

Theories of Learning

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Learning is one of the most important activities in which humans engage. It is at the very core of the educational process, although most of what people learn occurs outside of school. For thousands of years, philosophers and psychologists have sought to understand the nature of learning, how it occurs, and how one person can influence the learning of another person through teaching and similar endeavors. Various theories of learning have been suggested, and these theories differ for a variety of reasons. A theory, most simply, is a combination of different factors or variables woven together in an effort to explain whatever the theory is about. In general, theories based on scientific evidence are considered more valid than theories based on opinion or personal experience. In any case, it is wise to be cautious when comparing the appropriateness of different theories.

In addition to formal theories, people hold personal theories, including theories of learning and teaching. Some typical questions such theories might involve are: How does one determine if learning has occurred? What factors determine whether or not learning occurs? Are these factors located in the environment or within the individual?

This entry focuses first on different conceptions and definitions of learning. Next, the evolution of theories and conceptions of learning over the past 100 years is discussed, highlighting some of the advantages and limitations of different theoretical perspectives. Following a discussion of the relationship between theory and practice, examples of different types of learning are presented, and the appropriateness of different theories for different learning situations is pointed out.

CONCEPTIONS OF “LEARNING”

Understanding any theory requires a clear idea of what the theory is trying to explain. When a particular word is used, people usually assume everyone has a common understanding of what the word means. Unfortunately, such is not always the case. In trying to understand the various theories of learning and their implications for education, it is helpful to realize that the term “learning” means different things to different people and is used somewhat differently in different theories. As theories of learning evolved over the past half-century, definitions of learning shifted from changes that occur in the mind or behavior of an individual to changes in participation in ongoing activities with other individuals to changes in a person's identity within a group (e.g., a change from being a follower to being a leader). Although, most definitions of

learning involve a change in an individual's knowledge, ability to perform a skill, or participate in an activity with other individuals, there is considerable variation among the theories about the nature of this change.

Further difficulty in understanding similarities and differences among various theories results from the frequently overlooked fact that there are different types of learning. In many cases, the various theories are relevant to different types of learning and are not necessarily incompatible with one another. Rather, they provide different perspectives on the complex phenomena of learning and complement one another in their ability to explain different types of learning situations. Thus, radically different theories are relevant to the classroom by addressing different aspects of classroom learning, and it is wise to avoid comparing apples with oranges. Examples of different types of learning are presented later in this entry.

EVOLVING THEORIES OF LEARNING

The modern psychological study of learning can be dated from the work of Hermann Ebbinghaus (1850–1909), whose well-known study of memory was published in 1885. Other early studies of learning were by Edward L. Thorndike (1874–1949), whose dissertation on problem solving was published in 1898, and Ivan Pavlov (1849–1936), whose research on classical conditioning was begun in 1899 but first published in English in 1927. These theories focused on explaining the behavior of individuals and became known as behavioral theories. These theories use a stimulus-response framework to explain learning and dominated psychology and education for over half a century. Because behavioral theories focus on environmental factors such as reinforcement, feedback, and practice, they conceptualize learning as something that occurs from the outside in.

Behavioral theories provide very good explanations for certain kinds of learning but poor explanations for other types of learning. Operant conditioning, for example, is better than other theories at explaining the rote acquisition of information, the learning of physical and mental skills, and the development of behaviors conducive to a productive classroom (i.e., classroom management). In these situations, the focus is on performing behavioral tasks rather than developing a learner's cognitive structure or understanding. Although classical conditioning frequently is dismissed as irrelevant to human learning (Pavlov's initial research paradigm involved dogs salivating), this type of learning provides by far the best explanation of how and why people, including students, respond emotionally to a wide variety of stimuli and situations. The many types of emotional reactions acquired through classical conditioning include: anger toward or hatred for a particular person or group, phobias to a particular subject area or to school itself, and infatuation with another person. However, they are very poor at explaining how individuals come to understand complex ideas and phenomena.

But environmental factors are not the only ones that influence learning. Serious consideration of other perspectives began to enter mainstream psychological thinking about learning during the 1960s. For example, people clearly learn by observing others, and a learner's belief about his or her ability to perform a task (i.e., self-efficacy) plays an important role in their learning. In 1963 Albert Bandura and R. H. Walters published the first formal statement of social-learning theory in their book, *Social Learning and Personality Development*. Social-learning theory has clear roots in behavioral theory but differs from these theories in significant ways. During the 1980s the theory became known as social-cognitive theory. Although essentially the same theory, the new name more accurately reflects the cognitive features of the theory and aids in differentiating it from behavioral theories of learning.

