



The Principle Theories of Learning

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EDTC618: Learning Theories, Motivation, and Relationship to Technology
SP00-2303, Dr. Carrie Robinson

Objective Compare and contrast, in a visual format, the principal theories of learning.
Technology must be used to prepare the product. [Course objectives 1, 5]

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Behaviorism (Physical)



Behaviorism is a movement in psychology that advocates the use of strict experimental procedures to study observable behavior (or responses) in relation to the environment (or stimuli). The American psychologist John B. Watson first developed behaviorism in the early 20th century.

He was greatly influenced by the pioneering investigations of the Russian physiologists *Ivan P. Pavlov* and *Vladimir M. Bekhterev* on conditioning of animals (classical conditioning). In this theory all complex forms of behavior—emotions, habits, and such—are seen as composed of simple muscular and glandular elements that can be observed and measured.

BF Skinner, however, disagrees with Watson's position that inner processes, such as feelings, should be excluded from study. He maintains that these inner processes should be studied by the usual scientific methods, with particular emphasis on controlled experiments using individual animals and humans. He postulated a type of psychological conditioning known as reinforcement.



At the same time, psychologists have undertaken studies using behavioral principles on practical problems. This work has yielded a body of knowledge known as behavior modification, or applied behavior analysis.

By the early 1960s, behavior modification had become a clearly identifiable applied psychology movement with two components: behavior therapy and applied behavior analysis. Five essential steps characterize this approach: (1) deciding what the individual can do to ameliorate the problem; (2) devising a program to weaken undesirable behavior and strengthen desirable substitute behavior; (3) carrying out the treatment program according to behavioral principles; (4) keeping careful and objective records; and (5) altering the program if progress can thereby be improved.

Cognitive Information Processing (Mental)

In 1930 American psychologist *Edward C. Tolman* investigated cognitive processes in learning by studying how rats learn their way through a maze. He found evidence that rats formed a "cognitive



map" (a mental map) of the maze early in the experiment, but did not display their learning until they received reinforcement for completing the maze—a phenomenon he termed latent learning.

The American psychologist *Abraham Maslow* devised a six-level hierarchy of motives that, according to his theory, determine human behavior. Maslow ranks human needs as follows: (1) physiological; (2) security and safety; (3) love and feelings of belonging; (4) competence, prestige, and esteem; (5) self-fulfillment; and (6) curiosity and the need to understand.



In the 20th century, certain psychologists—including the Americans Rollo May, Gordon Allport, and *Abraham Maslow* and especially the advocates of existentialism—have recognized the element of spontaneity in the human mind that is admitted to lie outside any possible scientific law. This spontaneity can be interpreted to be free will, or at least a measure of self-determination that people feel themselves to possess and by which they make moral judgments.



Maslow developed a theory of motivation describing the process by which an individual progresses from basic needs such as food and sex to the highest needs of what he called self-actualization—the fulfillment of one's greatest human potential. In the 1980s American psychologist *Howard Gardner* proposed that there are many different forms of intelligence, including linguistic, logical-mathematical, musical, and interpersonal intelligence. A person may easily learn skills in some categories but have difficulty learning in others.

Comparison

That persons are active and intervening participants in their behavior has become increasingly clear but the work by Watson & Skinner remains a viable theory to this day. Environments, rewards, and punishments have a place in how humans learn, but they are not simply defined by their physical characteristics. Recent observations on how we think & learn have predicated new theories that further our understanding. In conclusion,

"Cognitive psychologists and behaviorists will continue to debate the merits of their different positions, but in many ways these two approaches have different strengths that complement each other. With its emphasis on memory and complex thought processes, the cognitive approach appears well suited for investigating the most sophisticated types of human learning, such as reasoning, problem solving, and creativity. The behavioral approach, which emphasizes basic principles of conditioning, reinforcement, and punishment, can provide explanations of why people behave the way they do and how they choose between different possible courses of action."¹

Constructivism (Understanding)

Constructivism is a theory based on results of Piaget's & Lev Vygotsky research. It differs from the traditional view, that knowledge exists independently of individual, the view that the mind is a *tabula rasa*, a blank tablet upon which a picture can be painted.²

¹ Microsoft® Encarta® Encyclopedia 99. © 1993-1998 Microsoft Corporation. All rights reserved.

