NATIONAL FORUM OF TEACHER EDUCATION JOURNAL
VOLUME 22, NUMBER 3, 2012

Theories of Learning and Student Development

Jose Victor Lineros, MBA
Doctoral Candidate
Higher Education Leadership
Department of Educational Leadership
College of Education and Human Services
Texas A&M University-Commerce
Commerce, TX

Maria Hinojosa, EdD
Assistant Professor
Director of Meadows Principal Improvement Program
Department of Educational Leadership
College of Education and Human Services
Texas A&M University-Commerce
Commerce, TX

Abstract

This article explores prevailing theories for learning and student development. Different thoughts are offered based on existing research and how they relate to the ability of students' positive outcomes. Specific attention is paid to learning theories that utilize classical conditioning, operant conditioning, and information processing. The ideas presented are meant to guide educational leaders through the use of these cognitive structures. Specific focus is on the design of these theories and their actual application. Through a deeper understanding of these structures, educational leaders can guide their organization through the selection and implementation of these learning schemas.

Keywords: student learning, student development, learning outcome optimization

---

Many theories of learning and student development have been studied and adopted over time. The heritage of education in the United States, with some exceptions, was grounded in a belief that everyone should have access to a K-12 education. The nature of this theory was grounded in a belief that American political and economic structures benefited from informed participants. Higher education, however, was treated more as a luxury consumer good until the G.I. Bill in June of 1944. Two million returning soldiers, aspiring to a university degree, effectively shifted the paradigm (Mattila, 1978). This burgeoning student population led to an increase in the study of learning theories and how to optimize student development. These early learning theories generally centered on Ivan Pavlov's classical conditioning and B.F. Skinner's operant conditioning. Both theories drew on common beliefs that either through stimulus or strategic reinforcement, learning behavior could be shaped. A subsequent evolving model promoted by Ulric Neisser grew in popularity during the 1960s. Known as information processing theory, this model concurrently emerged with the advent of the computer age. Although many other learning theories have been promoted, these three learning theories will be focused upon.

Classical Conditioning in Student Learning Development

Under the tenets of classical conditioning, the desired learning outcome is achievable through the creation of a conditioned response. The conditioned response is created by a series of strategic stimuli. Pavlov was famously able to create a conditioned response in dogs by associating the ringing of a bell with salivation. Every time the dogs were fed, a bell was concurrently rung. Soon the dogs were conditioned to expect food and salivate when the bell pealed regardless of any meal delivery. Simplistically interpreted, learned responses are driven by the presentation of stimuli, and the challenge is to identify the correct ones to elicit the desired response. Using this effect, educators do not worry about the internal mental processes that lead to desirable cognitive outcomes; instead the focus is on what conditioned responses can be molded (DeBell, 1992).

An example in the classroom would be an instructor engendering a conditioned response of paying attention in class by announcing that the class will finish early if the lecture material is mastered. Students passing an end of lecture quiz can leave fifteen minutes early. Failing students are required to finish out the class time receiving lecture material on questions missed. The stimulus in this example is the opportunity to leave early and the conditioned response is paying close attention to gain this freedom. Another example would be an instructor who lectures from the back row on the first day and compels a reorganization of seating on the second day. The back row students being exposed to the stimulus of the instructor’s proximity are quickly conditioned to move to the front row to reestablish privacy. Depending on future instructor actions, a seating reorganization can be provoked almost at will. Eventually students will look for clues as to where the instructor will lecture and act predictively. Taken to an extreme, the instructor could eventually provoke late arrivals to surveil existing lecture position.

In this model, students can be thought of as blank slates that can be molded towards a desired result through exposure to strategic stimuli. Unconditioned behaviors such as desiring freedom or privacy can be used to create new conditioned behaviors like listening attentively or changing seats. Although extremely simplistic and unable to explain the complexities of learning that have been recently illuminated, classical conditioning still has adherents. The desire to stop the psychoanalysis of learning and make it more explainable remains a tempting goal. The attractiveness of declaring learning as something concrete that has been instilled into the student by a stimulus makes the complex process of cognition more accessible. Only through constant challenges to the simplistic models of classical conditioning have alternate strategies been elaborated.

Operant Conditioning in Student Learning Development

Although tangentially related, operant conditioning is different from classical conditioning. Operant conditioning is not grounded in the belief that a stimulus is required to associate an unconditioned response with a new conditioned one. Instead, after a given behavior is observed, it is either rewarded or punished. Giving students a more elevated position, operant conditioning assumes they have innate behaviors that simply need correct reinforcement to mold a desired learning outcome (Kirsch, 2004). Using this viewpoint, the structure of teaching and subsequent learning is strictly architected to optimize the behaviors through reinforcement. B.F. Skinner promoted the belief that all these behaviors in the individual were a result of contact with rewards and punishments in the environment. Influenced by Charles Darwin and his elevation of the environment in shaping biology, an extension to behavior was not unexpected. Operant conditioning does not involve a stimulus being administered to create a new conditioned response. Instead, operant conditioning applies a reward or punishment after certain behaviors are observed. Through this manipulation, existing behavior can be effectively altered.

