Behavioral Model

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# Introduction

 Behaviorism promotes a particular lens to viewing the complex relationship between the learning process and the impact of teaching in this process. The leading argument of the behavioral model is that only measurable and observable behavior can constitute a measure of learning. Another foundational principal operating the behavioral model is the emphasis on the role of the environment (Driscoll, 2000). According to behaviorist principles, people respond to variables through conditioning. Based on the responses from the environment, the probability of repeated behavior will increase or decrease. Thus, teachers who practice instruction within a behavioral model environment are to structure their lessons and instructional materials to encourage productive learning.

 The concepts reviewed in the study concentrate on the three strategies employed in teaching within a behavioral model framework, explore the research behind behavioral theory, and evaluate the weaknesses and the strengths of each strategy.

# Delimitations

 General research on behavioral model was reviewed. The study focused on the contributions of the theorists to the development of the models, the structure of the instructional delivery, and weaknesses and strengths of each model. Specific classroom examples were not reviewed in this paper.

# Methods

 In order to gain a comprehensive understanding of the behavioral model role and its applicability in the classroom, various databases and journals were reviewed in regards to the research leading the development of the behavioral model. The contributions of theorists to the body of knowledge were evaluated in regard to mastery learning, direct instruction, and simulation; and the strengths and weaknesses of each strategy.

# Review of the Literature

The review of literature will focus on the general outline of behavioral model, its history and conceptual framework. Following the general introduction to the model, each instructional strategy will be discussed in detail.

## Behavioral Model

 Behavioral models of learning evolved from the work of Pavlov (1927) on classic conditioning, a reflexive or automatic type of learning where a stimulus has a capacity to evoke a reaction that was originally triggered by another stimulus. Thorndike (1913) was another contributor to the behavioral model. His views assumed that a connection between a man’s intellect, character, and skill, and the response to situations and elements within them, constitutes the man’s sum of the world. Thorndike, in his studies of voluntary behavior, posited that learning represents the connection between the environmental stimuli and the behaviors reinforced by consequence which is governed by the law of effect, law of exercise, or law of readiness.

 B.F. Skinner’s *Science and Human Behavior* serves as the anchor for the behavioral model and its applicability to teaching (Joyce, Well, & Calhoun, 2009). Skinner notes that educational institutions use a variety of reinforcers consisting of good grades, promotions, diplomas, or degrees. In addition to this positive reinforcement, schools account for educational control by using punishment represented by birch rod and cane (B.F. Skinner, 1953). Even though the most extreme forms of punishment have been abandoned, Skinner states that other forms of aversive control still exist. If one aversive consequence is dropped, another one is created. Skinner also notes that educational systems can no longer rely on control via punishment or on students’ families to reinforce the importance of education. Skinner argues that schools may be more effective in providing conditioned reinforcers by pointing out the value of education where skill is not the sole goal to achieve. According to Skinner, schools cannot contend with supplying a student with a toolbox of right answers. Educational institutions should instead strive to establish a repertoire of skills through which a student could arrive at the right answer in a novel situation, without the teacher’s help.

 In the framework of the behavioral model, the tasks are arranged to ensure the high probability of success. Therefore, the highly programmed instructional materials and language laboratories are often used to ensure frequent feedback and the provision of carefully sequenced chunks of information for students who have experienced little academic success before. Behaviorist assumption rests on the premise that the past failure does not lead to uncorrectable behavior. Therefore, the use of positive reinforcement is vital to ensure student success (Joyce, Well, & Calhoun, 2009).

Burton, Moore, and Magliano (1996) propose the following basic assumptions of the behavioral model in instruction:

1. Knowledge is action, as the learner has to engage in behavior in order for the learning to occur.
2. Learning constitutes a change in behavior, building connections between the stimuli and the response events.
3. The processes that promote or inhibit learning are universal to all organisms.

Since learning constitutes a change in behavior, the goals for instruction are to be specific and individualized. Thus, the emphasis in behavior theory lies in delivering instruction in small groups, using carefully sequenced lessons and instructional activities (Joyce, Well, & Calhoun, 2009).

Behavioral model principles are evolving in complex ways, providing a basis for an intricate assessment system, such as the assessment being created by the Smarter Balanced Consortium. Driscoll’s concept of computer-assisted learning has evolved into computer-adaptive assessment (Driscoll, 2000). According to Driscoll’s principles, students are directed to different branches of complexity in their activities depending on the answer they have chosen in the initial question. Thus, the instructional program or assessment becomes more flexible and avoids staying linear, providing students and teachers with a more precise feedback system.

