# FOUNDATIONAL LEARNING THEORIES AND STUDENT LEARNING MOTIVATION

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**Abstract** – Though learning theories vary in complexity and usefulness, a thorough understanding of foundational learning theories is a necessity in today's educational environment. Additionally, learning theories lead to approaches in instruction that can affect student motivation and learning. The combination of a learning theory and elements to enhance student motivation can create a learning context where the student can thrive in their educational pursuits. This paper will provide an overview of three main learning theories: (1) Behavioral Theory, (2) Cognitive Theory, and (3) Constructivist Theory and explore their connection to elements of student learning motivation. Finally, we apply these learning theories and elements of student motivation to the FastStart Program at the Community College of Denver and discuss potential of the program to have success in increasing student success outcomes.

**Keywords** - Learning Theory, Student Learning Motivation, Developmental Education

## I. INTRODUCTION

Learning theories develop over long periods time, experiences, observations, and scientific testing. They have become foundational in the learning experiences of students and in the teachers who hope to be effective in their field of instruction. Many learning theories vary in terms of complexity and usefulness.

A thorough understanding of many learning theories is a necessity in today's educational environment in order to assess the best uses of each theory and the contexts where they will be the most effective. Many have found that when learning objectives are basic and simple, the more basic learning theories can be the most useful.
At the same time, the more complex the learning objectives, the more complex learning theories should be put into use. There are three foundational learning theories that have influenced instruction throughout their history and have affected subsequent learning theories as well: (1) Behavioral Theory, (2) Cognitive Theory, and (3) Constructivist Theory.

While they each share many similarities, they also have differences that, when thoughtfully employed, can influence instructional design in purposeful and meaningful ways. An experienced instructional designer recognizes the different situations, learners, and environments where various theories can be most effective in the learning process.
Student motivation must be explored within the context of learning theories for it to be most effective when applied in and out of the classroom. It is this connection to learning theory that grounds student motivation discussions and provides practical techniques to the instructor. This paper will discuss this connection and its translation to the classroom to improve student success outcomes.

## II. LITERATURE REVIEW

Figure 1 below depicts the three foundational learning theories that will each be discussed in turn: (1) Behavioral Theory, (2) Cognitive Theory, and (3) Constructivist Theory.

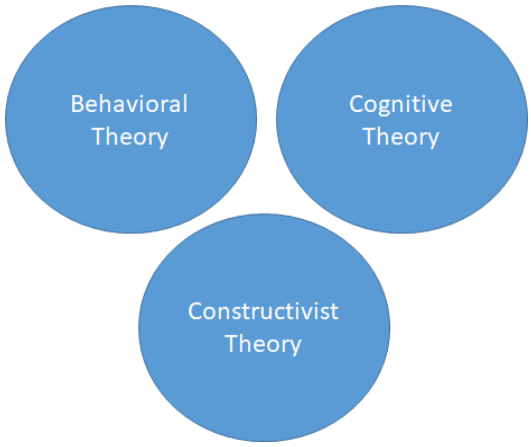



**Figure 1: Foundational Learning Theories**

### 2.1. Behavioral Theory

Behavioral theory states that learning is a result of repeated behavior brought on by a stimulus. The theory purports that behaviors are measurable and observable and can be reinforced with positive feedback. A stimulus is provided for the learner and when a correct response is given, a reward then helps the learner to connect the stimulus with the correct behavior and learning occurs when this bond is regularly reinforced. This theory does not take into account what goes on in the mind of the learner, but rather the outward behaviors of the learner. This can be expanded to entire sequences of desired behavior where the initial behaviors are rewarded until the learner has successfully performed the entire required sequence of behaviors.

Within the theory of behavioral learning, the role of the teacher is to provide an environment where the appropriate stimulus will occur naturally, or to provide the stimulus itself, and to give a reward, sometimes in the form of positive feedback. The goal for the learner is to discover, sometimes through trial and error, the correct response to the given stimulus and then link the two through repetition. This theory can work well when learning objectives involve quick, behavioral responses that are not complex in nature.

An example of a time when behavioral theory could be applied is teaching multiplication facts in the developmental math classroom. Multiplication tables and facts are a great tool to use as the student continues in the developmental sequence and quick recall of low number products can greatly ease the flow of learning more complex mathematical content. An activity based on behavioral learning theory to achieve this learning objective is to use flashcards. The stimulus in this activity is the visual on the flashcard, such as 4 x 5 = ?. When the student gives the correct response, in this case, 20, they are given positive feedback by their partner and immediately move on to the next flashcard. An appropriate assessment would be a timed quiz, where quick responses are required with 20 verbal questions and 20 written questions. Behavioral theory and the use of flashcards is very effective in this instance as the learning objective requires low level thinking with memorization and quick recall of facts.