Examples in the classroom would involve the instructor granting a higher grade for quality writing and a lower one for the inverse. Another noted example is that of consistently smiling and asking easier questions of the left side of a classroom. As the left side contributes to class discussion, the positive instructor reinforcement tends to push students towards that side.

Interestingly, the instructor does not have to be a rabid adherent of operant conditioning to engineer these behaviors. Instructors can inadvertently create these behaviors through subconscious positive and negative reinforcement. This can insidiously harm diversity as instructors unknowingly reward through positive body language or speech tone those who mirror their espoused beliefs. Educational leaders must possess knowledge of this dual nature inherent in operant conditioning to prevent stifling diversity. Essentially, adherents to this theory believe learning can be instilled through the environment with simple applications of reward or punishment. These applications are then the chief tools for channeling behavior towards the desired cognitive outcome.

Information Processing Theory in Student Learning Development

Of the three, information processing theory grants the most complexity and nuance to the student’s learning process. Information processing theory represents learners as innate scientists. They naturally hold theories on how things work and contact with new information causes reevaluation (Leonard, 2002). Through that process, new insight is either synthesized or discarded. Potentially, some portions may be accepted while others are rejected. Regardless, the learner is assumed to be in control of what is learned. Granularly, what happens first is that the learner must encode new information to change it from a sensory perception to a brain representation. The new representation is accepted as valid or discarded based on past experiences and judgment. Finally the new representation, if integrated, becomes the new baseline that is used for future perception.

Information processing theory provides a more heuristic solution as to how students learn. Allowance is made for the learner not bringing a blank slate into the classroom. Previous experiences and cognitive outcomes are factored into the experience of synthesizing new knowledge. Instructors use knowledge of this process to design teaching methods that factor in the background of the student, developmental level, cultural awareness, and other parameters that define the student's identity. New information is presented with direct ties to the previous experiences of the student to enhance encoding.

An example would be tying the learning of computer viruses to how human viruses spread and propagate. This draws on the theory that all students have been sick and can easily encode the similarities to initiate this new information. Even when exceptions to similarities are pointed out later, a common framework is established and available. Specifically, the student should understand computer viruses better because of their past encoded learning. This model of input, processing, and output closely mirrors the data processing model that became necessary to architect new computer systems in the 1960s. Ironically, this model also mirrors a much older model of change denoted by German philosopher Georg Hegel in the 19th century (Cummings, 1976). Hegel's dialectic of thesis, antithesis, and synthesis was influential in explaining how change occurred through time. Essentially, through contact with competing ideas, existing ideas were molded into a new idea. Although Hegel's writings are much older than modern data processing, they serve as a model to better understand information processing theory.

Conclusion

The three learning theories presented are not expansively inclusive of all ideas. First, classical conditioning depends on the instructor to present a stimulus that is used to create a new conditioned behavior. In this model, the instructor introduces the stimulus first and the desired behavior comes second. While many adherents remain, classical conditioning is currently out of favor because it appears too simplistic to explain all learning. In many cases learning occurs absent any stimulus and no matter how many comparisons are made. Human behavior is generally more diverse and unpredictable than animal. Because of this, educational leaders are generally hesitant to accept it uncritically. Second, operant conditioning is more widely deployed in modern higher education primarily because it takes its cues from the student and administers reward or punishment accordingly. Defining what the reinforcement structure will be, students are then presented the opportunity to match their behaviors to maximum advantage. Closely resembling contemporary parenting practices, it does not represent a jarring difference for most students and is therefore mostly accepted. Operant conditioning still uses a broadcast method for delivering content. Thus, it is criticized as a generic model that still relies on students fitting into its success rubric. Educational leaders generally accept operant conditioning's precepts as evidenced by its widespread deployment. Lastly, the information processing theory most closely resembles evolutionary thought on student development in that it attempts to customize information delivery to the receiver. The student's background, culture, and life experiences are factored into their ability to synthesize new information and arrive at a new cognitive level. Borrowing heavily from a data processing model, an attempt is made to realize that learners are constantly comparing new information to existing data models and adjusting. As amateur scientists, they compare what they know to the new information and reject or incorporate the new. Criticism of this theory comes chiefly from the mechanistic model it assumes and the pointed differences between computer protocols and human functioning. Flows of information are rarely accepted unilaterally by students and a bilateral architecture is more common. Leaders in education must consider this factor along with the complexity and cost of implementing a true information processing model.

References

Cummings, P. (1976). Thesis-antithesis-synthesis: Legend or fact? *Journal Of Critical Analysis,* 662-70.

DeBell, C. S. (1992). B.F. Skinner: Myth and misperception. *Teaching Of Psychology*, *19*(2), 68.

Kirsch, I. (2004). The role of cognition in classical and operant conditioning. *Journal of Clinical Psychology*, *60*(4), 369-392.

Leonard, D. C. (2002). *Learning theories, A to Z.* Phoenix, AZ: Oryx Press.

Mattila, J. (1978). G.I. Bill benefits and enrollments: How did Vietnam veterans fare? *Social Science Quarterly*, *59*(3), 535-545.