During the 1970s and 1980s conceptions and definitions of learning began to change dramatically. Behavioral theories gave way to cognitive theories that focused on mental activities and the understanding of complex material. An information-processing metaphor replaced the stimulus-response framework of

behavioral theories. These theories emphasized that learning occurred from the inside out rather than from the outside in. During the late 1970s John Flavell and Ann Brown each began to study metacognition—the learners' awareness of their own learning, an ability to reflect on their own thinking, and the capacity to monitor and manage their learning. During the mid 1980s the study of self-regulated learning began to emerge (see Zimmerman & Schunk, 2001).

Then, especially during the later 1980s and the 1990s, these cognitive theories were challenged by theories that emphasized the importance of social interactions and the sociocultural context of learning. The work of the Russian psychologist Lev Vygotsky (1896–1934) first became available in North America and along with the work of anthropologists such as Jean Lave began to have a major influence on theories of learning. Individuals were seen as initially participating in peripheral activities of a group (known as legitimate peripheral participation) before becoming fully integrated into group activities. Apprenticeship became a metaphor for the way people learn in natural settings. The notion that people learn by observing others, first articulated in social-cognitive theory, was expanded in a new context.

Traditionally, learning has been viewed as something that occurs within an individual. Individuals may participate and learn in groups, but it is the individual person that learns. With few exceptions, the educational systems in Europe and North America have adopted this perspective, if not entirely with regard to instructional practices, certainly in the evaluation of student performance and the assignment of grades. Many psychologists and educators currently consider learning to be a phenomenon that is distributed among several individuals and/or environmental affordances (such as calculators, computers, and textbooks) or situated (existing or occurring) within a “community of practice” (or community of learners). Both a social and a material dimension are involved in this distribution (Pea, 1993). For example, a student may use a calculator to help learn how to solve a three-digit multiplication problem (the material dimension) and/or work with another student to understand the proper procedures to follow (the social dimension). In either case, the student is not learning totally on his or her own but is taking advantages of resources (affordances) available in the environment. If the student is not able to solve a subsequent problem without the aid of the calculator or another student, then it is possible to see the distributed nature of learning. In such situations, participation or activity rather than acquisition becomes the defining metaphor (Greeno, 2006).

The evolution from behavioral to social to distributed to situated theories of learning was accompanied by new conceptions of knowledge (for a good discussion of these changes, see Schraw, 2006). Traditional theories conceive of knowledge as a commodity capable of being transmitted, more or less intact, from one individual to another. According to these theories, knowledge is something an individual acquires; when a student successfully learns it, he or she can reproduce the knowledge in its original form. In contrast, more recent theories conceive of knowledge as something each learner constructs or creates afresh rather than something that is assimilated in its preexisting form. According to current theories, truly “objective” knowledge does not exist, although something similar exists in the form of collective knowledge within a particular culture or discipline. Knowledge resides in the community of learners (individuals) that creates it and is distributed among members of the community and the various environmental affordances available to the group. Because each person constructs his or her own understandings, the knowledge they acquire is unique. Communities and cultures are composed of individuals with common understandings, and these groups provide opportunities for new members (e.g., children) to construct similar knowledge of the world through schools and/or a variety of informal activities.

The 1990s were dubbed “The Decade of the Brain,” and huge advances were made in neuroscience and how the brain relates to human behavior and learning. The study of how the brain relates to learning is in its infancy (for an introduction to some of the issue, see Bransford et al., 2006). An understanding of how the neurophysiology of the brain affects learning and cognition will add greatly to our understanding of human learning and have a large influence on future theories of learning. Nevertheless, a psychological component to these theories will remain critical for learning in educational settings. Education as it is presently

understood is based on psychological processes and interactions capable of being influenced by instruction, and it seems likely that psychological interventions will continue to be important for the foreseeable future.

THE RELATIONSHIP BETWEEN THEORY AND PRACTICE

The relationship between theories of learning and educational practices is complicated by several factors. One would think that instructional practices should be based on the best theories of learning available, but this relationship is not as straightforward as one might think. Schools and educational practices are far more likely to be based on philosophical beliefs than on empirical studies and theoretical understanding of learning. Schools are established according to different community and cultural beliefs about the world, the nature of humankind and children, locus of authority, and what should be learned. Schools also differ in their beliefs about teaching and learning, but the philosophical beliefs often come first. Every educational system and instructional program contains a theory of learning, although frequently this theory is implicit and goes unrecognized.

These philosophical and theoretical differences are formidable. Many have endured for centuries, and the debate is unlikely to end anytime soon. For example, the “factory model” of schooling dominated education in the United States for many years. This model is based on production and management procedures successful during the industrial revolution. It stands in sharp contrast to the voices of Henry David Thoreau (1817–1862), John Dewey (1859–1952), and others who advocated discovery, social reform, and freedom as the appropriate means of education. Both perspectives are clearly evident in modern-day discussions of education and instructional practices.

