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Overview of Learning Theories

Debra Espinor

Excellence, then, being of two kinds, intellectual and moral, intellectual excellence in the main owes both its birth and its growth to teaching (for which reason it requires experience and time) . . .

—Aristotle, *Nichomachean Ethics*

INTRODUCTION

VIRTUALLY EVERYONE WOULD AGREE that the role of the school is to help students learn. The school, as an institution of education, must incorporate a sense of morality or values. This said, the methods of incorporating morality and values into education vary. This chapter explores three of the most common learning theories of the last fifty years: behaviorism, cognitivism, and constructivism. Each section will take a brief glance at the history, background, and definition of each of the theories. Then, the chapter will turn to the strengths and weaknesses of each of the theories, illuminating their role in supporting students' learning. In addition, we will examine how these specific learning theories can be combined with faith in the classroom, in the home-school environment, and in other educational settings. Table 1.1 offers a summary of the three learning theories discussed in this chapter.

Table 1.1 Summary of learning theories

Theory	Behaviorism	Cognitivism	Constructivism
Definition	Behavior should be explained by all things observed, not by mental processes.	Mental function can be understood and explained, and psychology is the medium for the explanation.	The learner is at the center of the educational stage. Knowledge cannot be handed down from one person to another but must be constructed by learners themselves.
Strengths	A new behavioral pattern is repeated until it becomes automatic.	The focus is on the mental structures that cause our physical actions.	Learning is the constant effort to assimilate new information.
Weaknesses	Classical conditioning can create fear in learners. The method is unable to deal with complex human behavior.	The idea that mental functions can be described through an information processing model is a weakness.	The method does not fit with the current standards-based testing that has developed in the United States.
Applications to the classroom	Teachers can use this model to develop classroom rules and procedures.	The use of multiple and emotional intelligences could influence the development of lessons and curriculum.	Scaffolding the questions, clues, or suggestions that help students link prior knowledge to new information can improve the classroom environment.
Key people	John Watson B. F. Skinner Albert Bandura	Noam Chomsky Donald E. Broadbent Jerome Bruner	John Dewey Jean Piaget Lev Vygotsky

BEHAVIORISM

Education is what survives when what has been learned
has been forgotten.

—B. F. Skinner

History and Background

American psychologist John Watson was the original thinker behind behaviorism. He suggested that behavior was the only thing that psychology should be concerned with and discounted the mind and the feelings of human consciousness (Alonso, Lopez, Manrique, & Vines, 2008). He went on to propose that rats, apes, and humans should all be studied objectively and in the same way.

Behaviorism strongly emphasizes experience, specifically reinforcement and punishment, as these determine human learning and behavior. Ivan Pavlov (1928) studied animal responses to conditioning. His is best known for his experimentation with dogs. Pavlov would ring a bell when feeding a group of dogs. Eventually, the dogs began to salivate at the ringing of a bell and equated the sound with the coming of another meal. The behavior was later reversed: Pavlov would ring a bell but offer no food, yet the dogs still salivated. Pavlov and Watson believed that humans could be conditioned in the same manner.

B. F. Skinner tested Watson's theories in the laboratory. He rejected Watson's stress on conditioning. Skinner believed that people respond to their environment and that they are aware that their environment affects their behavior. Skinner (1985) believed that people act in response to their environment yet also operate under the conviction that the environment produces consequences. Skinner's theory of "operant conditioning"—the idea that humans behave the way they do because their behavior had consequences in the past—considers each person as an individual (Cohen, 1987). Consequences—rewards and punishments—are contingent on the behavior of the person studied. Reinforcement (reward) is a consequence that increases the probability that a behavior will occur, while punishment is a consequence that decreases the probability a behavior will occur. Reinforcement of behavior strengthens behavior. Using positive reinforcement, the frequency of a response increases because

it is followed by a rewarding stimulus. Negative reinforcement elicits a similar response because the frequency of a desired response increases as a negative stimulus is removed. In summary, positive reinforcement occurs when a pleasant stimulus is added and negative reinforcement occurs when an unpleasant stimulus is removed.