**2.2. Cognitive Theory**

Cognitive learning theory states that learning is done through relating new information to already existing understanding of old information. This theory suggests that the learner has mental structures, called schema, that the instructor must be aware of in order to connect the new information with what the learner already has an understanding of. If new information is meaningful and connected to existing schema, the learner is able to re-organize or build upon what is already known to increase understanding. With well built schema, the learner is able to transfer knowledge and apply it to new and different situations.

Within cognitive learning theory, the teacher is required to build on existing understanding in the learner in meaningful and connected ways. The goals of the learner are to link the new information to what they already know in order to build upon their existing schema and apply the new knowledge in various scenarios. The application of cognitive learning theory works well with learning objectives that are more complex than rote memorization, but which do not require high order thinking.

An example of cognitive learning theory in the classroom would be in the teaching of physics applications of previously taught math concepts. The students have already studied graphical features of quadratic functions as well as factoring quadratics, therefore, those schema are present in their knowledge base. The instructor gives a description of an observable situation, such as a rock being thrown from the top of a building with the corresponding descriptive quadratic function. Students can use their understanding of both quadratic functions and real-world knowledge of what happens when a rock is thrown off of a building to learn new applications in mathematics. Building on this knowledge to come to conclusions about when the rock will hit the ground and how high it will get in the air can be easily extrapolated by the students with the facilitation of the instructor. Discussion should follow about what other physical situations might be applicable to quadratic functions. This learning objective presents a great use for cognitive learning theory effectively because it builds on what the learners already know. They are presented with new information, in this case, the physical situation of a rock thrown off a building, that connects what they have already learned to the real-world in a meaningful way. The learners are then encouraged to transfer this new knowledge to other, predictable uses.

**2.3. Constructivist Theory**

Constructivist learning theory states that knowledge is gained through the experiences of the learner. Learners construct a reality based on their personal experiences. Learning is an active process where interactions with others and the environment shape the knowledge of the learner in ways that are meaningful to them personally. Social interactions then expand the perspective of the learner to create greater understanding and the ability to relate knowledge to other areas. Constructivist learning theory states that learning occurs when meaning is connected to experience.

Within constructivist learning theory, the learner hopes to have experiences that will lead to connections made with the subject matter that will be personally meaningful to them. The teacher is required to create environments that will provide these experiences for the learner while interacting with the perspectives of others. This learning theory is used well in contexts of higher order learning. When complex ideas or constructs are used, a more complex learning theory can be well suited to the situation.

An example of constructivist learning theory being well used could be with the professional development of faculty. A learning activity could begin with the basic idea of "How to best serve nontraditional developmental math students." The activity would begin with faculty determining what they might wish to learn as individuals and as a group. An administrator would then lead with discussion questions where each professor can share their personal experiences and ideas. Encouraging open minds and new ideas on the subject at hand is paramount to a successful, dynamic discussion. This

activity utilizes constructivist learning theory because it begins with no specific learning objectives, but rather, the learning objectives are created by the learners as they go. The learners make connections with the experiences and ideas of others with their own experiences and reflections. To fully employ a constructivist learning theory in an activity, learning must continue beyond the time of the structured activity. In order to encourage further learning, faculty could be paired and visit the classrooms of their peers to observe and experience the techniques employed by others in their field.

## III. STUDENT LEARNING MOTIVATION

Learning theories lead to approaches in instruction that can affect student motivation and learning. The combination of a learning theory and a method for student motivation can create learning structures where the student can thrive in their educational pursuits. This section will explore student learning motivation, as discussed by Wlodkowski and Ginsberg (2017), related to the following five areas, depicted in Figure 2 below: (1) Cultural Responsiveness of an Instructor, (2) Pillars of Student Learning Motivation, (3) Student Diversity, (4) Shared Responsibility for Learning, and (5) The Instructor's Role in Motivating Students.




**Figure 2: Elements of Student Learning Motivation**

### 3.1. Cultural Responsiveness of an Instructor

There is a direct connection between the cultural responsiveness of an instructor and the motivation of students. Students with different cultural backgrounds are going to find motivation to learn in different ways and an instructor who is sensitive to this fact has the opportunity to influence the motivation levels within his or her classroom. Intrinsic motivation is very complex and can be influenced by a variety of factors that are unique to each student. An instructor who is culturally responsive shows a level of respect for the students that is necessary before students can even begin to find their motivation. It is an initial requirement that must be present in order for students to feel positive about their experience in a classroom. "Motivation does not occur in a vacuum. It is energy with a consequence… people's motivation to learn is released by a vision of a hopeful future" (Wlodkowski, 2017, p.87).

