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**STRATEGIES TO TEACH GRIT AND PERSEVERANCE TO STUDENTS
WITH SPECIAL NEEDS THROUGH THE GROWTH MINDSET**

**A MASTER'S THESIS
SUBMITTED TO THE FACULTY
OF BETHEL UNIVERSITY**

**BY
MELISSA ANDERSON**

**IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF
MASTER OF ARTS IN SPECIAL EDUCATION**

MAY 2022

**STRATEGIES TO TEACH GRIT AND PERSEVERANCE TO STUDENTS
WITH SPECIAL NEEDS THROUGH THE GROWTH MINDSET**

BETHEL UNIVERSITY

BY

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APPROVED

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MAY 2022

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Truly, it took a village to help me complete my master's thesis. My village provided the support and the nudging that I needed to complete my thesis. My journey has been challenging in ways I had never imagined. I had to rely on my own Grit and Growth Mindset to accomplish this goal.

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Abstract

Recently, there has been increased attention on the importance of non-cognitive skills in achieving academic success. Grit and The Growth Mindset are two of the characteristics. Research has established a positive correlation between Grit and The Growth Mindset with academic achievement, higher graduation rates, and better self-esteem. Evidence strongly suggests the benefits of developing strong cognitive skills reach beyond the school-aged years, providing individuals with the skills to be productive and successful adults. However, research on this topic is still in the early stages. There is limited qualitative information available. The studies offer quantitative information linking Grit and The Growth Mindset to success. There is a current void in the research investigating how psychological factors, such as Grit and The Growth Mindset, play in the academic success of students with disabilities. This capstone project reviews the available literature regarding the importance of Grit and the Growth Mindset; explores why some students succeed while others fail; investigates methods of how special educators can develop those skills in students with special needs.

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CHAPTER I: INTRODUCTION

DUCKWORTH PERCEPTIONS OF THESIS TOPIC

Stanford researcher Angela Duckworth (Duckworth, 2016) started her career as a seventh-grade math teacher in the New York public school system. Early in the school year, she noticed some students grasped onto the seventh-grade math skills easier than other. She assumed these students had a higher ability or more of a talent than their classmates. Duckworth predicted this would be the case throughout the school year. However, this was not always the case. Some of the students who showed an early aptitude for math, or were believed to higher ability, were often the students who struggled the most in her class. In contrast, the students who devoted the most time and effort into their daily math lessons were receiving the highest scores. Ability was not a reliable predictor of academic success or struggle. She knew from building relationships with each student that they were all capable of learning seventh-grade math concepts. This led her to ask why some students were more successful than others? Were there better predictors of success than ability or talent?

THESIS WRITER EXPERIENCE

While working at a small charter school in West St. Paul, this researcher observed a similar achievement gap among students in special education as Duckworth observed in her classroom. The students who showed more talent, or who were identified as having more ability, were not always the ones that made the most significant gains toward their Individual Education Plan (IEP) goals. Two specific students with seemingly similar abilities, skills, and backgrounds exemplified this difference in achievement. One student was in the first grade, and the second student was in the third grade. Both students were English Language Learners who shared similar cultural, linguistic, and socio-economic backgrounds. Both students demonstrated

average cognitive abilities on a standardized intellectual achievement test. Both students received specialized instruction using a scientifically based reading program curated to build off their individual learning styles and address specific early reading skills. The curriculum was systematic, sequential, and provided opportunities to interact with the material through multi-sensory activities. The only notable difference was the primary languages spoken in their homes. The primary language spoken in the home of the third grader was English, while the first-grade student's family only spoke Karen, a language spoken in lower Myanmar (Burma) and on the borders of Thailand. One would predict they would make similar gains towards their reading goals. If anything, the student whose family was proficient in English would be expected to progress a bit quicker. After nine months of receiving intensive reading instruction for 45 minutes a day, five days a week, one student made significantly more progress than the other. It was not the student who benefited from English being the primary language spoken in the home but rather the student who demonstrated grit, perseverance, and a growth Mindset. The first-grade student from the Karen family made the greatest advances in his academic skills. Two years later, he was reading at grade level and was exited from special education services. Why was he more successful than the other student?

