

- Drive : In the present experiment, drive was hunger and was intensified with the sight of food. (motivation)
- Goal : To get the food by getting out of the box.
- Block: The cat was confined in the box with a closed door.
- Random Movement: The cat, persistently, tried to get out of the box.
- Chance of Success: As a result of this striving and random movement the cat, by chance, succeeded in opening the door.
- Selection (of proper movement) : Gradually the cat recognised the correct manipulation of latch.
- Fixation: At last, the cat learned the proper way of opening the door by eliminating all the incorrect responses and fixing the only right responses.

Through the experiment, Thorndike explains that the learning is nothing but the stamping in of correct responses and stamping out of incorrect responses through trial and error.

Thorndike's Laws of Learning

- **Law of Readiness :**

The law states "When any conduction unit is ready to conduct, for it do so is satisfying. When a conduction unit is not ready to conduct. for it to conduct is annoying. When any conduction is ready to conduct, for it not to do so is annoying."

- **Law of Effect:**

The law states "When a modifiable connection between a stimulus and response is made and is accompanied or followed by a satisfying state of affairs the strength of connection is increased. When a connection between stimulus and response is made and accompanied or followed by an annoying state of affairs , it strength decreases.

- **Law of Exercise:**

The law states "Any response to a situation will, other things being equal, be more strongly connected with the situation in proportion to the number of times it has been connected with that situation and to the average vigour and duration of the connection."

- The law has two sub parts: a) Law of Use and b) Law of Disuse

a) **Law of Use** states that "When a modifiable connection is made between a situation and response that connection strength is increased if it is practised."

b) **Law of Disuse** states that "When a modifiable connection is not made between a situation and response, during a length of time, that connection's strength is decreased."
This means, any act that is not practised for sometime gradually decays.

Educational Implication

- Thorndike's theory emphasizes the importance of motivation in learning. So learning should be made purposeful and goal directed.
- It stresses the importance of mental readiness, meaningful practise and incentive in learning process.
- The law of readiness implies that the teacher should prepare the minds of the students to be ready to accept the knowledge, skills and aptitudes before teaching the topic.
- More and more opportunities should be given to the learners to use and repeat the knowledge they get in the classroom for effectiveness and longer retention.
- To maintain learned connection for longer period, review of learned material is necessary.
- The law of effect has called attention to the importance of motivation and reinforcement in learning.
- In order to benefit from the mechanism of association in the learning process what is being taught at one situation should be linked with the past experience of the learner.

- **Principles of Trial and Error Learning**

- 1. Learning involves trail and effor
- 2. Learning involves formation of connection
- 3. learning involves increamental
- 4. learning is direct