Albert Bandura (1974) has also provided a modified approach to these theories, suggesting that people learn from one another via observation, imitation, and modeling. His theory has become a bridge between behaviorist and cognitive learning theories because it includes attention, memory, and motivation. Bandura's "reciprocal determinism" looks at the reciprocation of the person's behavior in direct connection to their world. Behaviorists essentially believe that one's environment causes one's behavior. Bandura also suggested that our behavior shapes our environment as well. Lastly, Bandura (1997) considered personality as an interaction between the three components of environment, behavior, and one's psychological processes (the ability to entertain images in minds and language).

From Watson to Bandura, the history of behaviorism has grown to include more than behavior modification. The development of the original theories of behaviorism has led to a clearer understanding of how people exist in their environment and interact with one another. The roots of behaviorism offer a foundation for working with the students in the classroom and assist teachers in creating procedures and consequences that will facilitate learning.

Strengths

One of the greatest strengths of the behaviorist theory is its relevance to classroom management. Positive teaching and applied behavior approaches receive continual research attention with regard to managing students in the classroom setting. Skinner advocated and popularized the use of positive reinforcement to promote desired learning in the classroom. Connecting learning to rewards and feelings of pleasure is part of a system of reinforcement designed by behaviorists to support desired behaviors. In the classroom, extrinsic rewards are gradually used less and less as students acquire the targeted behavior. Self-satisfaction then becomes its own reward. The teachers' goal is to move the learner from extrinsic to intrinsic reward systems.

One of behaviorism's greatest strengths has come recently with the use of technology. In particular, technology has allowed for many of the principles of behavioral teaching to be reexamined with state-of-the-art computer equipment and programs, including the recent technology of online browsers and phones (McInerney, 2005, 2006). Sophisticated computer programs not only allow realistic simulation of learning situations but provide immediate correction and feedback. There are many alternative learning paths and "intelligent" reactions to the choices that learners make. By measuring students' responses to intelligent computer programs, scientists and teachers have a better chance at understanding how to modify behavior for optimal learning.

Weaknesses

Critics of behaviorism speak to the disbelief in the autonomy of the individual. They wonder if people are little more than selfish "reward machines." Can people be manipulated through clever social engineering? Do teachers desire complete control over their students and their students' learning? Behaviorism is also seen as unable to deal with complex human behavior (Ingvarsson, 2004). Some argue that Skinner's theory is not about learning; instead, it is about manipulating human behavior. In that setting, the student is passive, waiting for orders and not capable of critical thinking (Faryadi, 2007). Although not always considered a weakness, behaviorists measure learning in small discrete skills such as how well students apply mathematical operations and remember facts specific to individual subjects (Rivera, 2005). These different methods contribute to a view of a person as the sum of behaviors and ignore the mind that both unites and critiques such behaviors.

Use in Faith-Based Settings

While there is application in all classroom settings, behaviorist theory is particularly applicable to faith-based classrooms. When studying classroom management, behaviorism takes precedence over making rules or enforcing consequences. There are three ways to view the use of behaviorist theory in the classroom: as positive reinforcement, negative reinforcement, or punishment as a consequence.

The first viewpoint—positive reinforcement—offers students the opportunity to identify and learn by constructive support. For example,

a student asks a question that is applicable to a lesson, and the teacher commends that student for asking a “good” question. The result is praise from the teacher. Praise can take place in any form depending on the age group and interest of the students. In some cases, praise can be both verbal and physical (the offering of a sticker or star, etc.). The student would then be inclined to ask more good questions in the future.

The same concept holds for negative reinforcement; however, the praise is reversed. A teacher may criticize a student for not turning in their homework on time by communicating with the student disappointment or concern for the student’s academic well-being. So, the student then begins to turn in the homework because he or she desires to please the teacher or not be subjected to the disappointment or oral concern of the teacher. As a result, the teacher stops disparaging the student, and the student is more inclined to turn in their homework in the future.

The last considers the teacher’s use of punishment as a consequence for breaking rules in a classroom setting. For example, a student interrupts the teacher, and the teacher verbally reprimands the student. This direct communication of the teacher’s sentiment toward the interruption would likely direct the student in not interrupting the teacher again.

Given these fundamental examples, one may conclude that behaviorism is already deeply imbedded in our educational systems, in both non- and faith-based environments. My experience of over twenty years in a faith-based school gives me reason to state that faith-based institutions actually are more behavior based.