The question of why some students fail where others succeed inspired Duckworth (2013) to look beyond the correlation between intelligence and success by looking closer at how personality plays a role in success. Researchers began to investigate this problem by examining the behaviors or characteristics of "successful" adults over the age of 25 across professions and participants in the Scripps National Spelling Bee. Results from this study identified several common personality traits, such as self-control, perseverance, and tenacity were shared among high achieving individuals. Duckworth and associates noticed one personality trait that rose to

the top- Grit. Grit is passion and perseverance towards long-term goals. It is working strenuously towards challenges and maintaining effort and interest over the years, despite failure, adversity, and plateaus in progress (Duckworth, 2013; Bashant, 2014).

Measuring Grit

Traditionally, student achievement is measured by their performance on standardized assessments normed on grade level or age. These methods yield strong, empirical data that is standardized on a group of peers. Despite the inherent biases of standardized assessments, these measures are the primary method of identifying special education students.

Duckworth believed to truly understand the underlying question of why some students succeed where others fail, there needed to be a deeper understanding of the psychology of learning from a motivational standpoint (Duckworth et al., 2007; Duckworth, 2016; Duckworth et al., 2011; Duckworth, 2013). But how does one reliably collect data on something as abstract as character traits? The primary methods used in the literature to measure Grit and the Growth Mindset were self-reports, informant reports, school records, and behavioral task performance.

There are several advantages and disadvantages in the methods used in the research used in this thesis. One of the most used methods of research used was through self-report. Participants typically filled out a questionnaire about their impressions. An example of this would be the Original Grit Scale (Duckworth et al., 2007; Duckworth, et al., 2011; Duckworth, 2013). The advantage of the self-report method is that it is easy to administer and interpret. The disadvantages are that the validity of the results is dependent on the ability of participants to self-evaluate their skills. Additionally, responses can be influenced by the subjects perception of the purpose of the questionnaire.

Informant reports use the impressions and opinions of observers regarding targeted behaviors. The benefit of this method is that it minimizes the biases of self-report. The disadvantages are that it can require a lot of resources (i.e., training for observers, aggregating and interpreting data), responses are subject to biases, and the observer can only give their impression about the subjects when they are present.

The advantage of school records is that they provide information regarding grades, attendance, academic achievement, and behaviors over a length of time. The disadvantage is that the information is one-dimensional and lacks information about circumstances and environmental factors.

Data collection by behavioral task performance can provide information regarding tenacity, persistence, or giving up. Its digital format allows it to be integrated into the curriculum; however, it requires technological resources.

Duckworth and associates developed The Original Grit Scale (Grit-O). The Grit Scale-O is a self-reporting questionnaire. Individuals rated themselves on a five-point scale ranging from “Very much like me” to “Not like me at all”. The questionnaire included examples such as these:

The Original Grit Scale

1. New ideas and projects sometimes distract me from previous ones.
2. Setbacks don't discourage me. I don't give up easily.
3. I often set a goal but later choose to pursue a different one.
4. I am a hard worker.
5. I have difficulty maintaining my focus on projects that take more than a few months to complete.
6. I finish whatever I begin.
7. My interests change from year to year.
8. I am diligent. I never give up.

9. I have been obsessed with a certain idea or project for a short time but later lost interest.

10. I have overcome setbacks to conquer an important challenge.

(Duckworth, 2022)

Duckworth wanted to understand how students learn to better identify factors that contributed to success. She used the Grit Scale to identify common factors in successful people. She researched factors and/or characteristics of cadets dropping out of basic training at New Point Military Academy, competitors in the Scripps National Spelling Bee, salesmen, and high school students. Researchers identified “Grit” as being a significant factor in success. Individuals identified as having more Grit received higher academic grades, were more successful in their careers, performed better at a national spelling bee competition, and had higher graduation rates (Christopoulou et al., 2018; Duckworth et al., 2007; Duckworth & Seligman, 2005).

Duckworth later condensed the Original Grit Scale into a shorter, 8-item questionnaire called the Short Grit Scale (Grit-S). The Short Grit scale included two scales measuring the “Consistency of Interest” and “Perseverance of Effort.” The Short Grit Scale provided self-reporting and informant reporting measures (Duckworth & Quinn, 2009). The following are examples of questions found on the Grit-S:

Short Grit Scale Examples

1. I have been obsessed with a specific idea or project for a short time but later lost interest.
2. New ideas and projects sometimes distract me from previous ones.
3. I have achieved a goal that took years of work.

