

# Gestalt Theory

[Adapted from: "Gestalt Theory", by Debbie Clark, Instructional Technology Foundations and Theories of Learning, Nada Dabbagh, March 8, 1999]

The Gestalt theory developed in Germany during a time when Behaviorism was the prevailing learning theory in America. Behaviorists emphasize the measurement of the outcome of learning without considering the mental processes that may have led to it. When an individual is presented with particular stimuli, Behaviorists would reinforce (positive or negative) or punish the response to the stimuli. By reinforcing or punishing responses, behavior is modified and learning acquired. The founders of the Gestalt theory believed that there was more involved with learning than behaviorism allowed. They believed that there was cognitive processing.

The Gestalt theory hypothesizes that an individual's perception of stimuli has an affect on their response. If two individuals are exposed to identical stimuli, their reactions to it would be different, depending on their past experiences. This was demonstrated in a study showing subjects chess pieces on a game board. They were shown the board briefly and asked to reconstruct what they saw. They were allowed successive brief looks at the board until they were able to reconstruct the entire board. The study found that experienced chess players did better than inexperienced subjects, when the pieces were situated in a way that resembled an actual game, than if the pieces were placed in a random order (Cook, 1993). This study demonstrated that the subject's past experiences affected their perception of the stimuli and as a result, affected their response to the stimuli, which was their ability to reconstruct the game board.

Gestaltists believe that individuals group stimuli in their own perception. This grouping in perception depends on several factors which can be considered the laws of Gestalt theory. The basic law of Gestalt theory, the law of Pragnanz, "implies that if a perceptual field is disorganized when an organism first experiences it, the organism imposes order on the field in a predictable way. This "predictable way" is in the direction of a "good" Gestalt, a psychological task that does not necessarily involve a change in the physical environment but one which represents a change in how an organism "sees" its physical environment. A good Gestalt has such properties as regularity, simplicity, and stability" (Blosser, 1973 p. 44). As discussed in Chapter 4, there are other laws related to the law of Pragnanz (similarity, proximity, closure, etc). When an individual encounters stimuli, it tries to make sense of the stimuli. An example of this concept is pattern recognition. If we encounter a pattern, such as an incomplete letter, we can still recognize the object as the letter to which we are familiar.

In this example, we would use the law of closure to "close" the pattern to create a whole letter. Being able to close the pattern would use our prior knowledge of the letter.

The Gestalt theory hypothesizes that individuals use insight when solving a problem or determining their response to stimuli. Wolfgang Kohler used his observations of chimpanzees to formulate his ideas on insight. Food was placed out of the chimpanzee's reach while objects such as sticks were placed in their reach. Kohler observed the monkeys while they attempted to reach the food. He observed that some of the apes learned more quickly than others. In addition, although the monkeys used trial and error to reach the food, their attempts were not consistent and regular as you may expect if they were basing their attempts on the reinforcement of a prior attempt. Nor were there attempts random, but Kohler believed that the chimpanzees used their prior attempts to determine their next attempt. Kohler theorized that the monkeys used insight to solve the problem (Blosser 1973).

Gestalt theory employs the belief in the presence of Trace systems. "Processes (that which goes on because of the present stimulating situation), leave traces in the form of chemical products in the brain. A trace must be formed in such a way that it will facilitate its own recurrence" (Blosser 1973 p. 45). Every new process or experience can contain a trace from a previous experience, thereby that previous experience having an affect on the new experience. Learning can be "defined as consisting of the creation of trace systems of a particular kind, the consolidation of these aggregates, and the increased availability of these trace systems in repeated and in new situations" (Blosser 1973 p.45). The act of repetition or drilling which often occurs in learning situations based on Behaviorism can actually hinder the learning process. When learning is acquired through repetition, the trace becomes only available to that one process and hence less available to other processes. (Blosser 1973) If a trace or past experience is not available to use for new processes, relating that new process or information to other information is impossible. This would make problem solving and development of critical thinking skills difficult.

The Trace system concept explains why individuals forget. Forgetting can occur when the trace disappears or the trace cannot influence or communicate with a new process (Blosser 1973 ).