Behaviorism is embedded in sociology and in the belief that moral values are rooted in biology. However, there are some presuppositions within behaviorism that run counter to faith-based education. For behaviorists there is the belief that a person is someone without a soul or mind and that it is the workings of the brain that reacts to outside stimuli that is the reality. Therefore, behaviorists argue that the material world is the ultimate reality. This idea does not align with the belief of those who have a deep faith structure.

Do you believe that humans are nothing more than machines? That humans only respond to conditions? David Cohen states that “the central tenet of behaviorism is that thoughts, feelings, and intentions, mental processes all, do not determine what we do. Our behavior is the product of our conditioning. We are biological machines and do not consciously act; rather we react to stimuli” (Cohen, 1987, p. 71). The biblical view is

dissimilar to the idea of humans being machines. Christians believe that our minds have influence on our actions and that we are made in an image of an inspired, creative God. The Bible teaches that we are basically covenantal creatures, not just biological creatures.

Some view behaviorism as a manipulative theory. Skinner's (1985) work makes the suggestion that behaviorism can be the root for influencing all of society. This is contrary to the biblical view that we should love our neighbors and not manipulate our neighbors. In the biblical view, humans are not reduced to pure biological creatures, stripped of responsibility, freedom, and dignity. To the contrary, we are God's creatures, able to make decisions (whether right or wrong) for ourselves. Behaviorism has its place in the role of classroom teacher, especially in the area of classroom management. However, Christian teachers must consent to love their neighbors, which includes loving their students in a manner that does not control their behavior, but teaches them ways to control their own lives.

COGNITIVISM AND SOCIAL COGNITIVISM

The shred guess, the fertile hypothesis, the courageous leap to a tentative conclusion—these are the most valuable coins of the thinker at work. But in most schools guessing is heavily penalized and is associated somehow with laziness.

—Jerome Bruner

History and Background

Cognitivism became the dominant force in psychology in the late twentieth century. It replaced behaviorism as the most popular way to view the mind. Cognitivism adopts a positivist approach. (Knowledge is only authentic knowledge when it is based on actual sense experience or has been arrived at through the scientific method). Cognitive psychologists challenge the limitations of behaviorism in its focus on observable behavior.

Cognitive psychologists are really interested in the inner workings of human thought and the process of knowing. Mental processes such as memory, thinking, knowing, and problem solving are what they

explore. Knowledge can be seen as schema (symbolic) mental constructions. Symbolic reasoning, then, is a “uniquely human talent. It may have arisen from our need to understand one another’s intentions and motivations, allowing us to coordinate within a group” (Medina, 2009).

The emphasis on mental structures and content was popularized in the 1950s when Miller (1956) and others showed how ideas from information theory could be modified to characterize the flow of information within the organism (Broadbent, 1963). Abstract ideas such as attention, set, immediate memory, rehearsal, and response bias were made more tangible as these models served to suggest ways in which perception, attention, memory, and action might be related to each other and contribute to overall functioning.

Noam Chomsky (2000) suggested that, although man is a biological organism, there are mystical properties having to do with the theory of mind. Cohen (1977) justifies Chomsky’s theory of mystical properties by arguing that “we as biological organisms will not have within our range the theory which would, in fact, explain it.”

Later in his career, Jerome Bruner (1966) was influential in the 1950s and 60s as he began to develop the “New Look” in psychology. This idea dealt with how people viewed the world around them and how they responded to different visual stimuli. Bruner had a profound interest in the cognitive development of children and in outlining a form of education that best suited children. He suggested that any subject could be taught to any child at any age of development, if presented in the proper manner. Bruner remains one of the most influential cognitive theorists of our time.

Strengths

Bruner (1983) suggests that being human involves being part of a culture that empowers us to “look outside the human skin for the sources of human competence.” Human beings interact with others verbally and are able to make connections while constructing materials necessary for their survival. Once they have made a new connection, humans can examine their perception of each other to expand their understanding.

Cognitivists assert that experts do not simply have more knowledge than novices; rather, the structure of the knowledge differs. Experts understand the patterns of interaction and the underlying principles; therefore, they are more able to plan ahead. Novices will rely on su-

perfidious features such as appearance with consideration of underlying principles. Cognitive scientists assert that collaboration and problem solving increase the potential for knowledge construction when both experts and novices work together, sharing ideas and interpretations (McInerney, 2006).