4. I have overcome setbacks to conquer an important challenge.

GROWTH MINDSET

Researcher Carol Dweck asked a similar question about the difference between student achievement and perseverance. Why did some individuals persist during difficult tasks while others gave up given the same task? Dweck believed an individual's perseverance and continued effort to do or achieve something despite difficulties, failure, or opposition, resulted from a person's Mindset.

Dweck found that perseverance toward difficult tasks depended greatly on their underlying belief about their own abilities (Dweck, 2016a; Dweck et al., 2014; Hochanadel & Finamore, 2015). Students with a growth Mindset believed:

“... that their most basic abilities can be developed through dedication and hard work—brains and talent are just the starting point. This view creates a love of learning and a resilience that is essential for great accomplishment.” (Dweck, 2015)

Compared to students with a Fixed Mindset, they believed their intelligence and abilities were fixed, and could not be changed. These students believed success was achieved by those who had a natural talent. Having to put forth effort toward a skill meant they were incapable or inadequate. (Dweck, 2016b). The research investigated further how Mindsets were developed and if we could indeed teach them in the schools.

Measuring Growth Mindset

The Mindset Assessment is a self-assessment questionnaire used to assess the Mindset of individuals over the age of 12. Individuals rate their responses to the following questions on a five-point scale ranging from “disagree a lot” to “agree a lot”.

Growth Mindset Questionnaire

1. No matter how much intelligence you have, you can always change it a good deal.
2. You can learn new things, but you cannot really change your basic level of intelligence.
3. I like my work best when it makes me think hard.
4. I like my work best when I can do it really well without too much trouble.
5. I like work that I'll learn from even if I make a lot of mistakes.
6. I like my work best when I can do it perfectly without any mistakes.
7. When something is hard, it just makes me want to work more on it, not less.
8. To tell the truth, when I work hard, it makes me feel as though I'm not very smart.

All of us possess both a Fixed and Growth Mindsets. Giving a diagnostic scale like the one above helps educators better identify areas to target in their own mindset and in the mindset of students to develop a Growth Mindset (Dweck et al., 2014; Laursen, 2015).

FURTHER CONSIDERATIONS OF GRIT AND MINDSET

To answer the question of why some students succeed where others fail, this thesis writer will address the differences between Grit and Mindset and the role they play in academic outcomes. This writer will further explore their association with successful outcomes and how they can be taught. The purpose of this thesis then is to investigate the role the psychological factors of Grit and Mindsets play in student success and investigate how to develop these skills specifically in students with disabilities. This process will begin by increasing our understanding

of the components of Grit and Mindset, how they develop, and if they can be developed through instruction. What determines if a student persists or gives up on challenging tasks? Can students learn these skills? If so, how can educators develop these skills in students? How can special educators differentiate instruction in character development to increase Grit in students with disabilities? This writer will apply this information to determine how Grit and the role of Mindset meet the individual needs of students with disabilities. Therefore, this thesis will address the following two questions:

THESIS QUESTIONS

- 1) Can non-cognitive skills, such as Grit and Mindset, be developed in students with disabilities?
- 2) What are effective strategies for teaching Grit and the Growth Mindset to students with special education needs?

CHAPTER II: LITERATURE REVIEW

INFORMATION GATHERING PROCESSES

The study of how non-cognitive factors, such as Grit, relate to student success is still in its infancy. Therefore, there is little empirical data available to collaborate the correlation between non-cognitive skills and academic outcomes. Most studies used in this thesis are correlational in nature. Resources for this thesis were gathered through the Bethel University Reference Library and Google Scholar. Words used during the search included “Grit,” “Growth Mindset,” and “non-cognitive skills,” in addition to “students with disabilities” and “education.” The search yielded many books, journal articles, and TED Talks.

PSYCHOLOGICAL FACTORS or DEFINITIONS ASSOCIATED WITH NON-COGNITIVE SKILLS

Psychological factors, also known as motivation factors, non-cognitive skills, and soft skills are all words used to describe the characteristics associated with character. The definition of psychological factors changes depending on the culture and area of study. Psychologists often refer to psychological factors as “The Big Five,” which include Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism (Köseoğlu, 2016).

In the educational setting, psychological factors have been referred to as soft skills, non-academic skills, and non-cognitive skills (Bashant, 2014; Duckworth et al., 2007; Duckworth, 2013; Dweck et al., 2015; Merz, 2014). Because the previously mentioned terms suggest these skills are secondary and not as important as cognitive skills in the success of students, recent literature has referred to these skills as “developmental skills” (Dweck et al., 2016). The term non-cognitive skills will be used to correspond with the language used in the majority of the literature and research used to support this thesis.