The correspondence between these philosophical perspectives and the various theories of learning is quite apparent. Classroom activities in a traditional classroom, for example, revolve around and are controlled by the teacher, who presents the to-be-learned material and dictates the type of learning activities in which students engage. Students are expected to study the information (via classroom activities and homework) until it is mastered. The knowledge being learned is seen as a commodity being passed from one individual (the teacher) to another (the student).

Very different classrooms emerge from different philosophical perspectives. If one believes, for example, that knowledge is something created afresh by each student, that learning occurs from working on authentic tasks in a social environment, and that the mental activities of the student determines what he or she learns, then the resulting classroom is likely to be one in which students work in groups and/or on projects, discussing how best to solve a problem, or negotiating the meaning of a concept. Once again consistency exists between theoretical beliefs and classroom practices. However, it is not always clear which comes first, for there is evidence that individuals seek out and accept information that confirms their existing beliefs while tending to reject information that would disconfirm those beliefs.

This reality leads to another realization regarding the relationship between theory and practice, namely that the relationship is two-way. A common belief is that knowledge flows from scientific theories to the development of effective practices, that sound theories of learning dictate effective educational practices. Science, however, does not always operate in such a linear fashion. In both the physical and social sciences, ideas often come from observing and questioning things that occur in the real world: “Why did that apple fall from the tree?” (a question asked by Isaac Newton [1643–1727] that led to his discovery of the three laws of motion). Scientific breakthroughs also come from trying to solve a practical problem (Stokes, 1997), such as “what is the best way to teach the concept of photosynthesis?” Established educational practices that teachers have found effective can and should be a source of ideas in developing a viable theory of learning.

A third caveat in understanding the relationship between theory and practice is realizing that the student is

more important than the teacher in determining what is learned. This does not mean the teacher is not important; only that it is the students' perceptions, prior knowledge, and beliefs that determine what and if they learn something approximating the instructional goals of the teacher. The bottom line in the teaching-learning process is the learning activities in which the students engage, not the instructional activities in which the teacher engages.

Modern-day conceptions of learning and teaching recognize that students are active, often proactive, participants in the learning process, even if they appear otherwise. This dynamic nature of the learning process is one reason why instructional interventions that appear the same to the teacher can result in very different student outcomes and why rather different instructional methods can result in very similar outcomes (e.g., Nuthall & Alton-Lee, 1990; Olson, 2004).

DIFFERENT TYPES OF LEARNING

The relationship between theories of learning and educational practices is complicated by the reality that there is more than one type of learning. None of the present theories is capable of explaining learning in all situations, and scholars working within a particular theoretical perspective often ignore or deny the importance of other types of learning and the relevance of other theories for different situations. Nearly every educational setting involves several types of learning, each with its unique importance to the functioning of the classroom.

There is little agreement on how many types of learning actually exist. Nevertheless, it should not be too difficult to identify different types of learning in the following examples: (a) learning to tie a shoelace or necktie, (b) being afraid (fearful in a literal sense) to work in a math class after a lengthy public ridicule by a teacher two years earlier for being unable to explain a problem to the class, (c) understanding and explaining causes of the French and American revolutions, (d) learning to cook by watching one's father or mother, and (e) negotiating an understanding of "learning" with a person holding a different theoretical perspective. Different theories are good for explaining one example but poor for explaining other examples.

When evaluating the validity or usefulness of different theories, especially from the perspective of the student doing the learning, it is helpful to consider what the person is learning and what is taken as evidence that learning has occurred. Students do not always engage in the type of learning sought by the teacher. For example, a teacher conducts a lesson on the Civil War that includes authentic activities, having students question one another about the war, and finally giving the students a quiz. It would not be at all uncommon for the teacher to conclude that a particular student *understood* what happened at Gettysburg when in reality he or she only memorized certain facts.

Theories of learning are efforts to explain how people learn. Different theories are based on different assumptions and are appropriate for explaining some learning situations but not others. Theories of learning can inform teaching and the use of different instructional resources including technology, but ultimately the learning activities in which the student actually engages (mental, physical, and social) determine what a student learns in the classroom. Classroom learning involves social, emotional, and participatory factors in addition to cognitive ones, and theories of learning need to take these factors into account. Most current theories of learning presuppose that the goal of education is to develop the ability of students to understand the content and to think for themselves, presumptions that are consistent with the majority of modern-day schools.

See also: [Cognitive Load Theory](#), [Constructivism](#), [Distributed Cognition](#), [Dual Coding Theory](#), [Information Processing Theory](#), [Self-Efficacy Theory](#), [Self-Regulated Learning](#), [Situating Cognition](#), [Social Cognitive Theory](#), [Sociocultural Theory](#)

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