## Mastery Learning

 Mastery learning is a framework established through the works of John Carroll and Benjamin Bloom. Benjamin Bloom, in his article *Learning for Mastery* (1968), evaluates mastery learning through his current-day instructional and evaluation practices where teachers expect only one third of their students to adequately learn in their classroom. These expectations are mirrored in the administrative policies, grading procedures, and methods of instruction, eventually becoming a sorting machine where the final assessment product coincides with the teachers’ initial expectations (Bloom, 1968). Bloom believes, however, that most students can master the material, and the teacher’s task lies in finding the means to enable students to do so. Bloom rejects the concept of normal curve and views it as the “distribution most appropriate to chance and random activity” (Bloom, 1968). On the contrary, Bloom believes education is a purposeful activity where the effect of instruction resulting in a normal distribution should be viewed as a teacher’s failure to accommodate individual differences while contributing to the full development of an individual student.

 In conjunction with Bloom’s views, it is important to note the concept of aptitude advocated by Carroll. Carroll (1963) viewed the concept of aptitude not as one’s ability, but as the amount of time it requires for one to master the skill. Carroll notes that if the methods of instruction and the amount of time are appropriate to the characteristics and individual needs of each student, then the majority of the students should be expected to achieve mastery in the content under study.

 Carroll’s concept of aptitude was transformed by Bloom into a system where mastery was defined in terms of major objectives which, in turn, were chunked into sets of smaller learning units. Instruction then was structured in the form of carefully selected modes of teaching and brief diagnostic tests to measure student progress. Based on the data provided by these tests, enrichment or remediation activities could be planned (Joyce, Well, & Calhoun, 2009).

 The role of diagnostic assessment cannot be underestimated in mastery learning. Leyton (1983) explored the effects of teaching prerequisite skills, based on the data from pre-assessment, before instruction begins. The results of the study indicated that the students who possessed low prerequisite skills were more likely to achieve mastery if pre-taught following the initial assessment that outlined their deficient skills. Thus, the mastery learning model, if used in conjunction with brief diagnostic pre-, during-, and post-assessments can facilitate student success despite various levels of proficiency before the instruction.

Bloom also discusses the concept of mastery, its definition, and the evidence educators are to collect to evaluate whether student has successfully mastered this objective. In this light, Ralph Tyler’s Rationale is worth evaluating, as his contributions to formalizing the curriculum are significant in terms of rendering curriculum in terms of objectives and their evaluation to assess the impact of the curriculum on student learning (Tyler, 1949). Tyler believes that in terms of planning an instructional program or making instructional improvement, it is necessary to have a clear understanding of the goals for the program or the improvement. Tyler also cautiously notes that the process of selecting curricular objectives needs to be a systematic one, avoiding the danger of the goals becoming the personal preference of certain individuals or groups.

 Mastery learning provides students with ample opportunities to feel successful and emphasizes the specifics of instructional delivery methods to ensure individual needs of students are met. Carroll’s concept of aptitude does not only provide for connecting student individuality and the time required to achieve mastery. This concept also proposes different modes of instruction to suit student learning styles (Bloom, 1968).

 The major concern in using mastery learning is time. Bloom (1968) grapples with the issue of reducing time for the slower students to master the skills and concepts to the point where it is “no longer a prohibitively long and difficult task for these less able students.” Bloom states that the time that a student requires to learn for mastery is affected by the individual aptitude, verbal ability, and the quality of help he or she receives outside the classroom walls. Thus, student family support needs to exist in order for this model to be efficient. In the light of the current familial structures, mastery learning advocates should be providing tutoring, individualized services, and smaller group instruction to meet the needs of the majority of students within the school environment.

## Direct Instruction

 In direct instruction, the main contributors to learning are task definitions and task analysis (Joyse, Weil, & Calhoun, 2009). Learner performance is conceptualized into goals and tasks which get broken into smaller components, with the subsequent creation of learning task sequences that ensure student transfer of skill from one component of instruction to another. Direct instruction is characterized by a great degree of teacher control, academic focus, and a system of managing time. Students have little choice in selecting activity, with larger groups used for instruction (Rosenshine, 1979). The pattern of teaching particular to direct instruction includes teacher explanation of a new concept to students and student practice of the skill with teacher scaffolding gradually removed. Rosenshine (1985, as cited in Joyce, Weil, & Calhoun) notes that more effective teachers devote more time to explaining new material than more ineffective ones. The emphasis is placed on the introductory activities that activate student prior knowledge or introduce students to the topic of the lesson.

 The role of checks for understanding and feedback is very important in the process of direct instruction (Joyce, Weil, & Calhoun, 2009). Teachers check for understanding, frequently, with the focus of the questions lying in seeking specific answers or the explanation as to how those answers were found. Nonacademic questions during the instruction are highly discouraged, with academic focus prevailing during the lesson. The teacher feedback should focus on the academic, not behavioral nature. Even though the behavioral model emphasis on positive feedback is evident in direct instruction, the praise should be provided based on the quality of response (Gage and Berliner, 1983, as cited in Joyce, Weil, & Calhoun, 2009).