As mentioned in the previous paragraph, the terms and definitions of the characteristics associated with non-cognitive skills vary depending on the culture of the community. Some researchers refer to this as the “Jingle Jangle Effect.” The “Jingle” refers to how a person can use the same label to define different concepts. “Jangle” means the same concept can be defined by different terms (Dweck et al., 2014). For example, Grit and tenacity are both related to overcoming an obstacle. The difference between Perseverance and Grit is the duration of effort it takes to overcome a challenge. Perseverance is related to overcoming obstacles in the short term, whereas Grit refers to sustaining perseverance over a long period of time toward a singular goal. Another closely related term associated with grit, tenacity, and perseverance is resilience. Resilience is defined by the Webster dictionary as “an ability to recover from or adjust easily to misfortune or change” (Merriam-Webster Dictionary.). The key difference between resilience and the previously described terms is that resilience does not focus on attaining a goal but rather on a person’s ability to adapt to an environment that would put them at-risk for not meeting academic achievement. Some examples of environmental factors that would put a student at-risk for achieving academic success included low-social-economic status, trauma, and low-birth weight (Laursen, 2015).

As educators, understanding the nuances of the terminology associated with non-cognitive skills is important because of the future implications in research and curriculum development. To truly understand what Grit is and how it can be cultivated, the terms “Passion” and “Perseverance” are essential to pull forward.

The Webster Dictionary describes Passion as “an intense, driving, or overmastering feeling or conviction” and “Perseverance” as “the continued effort to do or achieve something despite difficulties, failure, or opposition” (Merriam-Webster.). As it relates to Grit, Passion does

not refer to an intense feeling but rather to an individual's ability to be consistent, to persevere toward a long-term goal (Duckworth, 2013). These concepts are essential when assisting students in developing a common purpose.

IMPORTANCE OF NON-COGNITIVE SKILLS

The focus on standards-based education in today's schools has resulted in students learning how to “do” school rather than learning skills that will help them be successful throughout their life. The pressure to perform well on standardized assessments has driven educators to teach to the test. In the past decade, there has been a movement to include the development of non-cognitive skills, such as Grit, Perseverance, Self-Control, and Mindset into today's curricula (Laursen, 2015).

Several factors contribute to success, such as intellectual abilities, talent, opportunity, and the “It Factor.” The “It Factor” refers to non-cognitive skills like Grit, perseverance, tenacity, and self-discipline, which fall into the latter category. Research suggests non-cognitive skills may play as big, if not more important, of a role than cognitive skills in academic success. This is where special educators can help students develop skills to overcome obstacles and setbacks to succeed in the educational setting and become more successful and productive members of our community.

Can individuals learn how to be Gritty? Can Grit be taught in the classroom? Research has shown that Grit is positively correlated with success. Individuals who scored higher on the Grit Scale received higher academic grades, were more likely to graduate from high school, stay married, and be more successful in their careers.

Sandy Merz (2014), an eighth-grade math teacher, believed that developing the non-cognitive skills in students need to be an essential part of the curriculum to prepare them for life

after high school. Because non-cognitive skills are abstract, she found it difficult to provide direct instruction and even more difficult to develop measurable goals related to non-cognitive skills. She interviewed two recent high school graduates who had received special education services for a learning disability about their understanding of non-cognitive skills and how they were taught. The students reported having had direct instruction on the Growth Mindset and how the brain works. They believed skills, such as reading, could be developed just like how an athlete trains to improve their skills. The culture of the classroom, the examples set by the teacher, and expectations were influential when developing non-cognitive skills.

GRIT

DEFINITION OF GRIT IN TODAY'S CLASSROOM

In 2016 Duckworth defined Grit as the “passion and perseverance for long-term goals.” The gritty person demonstrates a tenacity, a never-give-up attitude toward reaching a goal over the long haul. The definition of Grit has since been updated. Today’s definition of Grit is “perseverance to accomplish long-term goals or higher-order goals in the face of challenges and setbacks, engaging students’ psychological resources, such as academic Mindsets, effortful control, strategies, and tactics” (Dweck et al., 2012). The new definition takes environmental and situational factors into consideration.