Many more recent learning theories have incorporated elements of Gestalt theory. The idea that insight has an affect on learning responses is an important concept for cognitive processing theories. The concept of trace elements can be related to encoding. Encoding "refers to the process of relating incoming information to concepts and ideas already in memory in such a way that the new material is more memorable" (Driscoll 1994 p. 84). Trace systems and encoding both involve new information being impacted by information already stored in memory. Individuals try to group information or make it meaningful by relating it to information already in memory.

The grouping process that is a basis of the laws of Gestaltism is also found in many models of memory representation. The Network model of Long Term memory, for example, also deals with grouping information in memory. Network models assume the existence of nodes in memory, which correspond to concepts, i.e., things and properties. These nodes are thought to be interconnected in a vast network structure that represents learned relationships among concepts" (Driscoll 1973 p.87). The nodes in the Network model are similar

to the trace systems concept associated with Gestaltism. The Feature Comparison Model of LTM hypothesizes that concepts are compared to and then associated with other concepts in memory. In the Gestalt theory, similar concepts are grouped together.

Gagne's theory of instruction incorporates some of the ideas of Gestalt theory. Both theories believe learning is influenced by past experiences and knowledge and that acquiring new knowledge depends on the ability to build on past knowledge. In Gagne's theory, however, some lower order learning outcomes require repetition where Gestalt theory believes repetition hinders learning.

The principles of Gestaltism are closely related to those of cognitive constructivism. J. S Bruner, a proponent of the Constructivist Instructional Design Paradigm considers thinking the most important outcome of cognitive development. "The mind creates from experience generic coding systems that permit one to go beyond the data to new and possibly fruitful predictions" (Driscoll 1994 p. 208). "The Constructivist paradigm states that learning occurs because personal knowledge is constructed by an active and self-regulated learner who resolves conflicts between ideas and reflects on theoretical explanation. The Constructivist value errors, see the teacher as an intervener and provide leaning environments that allow for play and discovery and are responsive to learner explorations by providing immediate feedback" (Seels 1989 p.13). This theory is closely related to the concepts of insight and the affect of prior experience on the building of trace systems used in Gestalt theory.

When considering what methods of instruction are related to the Gestalt Theory, Behavior Modification would be ruled out because of its use of repetition and drilling limit the abilities of the trace systems therefore hinder the learning process. Gestalt Theory, with its belief in insight, perception and building of trace systems would find problem solving to be an appropriate method of instruction. "Problem solving usually involves (1) formulation of possible solutions by students, (2) logical deductions as to what practical consequences the various proposed solutions imply, (3) testing the various proposals by determining which, if any, is successful in deducting correctly (a) data which already are known and (b) data not already known but which have to be discovered by search or produced by experimentation" (Blosser 1973 p.48). These problem-solving activities can be useful in developing and designing instruction for enhancing critical thinking skills.

In the Constructivists instructional design paradigm, learners use insight for personal discovery. When problem solving is used as a method of learning educators should provide for active, self-regulating, reflective learners in a responsive environment (Seels, 1989). Bruner considers "problem solving and the acquisition of knowledge as taking place as both analytic thinking and intuitive thinking. He defines analytic thinking as characteristically preceding one explicit step at a time, with relatively full awareness of the formation and operation involved. Intuitive thinking, however, rests on the familiarity with the domain of knowledge involved and with its structure and implies the act of grasping the meaning, significance, or structure of a problem or situation without explicit reliance on the analytic apparatus of one's craft (Blosser 1973). Bruner's statement discusses using intuitive thinking, what might be considered insight and analytic thinking, as building knowledge, is similar to the concept of building the trace system.

In summary, the Gestalt Theory believes individuals use insight and their prior experiences

to determine their responses to stimuli. They also use the laws of Gestalt Theory to try to make sense of, and provide order to, information in their perception. This information leaves a trace in memory; traces link together to form connections of information. The Gestalt theory is closely related to the present day cognitive constructivist view of learning. Problem solving is a good choice of instructional methods to use to incorporate the beliefs of the Gestalt theory.

#### References

Blosser, P. (1973). Principles of Gestalt psychology and their application to teaching junior high school science. *Science Education*, 57, 43-53

Cook, D. (1993). Behaviorism evolves. *Educational Technology*, 62-77

Driscoll, M. (1994). *Psychology of learning for instruction*. Needham Heights, MA: Allyn & Bacon.

Seels, B. (1989). The instructional design movement in educational technology. *Educational Technology*, 11-14.