 Direct instruction becomes quite scripted in its delivery and planning. Joyce, Weil, and Calhoun (2009) outline five phases of direct instruction activity: orientation, presentation, structured practice, guided practice, and independent practice. The teacher spends considerable time setting the stage for the lesson and introducing the new material. Teacher feedback is immediate during the structured practice, with scaffolding removed as the practice goes from guided to independent. In this highly structured environment, the teacher has to avoid the danger of becoming more of a technician and be able to switch the method of instruction based on the nature of the skill to be taught.

 Direct instruction works well when a teacher focuses on teaching basic skills. However, if inquiry-based, higher order skills are the focus of the lesson, direct instruction is not the best choice (Peterson, 1979). Teachers using the concept of direct instruction teach the lessons in a carefully designed sequence until the students reach skill automaticity. Since the direct instruction is based on student acquisition of general comprehension and analytic skills, it is not suitable for inquiry-based focus where emphasis is on the development of higher order, synthesis, and evaluation skills.

Direct instruction has received some criticism despite the research showing that students exposed to this approach displayed high achievement scores. Frymier (1981), for example, was concerned about the meaningfulness of the task, noting that learning is more than just time on task emphasized during direct instruction. In order to learn, students need to connect their experiences, feelings, and background to the content. For example, in teaching reading, a teacher cannot emphasize separate skills, such as word decoding or phonemic awareness, without linking them to the meaning of reading or outlining these skills as a primary purpose of reading. Thus, even though the direct instruction is viewed as conducive to fostering higher achievement scores on standardized tests, it does lead students to acquire more sophisticated skills.

## Simulation

 Simulation provides students with an opportunity to play the roles of persons engaged in real life pursuits, practicing skills in simplified environments where learning is safe and protected (Joyce, Weil, & Calhoun, 2009). Simulated instruction is based on the belief that students modify their behavior based on the feedback received from their environment. The environment response is in “full”, helping the learners experience the consequences of their decisions rather than receiving positive or negative answers from a teacher.

 Simulations provide learners with the opportunities to practice skills in safe, protected environments where learning tasks are simplified or made less dangerous (Shellman, 2006). Opportunities for learner self-reflection are continuously present, with instant feedback helping learners correct their behavior through the lens of their experiences rather than being directed by a teacher. Simulations offer students the means to engage with complex environment in a manner that cannot be provided for by the worksheets or lectures. During simulations, students practice not only academic skills but also become more engaged in instruction. Newmann and Twigg (2000) go even further suggesting that the relationships between students and teachers become more meaningful.

 Simulation might not be applicable to every content area, with activities varying in relation to the lived experiences of the learner. It might be argued that within complex learning environments, some students might struggle with understanding what they are actually learning. Additionally, with complex, changing environments, the validity of the simulation activities as well as their relation to the real, lived experiences might be questioned (Newmann and Twigg, 2000).

# Applicability of the Model to Preferred Teaching Style

The behavioral model is quite widely used in the schools today, even though emphasis on other teaching models is advocated by the societal demands to produce career ready citizens. In my work as a principal of curriculum and instruction, I provide professional development sessions for my teachers quite frequently. In reviewing the aforementioned models, I can definitely say that I mix direct instruction and simulation during my lessons for teachers. I emphasize learning by doing and try to expose teachers to a variety of strategies by putting them into the learners’ seat. I follow the principles of direct instruction of chunking my delivery of information into manageable time segments and using frequent checks for understanding to keep teachers on task, engaged in learning and reflecting on their instructional practices. After providing teachers with a rationale, research, and basic description of strategies or instructional practices, I allow them to practice skills or engage them in simulations to experience the effects of the instructional strategies on their learning.

Mastery learning has always been a very difficult notion to adopt in the classroom based on the concept differentiation of instruction and the time allotted for each student to master the material. Just like the differentiation concept, mastery learning requires skill, practice, an expert view of the content, and a variety of approaches to help all students learn. Teachers struggle with time constraints, the requirements for teaching a vast number of standards, and diverse student ability levels. Thus, many teachers perceive teaching to the mastery as a time-consuming, cumbersome concept. Therefore, even though I believe that the concept of mastery learning is invaluable to reaching each student, I feel like I am lacking skill as a teacher to implement it with fidelity.

# Conclusions

 Behavioral models promote the stance that humans are self-correcting mechanisms who change their behavior in response to the stimuli provided by the environment (Joyce, Weil, & Calhoun, 2009). These teaching models are available to the learners of all ages and cover a vast range of educational goals. However, with the requirement for observable behavior, the level of skill addressed through strategies of mastery learning, direct instruction, and simulation is usually represented by the basic, low-level understanding of the concepts. Behavioral models are highly structured and sequential in their approach to teaching, sometimes reducing the role of the teacher to the one of a statistician rather than guide of higher order learning. Even though the research base on the impact of behavioral model on student achievement measured by standardized testing is solid, teachers have to consider other approaches to instruction to ensure students are engaged in higher order, rigorous, and meaningful instruction in addition to the behavioral model strategies.

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