

# Learning

Compiled by: Punit Jajodia(pnt\_jjd@hotmail.com) -----→2K9 batch

The parts in grey are only for developing concepts and can be left out if you have less time.

## Definition

According to E.R. Hilgard, learning is a relatively permanent change in behavior that occurs as a result of prior experiences.

W. McGehee says that learning has taken place if an individual behaves, reacts, responds as a result of experience in a manner different from the way he formerly behaved.

For simplicity sake, we can define learning as change in behavior through education and training, practice and experiences. It is accompanied by acquisition of knowledge, skills and expertise which are relatively permanent.

## Learning process

The following steps are involved in the learning process:

1. learning invariably involves a change.
2. Change in behavior must be relatively permanent.
3. Change in behavior should occur as a result of experience and training.
4. The practice or expertise must be reinforced in order for learning to occur.
5. Learning is reflected in behavior.

## Theories of Learning

- **Classical conditioning**

This theory of learning was given by Ivan Pavlov. The classical conditioning theory deals with association of one event with another desired one resulting in a desired behavior or learning.

*The original and most famous example of classical conditioning involved the salivary conditioning of Pavlov's dogs. During his research on the physiology of digestion in dogs, Pavlov noticed that, rather than simply salivating in the presence of meat powder (an innate response to food that he called the unconditioned response), the dogs began to salivate in the presence of the lab technician who normally fed them. Pavlov called these psychic secretions. From this observation he predicted that, if a particular stimulus in the dog's surroundings were present when the dog was presented with meat powder, then this stimulus would become associated with food and cause salivation on its own. In his initial experiment, Pavlov used a bell to call the dogs to their food and, after a few repetitions, the dogs started to salivate in response to the bell. It is a type of conditioning where an individual responds to some stimulus that would invariably produce such a response.*

To understand classical conditioning better, we need to understand the following terms:

### The Unconditioned Stimulus

The unconditioned stimulus is one that unconditionally, naturally, and automatically triggers a response. For example, when you smell one of your favorite foods, you may immediately feel very hungry. In this example, the smell of the food is the unconditioned stimulus.

### The Unconditioned Response

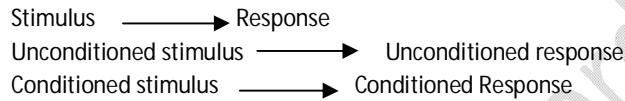
The unconditioned response is the unlearned response that occurs naturally in response to the unconditioned stimulus. In our example, the feeling of hunger in response to the smell of food is the unconditioned response.

### The Conditioned Stimulus

The conditioned stimulus is previously neutral stimulus that, after becoming associated with the unconditioned stimulus, eventually comes to trigger a conditioned response. In our earlier example, suppose that when you smelled your favorite food, you also heard the sound of a whistle. While the whistle is unrelated to the smell of the food, if the sound of the whistle was paired multiple times with the smell, the sound would eventually trigger the conditioned response. In this case, the sound of the whistle is the conditioned stimulus.

### The Conditioned Response

The conditioned response is the learned response to the previously neutral stimulus. In our example, the conditioned response would be feeling hungry when you heard the sound of the whistle.



Here are a few more examples of classical conditioning:

1. Fred has a fluffy down pillow with some of the down sticking out of the fabric. When he first tries out the pillow, a piece of down tickles his nose and he sneezes. This happens every time he goes to bed. Soon he sneezes every time he lays down on any kind of pillow.
2. Every time you take a shower, someone in the house flushes the toilet causing the water to turn cold and you to become cold. Now every time you hear a toilet flush, you get cold.
3. It is springtime and the pollen from the flowers causes you to sneeze. Soon you are sneezing every time you see a flower.
4. In order to treat bedwetting, a pad that is sensitive to dampness is placed under the sheets. When this pad becomes wet, it sounds an alarm and you wake up. Eventually you don't need the alarm to wake up and your full bladder will wake you up.
5. People receiving chemotherapy often vomit during or shortly after the procedure. After several chemotherapy sessions, people begin feeling sick at the sight of the treatment room.
6. Often times physicians will give treatments that make people feel uncomfortable (a shot for example). After this happens several times, people will begin feeling uncomfortable at the sight of anyone in a white lab coat.
7. Your significant other often yells at you and makes you feel bad. Pretty soon you can't stand the look of that person and end the relationship. You meet another person who looks like your ex. Although they seem nice, you find yourself feeling bad every time you are around them.
8. The sight of food makes you hungry. Soon every time you go into the kitchen, you feel hungry.

