

# Learning Theories

# Learning Theories

- Philosophers and educators researched ways to understand and explain the process of learning.
- Understanding learning theories helps educators know how to communicate content to the students effectively.
- Educators will then organize delivery of instruction and help students become successful.



# Behavior Learning Perspective

- Behaviorism which was the predominant school of experimental psychology in the early 20<sup>th</sup> century. This was influenced by Ivan Pavlov, B.F. Skinner, and other physiologists.
- They proposed that psychology could only become an objective science if it is based on observable behavior in test subjects.
- Since mental events are not publicly observable, behaviorist psychologists avoided description of mental processes or the mind in their literature.

# Edward Thorndike

- Thorndike's research consisted of experiments that required a voluntary behavioral reaction from subjects.
- Animals were confined in cages or food and were placed in a latched box. They had to open the box or cage to get to food.
- These experiments were called instrumental conditioning or connectionism.

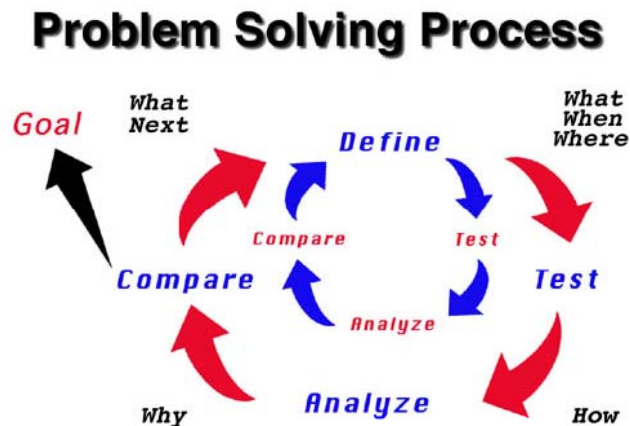


# Edward Thorndike

- Experiments were designed to determine if animals solved a problem through reasoning or by a more basic process.
- Thorndike experimented with baby chicks, dogs, cats, monkeys and fish.
- A puzzle box was used to get each animal to trip a latch. The animals would claw, bite, scratch, and claw against the sides of the box.
- Repeated confinements decreased the time it took for the animals to escape confinement.

# Thorndike's Connectionism

- Thorndike referred to his experiments as instrumental conditioning or connectionism to reflect a difference from Pavlov's classical conditioning.
- Problem solving strategies were associated with connections between the stimulus or the problem and the appropriate responses.



# Thorndike's Connectionism

- Application of Thorndike's laws to education
- Human mental life is describes as consisting of:
  - mental states and movements with connections between ideas.
- Learning is the process of connecting.
- **“The mind is man's connecting system”** Thorndike.
- For example, numerical problems and their answer, events and dates, and persons and characteristics.

# Laws of Learning

Thorndike's research showed the correct response was strengthened and the incorrect responses were weakened. He then identified three major laws of learning to explain the process:

- 1. Law of Effect** – a satisfying effect following the response strengthens the connection between the stimulus and the behavior.
- 2. Law of Exercise** – repetition of the experience increases the probability of a correct response. But, it will not enhance learning without a satisfying effect following the response.
- 3. Law of Readiness** – the execution of an action in response to a strong impulse is satisfying. But, the blocking of an action or forcing it is annoying.



# Thorndike's minor laws to education.

## Law

1. Multiple response or varied reaction
2. Attitudes, dispositions, or states
3. Partial or piecemeal activity of a situation.
4. Assimilation of response by analogy
5. Associative shifting

## Description

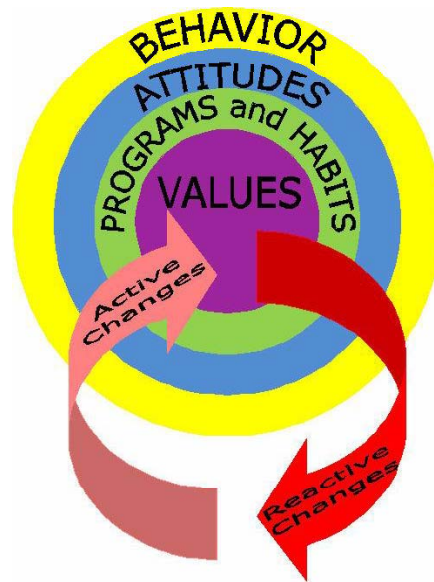
1. A variety of responses often occurs initially to a stimulus
2. Condition of the learner that influences the learning
3. Tendency to respond to particular elements or features of a stimulus situation
4. The tendency of a situation B to arouse in part the same response as situation A.
5. Successively altering the stimulus until the response is bound by a new stimulus.