² http://www.ic.polyu.edu.hk/posh97/Student/Learn/Learning_theories.html#constructivism

Constructivism, as part of a cognitive family tree³ [is a] ...theory of cognitive growth and learning that has gained many adherents in recent years.⁴ One foundational premise is that children actively construct their knowledge. Play and experimentation are valuable forms of learning. The child as a self-governed creator of knowledge. Learning something new, or attempting to understand something familiar in greater depth, is not a linear process. In trying to make sense of things we use both our prior experience and the first-hand knowledge gained from new explorations.⁵



Comparison

As constructivism is a cognitive theory, differences between them are a matter of degree. Constructivism builds on cognitive theory, which was in turn built upon the work by behaviorists. The basic distinction, however, is that while the behaviorists viewed knowledge as nothing more than passive, largely automatic responses to external factors in the environment and the cognitivists viewed knowledge as abstract symbolic representations in the head of individuals, the constructivistic school views **knowledge as a constructed entity** made by each and every learner through a learning process. Knowledge can thus not be transmitted from one person to the other; it will have to be (re)constructed by each person. This means that the view of knowledge differs from the "knowledge as given and absolute" views of behaviorism and cognitivism.⁶

Constructivist Perspective	Behavioral Perspective
Knowledge is active, situated in lived worlds	Knowledge is inert
Individuals construct knowledge	Individuals are passive recipients of knowledge
Meaningful learning is useful and retained, building on what the learner already knows	Learning occurs with programmatic, repeated activities
Teacher's role is coach, mediator, strategic	Teacher's role is authoritative, directive

Technology Used (Software)

- Microsoft Windows 98
- Microsoft Word 97
- Microsoft Encarta 99
- CompuServe (ISP)
- Metacrawler Internet Searches
- Microsoft FrontPage 98
- Adobe PhotoDeluxe BE
- Adobe Acrobat
- Adaptec DirectCD
- Adaptec EZ-CD

³ <http://www.hmco.com/college/education/station/concept/construct/conback.html>

⁴ <http://www.ilt.columbia.edu/k12/livetext/docs/construct.html>

⁵ <http://www.miamisci.org/ph/lpintro5e.html>

⁶ http://www.uib.no/People/sinia/CSCL/web_struktur-836.htm

Webliography

The following links were the results of searching for the various proponents of the theories in this paper, and the theories themselves. The results were mixed but interesting. This is a sample of the many "hits" from my search terms.

Tolman Biography

<http://muskingum.edu/~psychology/psycweb/history/tolman.htm>

Maslow Biography

<http://www.ship.edu/~cgboeree/maslow.html>

Garner Biography

<http://www.cogsci.princeton.edu/~ghh/COG/Gardner.html>

Garner's 7 Intelligences

http://www.swopnet.com/ed/TAG/7_Intelligences.html

School Reform: What Role can Technology Play in a Constructivist Setting?

<http://pixel.cs.vt.edu/edu/fis/techcons.html>

Constructivism: Background Knowledge

<http://www.hmco.com/college/education/station/concept/construct/conback.html>

University of Colorado at Denver, School of Education: Constructivism

<http://carbon.cudenver.edu/~mryder/itc/constructivism.html>

Building and Using Constructivist Learning Environments (Resource Site)

<http://gamma.is.tcu.edu/~cpevoto/treatise/>

Constructivism and Related Sites (Resource Site)

<http://www.emtech.net/links/construct.htm>

Constructivism, Technology, and the Future of Classroom Learning

<http://www.ilt.columbia.edu/k12/livetext/docs/construct.html>

(Mathematics Education) Constructivism: Vygotsky and the Internet

<http://forum.swarthmore.edu/mathed/vygotsky.html>

Constructivism and the Five E's

<http://www.miamisci.org/ph/lpintro5e.html>

Transformative Learning

<http://adulterd.about.com/education/adulterd/library/weekly/aa011500b.htm?iam=mt&terms=%2Bconstructivism+%2Blearning>