The beginning days of a course are a particularly important time for the instructor show a culturally responsive attitude toward the students. The beginning of a semester sets the tone for the entire course and an insensitive comment could derail the entire course before it has begun. It is, therefore, crucial to create an environment at the start where students feel respected and appreciated for their various cultural backgrounds. One strategy to accomplish this would be to have a frank discussion with the students on the first day of the course. Set communication norms as a group where all students commit to respect each other as well as give each other the benefit of the doubt when possible. Decide together to be sensitive to each other as well as open to new ideas. Commit to find ways to contribute to the classroom atmosphere by being mindful of the way we think, speak, and act. This discussion will show the students that the instructor is purposeful in their inclusivity and in their pledge to be culturally responsive.

### 3.2. Pillars of Student Learning Motivation

Figure 3 below depicts the five pillars of student learning and motivation include: (1) Expertise, (2) Empathy, (3) Enthusiasm, (4) Clarity, and (5) Cultural Responsiveness.

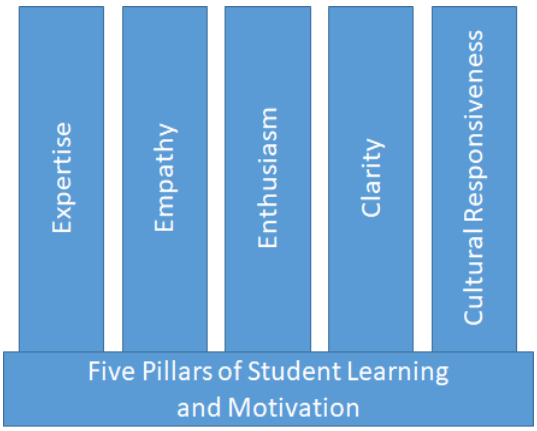



**Figure 3: Five Pillars of Student Learning and Motivation**

The first pillar is expertise. Adults have high expectations when it comes to the expertise of their instructors and are quick to observe the depth of knowledge of their instructors. Adults have many

demands on their time and do not wish to engage in anything that they feel is wasteful of their time and money. As an instructor in developmental math which involved content from arithmetic to upper level algebra, the content mastery itself is not very difficult for me. However, being able to present the material effectively is where the challenge lies. There are a lot of professors who are extremely mathematically minded and the breadth of their knowledge is truly astounding. However, when it comes to conveying the concepts to students, particularly developmental students, they stumble. I was once asked to let a 9th grade student shadow me for a day while she observed what went into being a math instructor. This student was exceptionally gifted in math and is ranked in the top ten nationally for her grade. Her mathematical abilities were truly astounding. At the end of the day, we discussed what she observed and her thoughts about being a math instructor. The first thing she said was that she had no idea the level of patience that was necessary to teach. Just watching me teach and reteach throughout the class was an exercise in frustration for her. She recognized very quickly that being knowledgeable on a subject and being able to teach that subject are two very different things. The second pillar is empathy. Almost all developmental students have had experiences with unempathetic teachers in the past. They have had their fair share of impatience and frustration from teachers who do not show an understanding of where the student is coming from. An empathetic instructor can make a world of difference for them. Simply showing some understanding and compassion can truly help to motivate a student who has felt left out in previous classes. The third pillar is enthusiasm. Students need to see enthusiasm in their instructors The overall enthusiasm of the instructor becomes the overall enthusiasm of the group as a whole and can create a level of excitement for learning. The fourth pillar is clarity. Expectations in the course and how to meet those expectations must be extremely clear. Instructors must be extremely patient and encouraging when students get bogged down or frustrated by the material. I have found that students like to know exactly what is going on in a class and where they stand at all times. Developmental students also need to have things explained on their level where they can understand the material in real-world ways. This often includes re-explaining concepts in many different ways in order to make sure things are clear for everyone. The fifth pillar is cultural responsiveness. This pillar is not easily described and goes deep and wide in concept. However, even a basic willingness to learn and to show sensitivity to students can motivate them to work in the class.

### 3.3. Student Diversity

Developmental students are just as diverse as college populations. They come from all backgrounds and walks of life. Representations of all different cultures can be found within developmental student populations, therefore, cultural responsiveness is imperative when teaching developmental courses. A main take-away from the ideas of cultural responsiveness is to treat everyone with respect and giving equal learning opportunities to all. This is also central goal of developmental education. Wlodkowski and Ginsberg stated that the idea of cultural responsiveness is to "change ideas and attitudes that perpetuate the exclusion of underserved groups of students and significantly challenge their motivation to learn" (2009, p. 11). This defines the purpose of developmental education as well as instructors strive to remove obstacles that have long stood in the way of student success.

### 3.4. Shared Responsibility for Learning

The responsibility to motivate students does not rest solely with the students, but nor does it rest solely with the instructor. It is a dual responsibility that requires the work and commitment of both student and instructor alike. Constructing this paradigm at the beginning of the semester benefits the students who will see that they need to work and commit to learning, but that their instructor is on their side as well. Knowing that their developmental teachers want them to succeed in developmental courses as well as their entire college career can be a powerful motivator. Student motivation does not reside on either side of the pendulum, but rather requires all parties to strive for excellence. Of course, there are times when a student will not or cannot take on their obligation. Instructors can put in extra effort and try additional motivating strategies with these students, but a teacher cannot instill motivation into a student who is not receptive.

