

Learning Theory

This course will cover the fundamentals of pedagogy and andragogy, as well as examine different theories in learning. We will analyze the particular characteristics of adult learning, identifying the contributions of theoretical and scientific support to andragogy, its principles and applications. Also we will evaluate the concept and importance of permanent or life-long education. Hopefully you will come away with a better sense of how humans learn and how you in particular can continue to learn.

What is learning? Learning involves change. It is concerned with the acquisition of habits, knowledge, and attitudes. It enables the individual to make both personal and social adjustments. Since the concept of change is inherent in the concept of learning, any change in behavior implies that learning is taking place or has taken place. Learning that occurs during the process of change can be referred to as the *learning process*. Learning is a change in the individual, due to the interaction of that individual, and his environment, which fills a need to make him more capable of dealing adequately with his environment.

A distinction is frequently made between *education* and *learning*. Education is an activity undertaken or initiated by one or more agents that is designed to effect changes in the knowledge, skill, and attitudes of individuals, groups, or communities. The term education emphasizes the educator, the agent of change who presents stimuli and reinforcement for learning and designs activities to induce change. The term learning, in contrast, emphasizes the person in whom the change occurs or is expected to occur. Learning is the act or process by which behavioral change, knowledge, skills, and attitudes are acquired.

What is a learning theory? A theory is a comprehensive, coherent, and internally consistent system of ideas about a set of phenomena. Learning theories are conceptual frameworks that describe how information is absorbed, processed, and retained during learning. Cognitive, emotional, and environmental influences, as well as prior experience, all play a part in how understanding, or a world view, is acquired or changed, and knowledge and skills retained.

There are different theories of learning and the term defies precise definition because it is put to multiples uses. In one sense it refers to the acquisition and mastery of what is already known about something; *learning is a product*. In another sense it refers to the extension and clarification of meaning of ones experience; *learning is a process*. In another sense learning refers to the organized, intentional process of testing ideas relevant to problems; *learning is a purpose*. Learning is an elusive phenomenon, and the way people define it greatly influences how they theorize and go about causing it to occur.

Behaviorists look at learning as an aspect of conditioning and will advocate a system of rewards and targets in education. Educators who embrace cognitive theory believe that the definition of

learning as a change in behavior is too narrow and prefer to study the learner rather than her environment, and in particular the complexities of human memory. Those who advocate cognitive constructivism believe that a learner's ability to learn relies to a large extent on what he already knows and understands, and that the acquisition of knowledge should be an individually tailored process of construction

STIMULUS-RESPONSE THEORY OF LEARNING

Learning theories fall into two major families: stimulus-response (S-R) theories, and cognitive theories. The stimulus-response theorists hold a mechanistic world view, the basic metaphor of which is the machine. The mechanistic model represents the universe as a machine composed of discrete pieces operating in a spacio-temporal field, everything can be explained by physical causes. Living things (like humans) are like complicated machines or artifacts, composed of many parts lacking any intrinsic relationship to each other. The appearance of qualitative changes is considered either as caused by another phenomenon or as reducible to quantitative change, since the organism, like the elementary particles of classical physics, does not exhibit basic qualitative changes. Most of these theories have been derived by studying learning in animals and children, not adults.

Stimulus-response learning theorists see learning as a process by which behavior is changed, shaped, or controlled. There is emphasis on control of the environment and having optimal conditions for producing changes called learning. Also the concept of shaping which uses reinforcement to shape the behavior of an organism. These theorists have an image of man as a more or less passive, reactive recipient; most of the responsibilities for learning fall to the teacher.

One person who held a mechanistic world view was the Russian physiologist Ivan Pavlov (1849-1936), who conducted experiments which resulted in the concept of conditioned reflexes. The classical experiment involved presenting food to a dog, which caused salivation; the food was an *unconditioned* stimulus and the salivation was the *unconditioned* reflex. Then some arbitrary stimulus, such as a bell being rung, is combined with the presentation of the food. Eventually after repetition, the bell will evoke the salivation independent of the food; the bell is the *conditioned* stimulus, and the salivation is the *conditioned*, or learned, reflex. Pavlov developed several concepts and accompanying techniques which have been incorporated into the *behaviorist* system, which holds that psychology should concern itself with the observable behavior of people and animals, not with unobservable events that take place in their minds.

Edward Thorndike (1874 –1949), who was an American psychologist whose work on comparative psychology and the learning process helped lay the scientific foundation for much modern educational psychology. Thorndike conceived learners to be empty organisms who responded to stimuli more or less randomly and automatically. A specific response is connected to a specific stimulus when it is rewarded. In this situation the stimulus, is entirely under the

control of the teacher, and in large measure so is the response. All the teacher has to do to connect the particular response to a particular stimulus is to reward the response when the organism happens to make it.

Thorndike is famous in psychology for his work on learning theory that led to the development of operant conditioning within behaviorism. Whereas classical conditioning depends on developing associations between events, operant conditioning involves learning from the consequences of our behavior.

Thorndike studied learning in animals (usually cats). He devised a classic experiment in which he used a puzzle box to empirically test the laws of learning. He placed a cat in the puzzle box, which was encouraged to escape to reach a scrap of fish placed outside. Thorndike would put a cat into the box and time how long it took to escape. The cats experimented with different ways to escape the puzzle box and reach the fish. Eventually they would stumble upon the lever which opened the cage. When it had escaped it was put in again, and once more the time it took to escape was noted. In successive trials the cats would learn that pressing the lever would have favorable consequences and they would adopt this behavior, becoming increasingly quick at pressing the lever.

For an example in humans, imagine that a schoolteacher punishes a student for talking out of turn by not letting the student go outside for recess. As a result, the student forms an association between the behavior (talking out of turn) and the consequence (not being able to go outside for recess). As a result, the problematic behavior decreases.

Edward Thorndike put forward a “Law of effect” which stated that any behavior that is followed by pleasant consequences is likely to be repeated, and any behavior followed by unpleasant consequences is likely to be stopped.

John B. Watson (1878-1958) is generally credited with being the father of behaviorism. He believed that the science of psychology must be based upon a study of that which is overtly observable; physical stimuli, the muscular movements and glandular secretions which they arouse, and the environmental products that ensue. Watson placed emphasis on kinesthetic stimuli as the integrators of animal and human learning, and held that thought was merely implicit speech, that sensitive enough instruments would detect tongue movements or other movements accompanying thinking. Kinesthetic learning, also known as Tactile learning, is a learning style in which learning takes place by the student carrying out a physical activity, rather than listening to a lecture or watching a demonstration.

The *Little Albert* experiment was a case study conducted by John B. Watson and his graduate student Rosalie Rayner, it provided empirical evidence of classical conditioning in humans. The aim of Watson and Rayner was to condition phobias into an emotionally stable child. They chose a 9 month old baby named Albert from a hospital for the study. Albert was placed on a

mattress on a table in the middle of a room. A white laboratory rat was placed near Albert and he was allowed to play with it. At this point, the child showed no fear of the rat. He began to reach out to the rat as it roamed around him. In later trials, Watson and Rayner made a loud sound behind Albert's back by striking a suspended steel bar with a hammer when the baby touched the rat. Little Albert responded to the noise by crying and showing fear. After several such pairings of the two stimuli, Albert was again presented with only the rat. Now, however, he became very distressed as the rat appeared in the room. He cried, turned away from the rat, and tried to move away. Successive introductions of the rat (the conditioned stimulus) resulted in fear (the conditioned response). Here, learning is demonstrated.