# Classical conditioning in the classroom

- Classical conditioning impacts teaching in that students' need to experience positive reactions in developing an appreciation of science, art, literature and other subjects.
- Negative emotional reactions may lead to passive behaviors of apathy or "tuning out."
- For example, the anxiety associated by adults pursuing education can be changed by introducing strategies that can elicit positive reactions.
- For example, adults can be greeted warmly as they arrive and no difficult material should be introduced in the first week so that they can get used to classroom activities and routines.
- The anxiety is reduced by pairing the new routine or activity with a warm greeting and enjoyable activities.

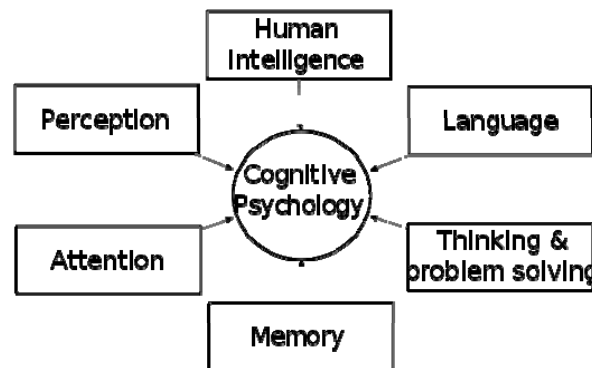
# Behavior Learning Theory

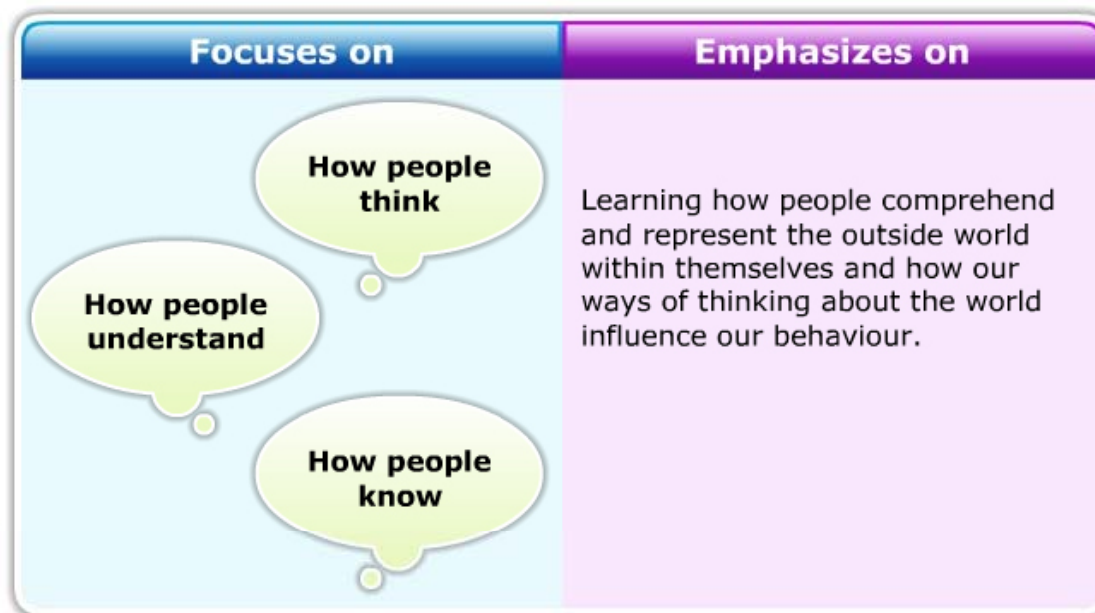
- According to Gredler, behaviorism has three basic assumptions about learning:
  1. Observable behavior should be the focus of study
  2. Behavior should be studied in simple elements.
  3. The process of learning is behavioral change.