An unmotivated student does not necessarily mean that an instructor has not put in the effort required. In my opinion, an instructor who has genuinely tried to motivate a student, but cannot give the student a passing grade in the end, can feel confident that they have done their duty.

### 3.5. The Instructor's Role in Motivating Students

Motivating student should definitely be a factor in the hiring process. Developmental students, especially, need extra attention to motivation in their courses and the instructors should be willing and desirous to assist the students in any way they can. There are some simple ways to determine whether potential instructors will employ motivating strategies in their classroom. The first, is to thoroughly read their teaching philosophy statement. It their statement includes statements regarding student motivation, this is a great place to ask follow-up questions to ensure that they are truly committed to doing their part. Another option would be to ask for specific strategies that the instructor uses in their classroom to motivate students. Candidates could also be given a situation

of an unmotivated or bored student and asked to describe their approach to helping that student.

## IV. A CASE STUDY: REDESIGN OF DEVELOPMENTAL PROGRAM AT THE COMMUNITY COLLEGE OF DENVER

The Fast Start Program at the Community College of Denver is an example of efforts to improve student success outcomes in developmental mathematics programs. This new accelerated approach to developmental education, while somewhat reactionary to current politics, is designed to improve student learning and motivation, which then leads to student success. It is certainly not a perfect design, however its reliance on behavioral rewards for learning and academic momentum to provide motivation leads to its credibility and potential.

The Community College of Denver's FastStart Program is a fundamental change in the way developmental programs are designed. The courses have been compressed into block semesters, allowing students to enroll in two courses simultaneously. It also provides the opportunity to complete two courses in the developmental sequence in one semester instead of two semesters. Essentially, the program accelerates the students' path through the courses in their sequence in order to increase student completion rates of developmental and gateway courses. In addition to the acceleration, students are provided with additional support to ensure their success. This includes intense advisement a concurrent student success course.

In many cases, accelerated programs that are currently being implemented seem to be a reactionary measure to address low student success rates and pressure from legislation to cut costs. However, these redesigned models could also be grounded in the theory of academic momentum (Goldrick-Rab, 2007). The concepts included in academic momentum as a theory are that students are more likely to continue in their college career and be successful in their courses when they are able to complete more credits early on in their studies. Traditionally, developmental courses have slowed the successful completion of credit courses for many students, but the FastStart program addresses this issue through acceleration.

The students who are enrolled in FastStart must be made aware at the beginning of the program of the differences in the nature of the program and what that means in their personal learning and studies. The students, who are required to enroll in a student success course, learn effective study strategies, time management, and about their personal learning styles. With these skills, students are able to comprehend the level of commitment required to be successful in this high credit bearing program. The time and effort essential to success is more than that in a traditional developmental sequence. Students who begin with this understanding and make a personal commitment to work and study, along with the additional supports found in the program, make them much more likely to succeed. Instructors in the FastStart program take on a slightly different as well. They must work together with the students to encourage in their continued work and effort in the program. The intensity of the program and its pace comes with its own unique difficulties for the students and teachers must be cognizant of these in their individual students and act as a long term mentor to students who may need the extra personal support and attention.

Teaching a block course requires different skills than a traditional fifty-minute course. The consolidated time in the classroom allows for more in depth coverage of certain concepts and the instructors of these courses must use varying teaching techniques to create an effective learning atmosphere within the classroom. Teachers must also put forth extra effort to gain a report with the students and show genuine concern and care for them as individuals in order to maintain motivation and engagement among their students.

## CONCLUSIONS

Although the FastStart Program at the Community College of Denver has great potential for success in increasing student success outcomes, there can and should be more thoughtfulness in the design of these developmental programs. Basing these programs in a combination of sound learning theory and student motivation approaches can lead to stronger redesigns of programs and, therefore, higher levels of student success and achievement.

These three foundational theories and pillars of student learning motivation have many contexts of usefulness and effectiveness. They build in complexity and their implementation should correspond to the complexity of the material to be taught. The level of understanding required and the intricacy of the given material should dictate the theoretical approach to the learning activity or instruction. The learners themselves along with their cognitive and academic development, must also be considered. Each group of learners comes with their own dynamics and levels of understanding. A firm grasp of these three theories and many others that have come since, allows for more options that will more closely align with given goals in different situations and with different learners. Teachers have been given the responsibility of "translating principles of learning and instruction into specifications for instructional materials and activities" (Smith & Ragan, 1993, p. 12). The best method for meeting this goal is to be knowledgeable of varying learning theories and their best applications.

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