9. One of your friends drinks several martinis while eating pepperoni pizza. After becoming sick, she refuses to eat pepperoni pizza.
10. You meet a new person who is an excellent cook. After a few superb meals you find yourself liking that person very much.
11. Whenever you see a scary movie, you always eat a box of thin mints. Now you find that just seeing thin mints makes you feel scared.
12. Whenever you go to bed you fall asleep very quickly. One week you have a lot of stress and instead of falling asleep you lie awake several nights in a row. Now, even though the stress is gone, you have difficulty sleeping in your bed.

- **Operant conditioning/Reinforcement**

This theory of learning was given by B.F Skinner. He advocated that individuals emit responses that are rewarded and will not emit responses that either not rewarded or punished i.e. behavior is the function of its consequences.

As a behaviorist, Skinner believed that internal thoughts and motivations could not be used to explain behavior. Instead, he suggested, we should look only at the external, observable causes of human behavior.

Skinner used the term *operant* to refer to any "active behavior that operates upon the environment to generate consequences" (1953). In other words, Skinner's theory explained how we acquire the range of learned behaviors we exhibit each and every day.

### **Examples of Operant Conditioning**

We can find examples of operant conditioning at work all around us. Consider the case of children completing homework to earn a reward from a parent or teacher, or employees finishing projects to receive praise or promotions.

In these examples, the promise or possibility of rewards causes an increase in behavior, but operant conditioning can also be used to decrease a behavior. The removal of an undesirable outcome or the use of punishment can be used to decrease or prevent undesirable behaviors. For example, a child may be told they will lose recess privileges if they talk out of turn in class. This potential for punishment may lead to a decrease in disruptive behaviors.

### **Components of Operant Conditioning**

Some key concepts in operant conditioning:

- A **reinforcer** is any event that strengthens or increases the behavior it follows. There are two kinds of reinforcers:
  1. **Positive reinforcers** are favorable events or outcomes that are presented after the behavior. In situations that reflect positive reinforcement, a response or behavior is strengthened by the addition of something, such as praise or a direct reward.
  2. Negative reinforcers involve the removal of an unfavorable events or outcomes after the display of a behavior. In these situations, a response is strengthened by the removal of something considered unpleasant.

In both of these cases of reinforcement, the behavior **increases**.

- **Punishment**, on the other hand, is the presentation of an adverse event or outcome that causes a decrease in the behavior it follows. There are two kinds of punishment:
  1. **Positive punishment**, sometimes referred to as punishment by application, involves the presentation of an unfavorable event or outcome in order to weaken the response it follows.
  2. Negative punishment, also known as punishment by removal, occurs when an favorable event or outcome is removed after a behavior occurs.

In both of these cases of punishment, the behavior **decreases**.

- **Social learning**

"Learning would be exceedingly laborious, not to mention hazardous, if people had to rely solely on the effects of their own actions to inform them what to do. Fortunately, most human behavior is learned observationally through modeling: from observing others one forms an idea of how new behaviors are performed, and on later occasions this coded information serves as a guide for action."

-Albert Bandura, **Social Learning Theory**, 1977

Social learning theory focuses on the learning that occurs within a **social context**. It considers that people learn from one another, including such concepts as observational learning, imitation, and modeling. Among others **Albert Bandura** is considered the leading proponent of this theory.