Cognitivist research has shown that meaningful information is easier to learn and remember; it is also easier to remember items from the beginning or the end of a list rather than from the middle of a list. Other strengths include the recognition that much of learning involves associations established through contiguity and repetition. There is also value in reinforcement; indeed, cognitivists stress that providing feedback about whether a response is correct is more important than acting as a motivator (Brophy, 1987).

Weaknesses

Cognitive psychologists have been criticized for not seeing the need to consider our human environment in conducting and evaluating experiments (Overskeid, 2008). From a behaviorist viewpoint, all cognition is behavior. Most human behavior is assumed to respond favorably to conditioning and reinforcement. When cognitivists moved away from behaviorism, they disregarded the behaviorist's knowledge of the relationships of behavior—the way the activity of humans is shaped by the consequences of their own behavior. Why do certain behaviors occur? We communicate to influence the behavior of others, and successful communication depends on our ability to predict the response of the other.

Use in Faith-Based Settings

“Cognitivism exerts great influence over most of psychology” and other related disciplines. “Unlike behaviourism, cognitivism does not reject consciousness”; thus, it acknowledges aspects of mental life, including intentionality, emotional responses, and subjectivity (Pickering, 1995). This knowledge opens the door for a discussion into how cognitivism could influence a faith-based classroom.

The development of faith calls upon some of the Aristotelian ideals of moral education, in particular the education of human virtue. Virtue for Aristotle is about both actions and emotions. Virtue, as with other character traits, arises through repeated practice; we become kind by

performing kind actions (Kristjansson, 2000). People can acquire many virtuous dispositions through habit. Gradually, external conditioning plays a less significant role in character formation; more and more, disposition becomes established as a result of an individual's own deliberation and choice.

When educators read Howard Gardner (1983) or Daniel Goleman (1995), there is an understanding that there are more factors than IQ tests that determine how well people fare in school, or even in life. Goleman argues that noncognitive skills can matter as much as IQ in success in education while Gardner suggests that humans have more than mathematical or literacy intelligence. Even so, Gardner's theory does not give us accurate ways to measure the way people experience right and wrong emotions in the right circumstances.

Our very presence as educators puts us at the forefront of how faith, morality, and acceptable emotional responses are taught to our students. Children and young adults "catch" our moral attributes, attitudes, beliefs, and habits from their teachers, both good and bad. Rather than indoctrinating them, we should adhere to the code of ethics that asserts all teachers are required to be responsible for good behavior in their classrooms.

CONSTRUCTIVISM

The belief that all genuine education comes about through experience does not mean that all experiences are genuinely or equally educative.

—John Dewey

History and Background

The premise of constructivism is that learners construct knowledge based upon their own experiences and prior beliefs. Therefore, what is learned cannot be separated from the context of where that learning took place (Roehl & Snider, 2007). Teachers facilitate the construction of knowledge by including opportunities for meaningful and authentic exploration, by designing engaging activities, and by utilizing interactive group work.

Constructivism asserts that knowledge cannot be just handed from one person to another, to be put on like an article of clothing. Knowledge must be constructed (or “sewed,” using the clothing metaphor) and tried on and “fitted” to the new learner. Constructivists believe that people continually try to order and make sense of their world. Constructivism, built on the work of Jean Piaget and Lev Vygotsky, reflects cognitive psychologists’ view that learning is the constant effort to assimilate new information.

John Dewey (1938) intended his pragmatist approach as a way to know what changes the environment and then reflect on that change. He viewed genuine knowledge as coming neither by thinking about it abstractly or by acting uncritically, but rather by integrating thinking as well as doing.

Therefore, constructivism is built upon the foundation that students are not just “empty heads” that can be filled with knowledge by teachers and great curriculum. Because learning is active and the student must be actively involved in the creation of that knowledge, it is not a product for behaviorists to quantitatively measure but a process of negotiation between one’s personal understanding and public knowledge (Marcum-Dietrich, 2008).

Jean Piaget was the originator of the cognitive constructivist viewpoint. He put emphasis on the importance of the cognitive processes that are individual to each person. As individuals try to make sense of the world through experiences, they rely on physical, mental, and social processes (Palmer, 2005). In Piaget’s classroom, the child is the subject, with that child’s cognitive development as the primary goal.