# Cognitive Learning Theories

- Fritscher defines cognitive learning as an attempt to explain human behavior by understanding the thought processes.
- The idea relies on the assumption that humans are logical beings that make the choices that make the most sense to them.
- Comparing the human mind to the computer is a way to describe mental processing and is referred to as information processing.





## Cognitive Theories

- Cognitive theories present a positive view of development, emphasizing conscious thinking.
- Cognitive theories emphasize on the individual's active construction of understanding.
  - They explain the importance of examining developmental changes in children's thinking.

# Gestalt Psychology: A Cognitive Perspective

- Gestalt is a perspective that focuses on the belief that human consciousness cannot be broken down into its elements.
- This approach to psychology was founded on the concept of the gestalt, or whole.
- Gestalt psychologists led by **Max Wertheimer** (1880 - 1943), **Wolfgang Kohler** (1887 – 1967) and **Kurt Koffka** (1886 – 1941) have made substantial contributions to our understanding of perception.
- They illustrated the differences between visual perceptions and physical phenomena and pointed out that perception has meaning only when it is seen as a whole.

# Gestalt Theory

- The word Gestalt in German means “shape” or “figure”.
- Gestaltists performed many researches on perception and human learning.
- They believed learning is the result from good perception. This enables an individual to form correct concepts in their mind.
- They also proposed the principles for perceptual organization.
- These six principles are good form, figure or ground, similarity, proximity, closure, and continuity.



# Laws of Perceptual Organization

## 1. The Law of Good form or Pragnanz

- The word 'Gestalt' means 'form' or 'shape'.
- Gestalt psychologists state psychological organization will always be as 'good' as prevailing conditions allow.
- For Gestalt psychologists, form is a unit of perception.
- Our perceptions are influenced by our past experiences.
- It includes properties like symmetry and similarity.
- This principle is also called Pragnanz Law.

## 2. The Law of Figure or Ground Discrimination

- This law explains that the source of a message determines one's perception.
- The pictures below are an example of our tendency to pick out form. We see two forms of equal importance.
- If the source of this message wants us to perceive a vase, then the vase is the intended figure and the black background is the ground. The problem here is a confusion of figure and ground.



*From Spooner,  
1992*

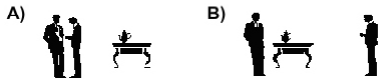




# Laws of Perceptual Organization

## 3. The Law of Proximity - The nearness of elements to each other

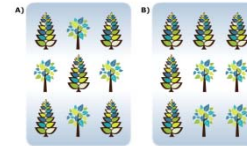
- Things that are close together in space or time tend to be perceived as grouped together.
- Thus, if you want your audience to associate the product with the presenter, put them close together
- If you want them to perceive two ideas as associated, present them in close proximity.



When you look at A you see (a man + a man) + a table.  
When you look at B you see (a man + a table) + a man.

## 4. The Law of Similarity Shared features such as color

- Things that are similar are likely to form groups.

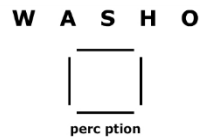


- In graphic A, you might see an X of fir trees against a background of the others.
- In graphic B, you might see a square of the other trees, partly surrounded by fir trees.
- This is also an example of good form or Prägnanz.

# Laws of Perceptual Organization

## 5. Law of Closure

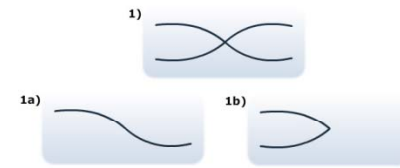
- Perceptually, we have the tendency to fill in the gaps.
- For example, we can still read WASHO, see the square and read 'perception' despite the missing information.



- The figure is still perceived as a rectangle even though it is not a closed figure.

## 6. Law of Continuity

- When you see a figure like the one below, you are much more likely to see it as consisting of two lines rather than of the two shapes.
- This is the Gestalt principle of continuity which saw a single unbroken line is likely to be seen as an entity.



# Applications to Learning

- Simple connections to learning are made in a meaningful way.
- For example, if only one side of an equation is presented, the other can be derived from it.
- Wertheimer was primarily concerned that meaningful learning methods are derived from structured environments.
- Students need to be given information to prompt them to solve a problem.
- The solution to a problem can then depend on the children's reorganization of the information.

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