**General principles of social learning theory follows:**

1. People can **learn by observing** the behavior of others and the outcomes of those behaviors.
2. Learning can occur **without a change** in behavior. Behaviorists say that learning has to be represented by a permanent change in behavior, in contrast social learning theorists say that because people can learn through **observation alone**, their learning may not necessarily be shown in their performance. Learning may or may not result in a behavior change.
3. Cognition plays a **role** in learning. Over the last 30 years social learning theory has become **increasingly cognitive** in its interpretation of human learning. Awareness and expectations of future reinforcements or punishments can have a major effect on the behaviors that people exhibit.
4. Social learning theory can be considered a bridge or a **transition** between behaviorist learning theories and cognitive learning theories.

The techniques of social learning are as follows:

### **1. Modelling and Symbolism**

People are often reinforced for **modeling** the behavior of **others**. Bandura suggested that the **environment also reinforces** modeling. **This is in several possible ways:**

1. The observer is reinforced **by the model**. For example a student who changes dress to fit in with a certain group of students has a strong likelihood of being accepted and thus reinforced by that group.
2. The observer is reinforced by a **third person**. The observer might be modeling the actions of someone else, for example, an outstanding class leader or student. The teacher notices this and compliments and praises the observer for modeling such behavior thus reinforcing that behavior.
3. The imitated **behavior itself leads** to reinforcing consequences. Many behaviors that we learn from others **produce satisfying** or reinforcing results. For example, a student in my multimedia class could observe how the extra work a classmate does is fun. This student in turn would do the same extra work and also receive enjoyment.
4. Consequences of the model's behavior affect the observers behavior **vicariously**. This is known as vicarious reinforcement. This is where in the **model is reinforced** for a response and then the **observer shows an increase** in that same response. Bandura illustrated this by having students watch a film of a model **hitting** a **inflated clown doll**. One group of children saw the model being praised for such action. Without being reinforced, the group of children began to also hit the doll .

### **2. Self efficacy:**

People are **more likely** to engage in certain behaviors when they believe they are **capable** of executing those behaviors **successfully**. This means that they will have high self-efficacy. In layman's terms self-efficacy could be looked as self confidence towards learning.

### **3. Forethought**

These are two ways that people can control their own behavior. First they monitor and observe their own behavior, sometimes even scoring behavior. Secondly, people are also able to change their behavior by reinforcing themselves, by giving or withholding reinforcement.

### **4. Self regulation:**

Self-regulation has come to be more emphasized in social learning theory. Self-regulation is when the individual has his **own ideas** about what is **appropriate** or inappropriate behavior and **chooses** actions accordingly.

- **Cognitive learning**

Cognition means gaining learning through senses. It is a kind of learning that is achieved by thinking about the perceived relationship between events and individual goals. The processes within an individual concerned with receiving, perceiving and interpreting information make the individual learn new pattern behavior.

Human beings can learn efficiently by observation, taking instruction, and imitating the behavior of others.

"Cognitive learning is the result of listening, watching, touching or experiencing."

Cognitive learning is a powerful mechanism that provides the means of knowledge, and goes well beyond simple imitation of others. Conditioning can never explain what you are learning from reading a web-site. This learning illustrates the importance of cognitive learning.

Cognitive learning is defined as the acquisition of knowledge and skill by mental or cognitive processes — ;the procedures we have for manipulating information 'in our heads'. Cognitive processes include creating mental representations of physical objects and events, and other forms of information processing.

How do we learn cognitive?

In cognitive learning, the individual learns by listening, watching, touching, reading, or experiencing and then processing and remembering the information. Cognitive learning might seem to be passive learning, because there is no motor movement. However, the learner is quite active, in a cognitive way, in processing and remembering newly incoming information.

Cognitive learning enables us to create and transmit a complex culture that includes symbols, values, beliefs and norms. Because cognitive activity is involved in many aspects of human behavior, it might seem that cognitive learning only takes place in human beings. However, many different species of animals are capable of observational learning. For example, a monkey in the zoo, sometimes imitates human visitors or other monkeys. Nevertheless, most information about cognitive learning is obtained from studies on human beings.