Lev Vygotsky (1978) took this concept to a different level with the idea of “social constructivism.” He put emphasis on the importance of society, culture, and language. The cognitive constructivist and social constructivist perspectives emphasize different paths towards knowledge construction, but there are commonalities. One source of common ground is the characteristics of students’ conceptions or ways of seeing reality.

The cognitive constructivist and social constructivist perspectives emphasize different paths towards knowledge construction, but there are commonalities. One source of common ground is the characteristics of students’ conceptions or ways of seeing reality. Both views suggest that learning is an active process as each individual reconstructs knowledge in response to the environment (the classroom).

In summary, constructivism is learner centered; it suggests that classrooms should support many perspectives and interpretations of reality by the use of context-rich, experienced-based activities. Constructivism focuses on knowledge construction, not knowledge reproduction. The human mind is crucial to the interpretation of events. We each have a different "worldview" based upon our learning environment and our experiences in the world.

Strengths

In thinking of the strengths of constructivism, Brooks (1993) expands on how constructivism fits within a classroom environment or educational setting. Traditionally, students in classrooms primarily work alone with the curriculum presented from part to whole, with the emphasis on basic skills. The constructivist classroom would present curriculum from whole to part, with the emphasis on the big concept. Students would be allowed the opportunity to see the "big picture" before they start putting the puzzle together.

Students in a constructivist classroom work in groups where there is freedom to ask questions outside of the existing curriculum. The curriculum itself relies heavily on primary sources whereas in a traditional classroom the curricular activities rely on textbooks. As a result, students are viewed as thinkers with emerging viewpoints on the world and their role in that world.

As a teacher, the role of a guide is quite appealing to me. It offers a visual of climbing a mountain and pointing out all the interesting details along the way to those who walk with me. I may have more knowledge and understanding of the environment we travel, but each day that same mountain looks different, eliciting new and different questions. The constructivist teacher seeks the students' point of view in order to understand how they learn, which in turn influences how new lessons and concepts are presented.

One final strength is present in the area of assessment. In traditional classrooms, assessment of student learning is viewed as separate from teaching and is directly linked to formal and informal testing. In the constructivist classroom, the assessment of student learning is interwoven with the teaching and learning that occurs through teacher observation of students at work and through their portfolios and reflections.

Weaknesses

Some researchers suggest that learning is active and transforms the learner. Research into teaching, though, demonstrates the importance of direct instruction, which is largely based on behavioral principles (McInerney, 2005). Maybe this paradox exists because there has not been a strong enough definition of exactly what “learning” looks like? Do we think it looks like a “traditional” classroom with a teacher up in front talking? Or do we see learning in the context of a classroom formed around table groups, with conversations and the teacher mingling among the groups like a guide? One thing is clear: more research needs to be done to understand what our outcomes should be.

The use of computers in classrooms is a fine example of constructivist methodology. With the onset of online high schools and continuation of many collegiate classes that are held online, there is the assumption that the students want to learn the material taught and that they want to explore and stay focused on the tasks at hand (Weigel & Gardner, 2009). When students begin to own their own learning, teachers must learn to relinquish control of the classroom, the curriculum, and the assessment. This can be a strength for students in the classrooms of America as they have choice in their construction of knowledge.

Lastly, there is a view that constructivism leaves open the possibility of pluralism, since unshared interests would be permissible so long as they don't conflict with the vital interests of the classroom (Wright, 2006). Thus teachers may view students' interests in the area of morality as viable so as not to interrupt their learning. Individual teachers may want to identify common themes and goals for the classroom setting so as to avoid conflict in other subjects.

Use in Faith-Based Settings

Brooks and Brooks (1993) identify five tenets of constructivism for application in the classroom. The first of these tenets begs the question, how do we find out where students have entry? Student's points of view hold strong value in a constructivist classroom. When formulating lessons and beginning to differentiate instruction, teachers must have a grasp of the students' interests and needs.

Once there is a starting point, the next tenet asks, what can instruction do to build the bridge from a learned concept to a new concept

or understanding of a lesson? Bridging offers teachers the opportunity to structure lessons that challenge their students' existing suppositions. Every student, young and old, comes to the classroom with unique life experiences that shape their view of how the world works. When educators permit students to construct knowledge that is challenging, then true learning begins to take shape. Therefore, teachers must question and know their students before this authentic learning can take place.

Practicing concepts and building projects around the students' real life experiences outside the classroom, leading the student to ask questions, is the third of these five tenets. Teachers can recognize that students must attach relevance to any curriculum. Students will be more interested in learning when lessons in school reflect on their daily activities and interests.

The fourth tenet asks the question, what are the major concepts that students should understand? Exposing students to a whole concept before detailed information can assure a stronger understanding. Teachers who instruct in this manner structure their lessons around the big ideas first.

The last of the five principles focuses on the teacher, asking, how might teachers move from right-or-wrong judgments to monitoring students' understanding? This is a question of assessment. Teachers who use constructivist methods assess student learning in a different manner. Assessment is done as part of daily routines, not as "end of the unit" or "end of the chapter" events. Creative assessment strategies can help the students demonstrate their knowledge every day in a variety of ways that go beyond paper-and-pencil assessments. Of course, this may mean more work for the teacher to design and implement a more individualized assessment to students, but there will be the opportunity to truly quantify what a student has learned, rather than what they have memorized.

Now, let's distinguish these five tenets under the lens of faith-based teaching. What might it look like in the classroom? If every human is made in the image of God, then the first tenet (how do we find out where students have entry?) would fit nicely into the faith-based worldview. If we view our students as having the attributes of God, then each one has been made individually, with different life experiences, gifts, and talents. Our curriculum may be standardized but our methodology does not need to be.

Proverbs 2:10 states, “For wisdom will enter your heart, and knowledge will be pleasant to your soul.” Our goal for our students is that they use the knowledge they receive from their teachers to live in and improve the world around them. The second tenet speaks of building bridges from learned knowledge to new knowledge. Teachers in the faith-based classroom must be open to helping all students build new knowledge by using and bridging previous knowledge.

The third tenet speaks to the idea of service learning, taking the classroom into the community and exploring all facets of society from inside and outside of the classroom setting.

The issue of relevance taken from the fourth tenet changes the focus of control. For a student to attach relevance to a lesson, that student first must have interest in the subject matter. The teachers’ responsibility is to know the students, their interests and their backgrounds, so as to formulate lessons that will “stick.” The question of what knowledge is of most worth has been around for centuries. Curriculum that is faith-driven has answered that question whether the faith is derived from the Bible or any other holy book. If you home-school or work in a school with faith-based standards, then your students should also be aware of those expectations.

Assessment needs from the fifth tenet are constant in any educational setting. Teachers must have a way to evaluate student learning. They may not necessarily be the judgment of the beliefs of students, but there is the necessity of making sure they are learning the content that is required by the school or institution or state.

In summary, constructivism allows the role of the student and the role of the teacher to interchange based upon mutual interests and curriculum requirements. Let me leave you with three classroom-based suggestions for a strong faith-based constructivist model.

1. Design your classroom environment (climate) to be characterized as nonjudgmental and non-self-conscious for your students and yourself.
2. Encourage spiritual discourse. In a nonjudgmental classroom, this will open doors to rich discussions about “important” issues that are on the minds of your students and yourself.
3. When designing curriculum and individual lessons, look for opportunities to make those lessons meaningful in a spiritual manner.

Tie lessons back to those spiritual discussions, and plan field trips, events, and book readings to invest in deeper moral meanings for your students.

CONCLUSION

If we go back to the quote from Aristotle at the beginning of the chapter, he is talking about excellence in two areas: intellectual excellence and moral excellence. Those of us that work and teach in faith-based environments are fortunate to have the ability to present new knowledge from a viewpoint of a particular belief structure. The role of the teacher is to be a facilitator and an example, both in intellectual knowledge and moral knowledge. Learning must be well organized, with the goal of having self-directed students. Highly qualified educators have the ability to provide learning experiences that grow students as intellectuals and as strong moral citizens. The questions below are designed to help readers understand learning theories as they apply to faith-based education.

1. How can you present new material to your students in a manner that challenges their current conceptions and encourages them to construct their own personal meaning?
2. In a faith-based classroom, there may not be an emphasis on multiple perspectives, especially in the area of religion. How will you present differing viewpoints in a manner that allows students to restructure their own faith story?

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