In her research, Duckworth found Grit to be a common characteristic of successful people across academic and professional fields. Grittier people were more likely to graduate from high school or college. Grittier people were more likely to receive promotions in their careers and earned more money. Professional athletes, such as Michael Jordan, demonstrated Grit every day in practice to achieve the final goal of winning championships. Data show that individuals with

Grit who score one standard deviation above the mean were 41% more likely to advance further in the competition. Participants who scored higher on the Grit scale outperformed those who scored lower. Results of this study also suggested that achievement is a result of talent and Grit. The Grittier participants put forth more time and effort toward preparing for the spelling bee, providing them with more practice with the skills needed to succeed. This demonstration of Grit provided them an edge over their peers with similar verbal IQ scores.

The authors recognized limitations of the study and future research implication. First, there is a risk of participant biases affecting the information gathered from the self-reporting questionnaire. The authors also acknowledge this was a small, select population with restrictions on variables such as verbal IQ scores and participation in the Scribb Championship Spelling Bee. These limitations limited the external validity of the findings. However, the results of this study suggest Grit is an essential trait in achievement in all areas and has implications on how to teach skills. First, students who demonstrate a commitment to a particular goal should be supported. In addition to reinforcing outcomes, educators and parents should encourage and reinforce intensity and stamina. Students will need to be taught how to deal with failures and that excellence in an area requires years of practice. And finally, educators need to teach students the difference and the implication of developing breadth and depth of skills.

MORE THAN JUST TALENT

Adjectives such as creative, talented, or “they are a natural,” have been used to describe high achieving individuals. This gives the impression that success came easily to them, and they did not have to work for their accomplishments. When society romanticizes and inflates the value of talent, it minimizes the value of effort. We watch athletes and artists perform

effortlessly and attribute their skills to a God-given talent. The perception of natural talent or instant achievement has a negative effect on how students perceive their own failures. When a skill, academic or otherwise, is challenging, students may internalize their failure, believing they are incapable. Psychologists and researchers would argue that the success of high achievers may be partially due to an innate ability (talent), but for the most part, is a result of dogged determination and hard work toward a specific goal (Duckworth et al., 2011; Duckworth, 2013; Hochanadel & Finamore, 2015; Laursen, 2015; Park et al., 2017).

During her TED talks and in her book, Duckworth often refers to an interview given by actor Will Smith.

“The only thing that I see that is distinctly different about me is that I’m not afraid to die on a treadmill. I will not be outworked, period. You might have more talent than me, you might be smarter than me, you might be sexier than me, you might be all of those things you got it on me in nine categories. But if we get on a treadmill together, there’s two things: you’re getting off first, or I’m going to die. It’s really that simple” (Will Smith Will Not Be Out-Worked, YouTube, 2011).

Will Smith demonstrated two main concepts this thesis focuses on. First, Smith demonstrated Grit as a determined tenacity to meet a long-term goal through effortful and deliberate practice. Second, he demonstrated a Growth Mindset. He believed that hard work could improve his skills.

How does talent lead to achievement? Duckworth and Gross developed an equation to explain how successful individuals get from talent to achievement.

TALENT X EFFORT = SKILL

SKILL X EFFORT = ACHIEVEMENT

Achievement is determined by two factors, talent and effort. Talents are skills that have developed quickly and with little effort. When talent is combined with effort, people develop a skill. This is the “Talent x Effort = Skill” part of the equation. Achievement is the product of practicing that skill for hours (Skill x Effort = Achievement). “Talent counts, but effort counts twice” (Duckworth & Gross, 2014). Without effort, talent is just unfulfilled potential.

Can we develop Grit in ourselves and in the students we service? Duckworth says, “most likely, yes” (Duckworth, 2013). There needs to be more research in the development of Grit before answering with a definitive “yes.” In the meantime, Duckworth has identified four components in developing Grit: pursuing interests, practice, purpose, and hope.

In review, the definition of Grit is the passion and perseverance toward a long-term goal. Grittier individuals pursue their goals with a relentless, never-give-up attitude to achieve their goals. Research and the literature have primarily focused on the perseverance aspect of the definition of Grit. Perhaps that is partly due to the tools available to measure Grit, such as the Original Grit Scale and the Short Grit scale, focusing on the perseverance aspect of the definition. For example, studies measuring the Grit in the participant of the National Spelling Bee collected data on the time spent and methods used to prepare for the competition. The study does not address the student’s passion for achieving their goals. Although equally important, the passion aspect of Grit has been overlooked. In an interview, Duckworth is quoted as saying,

“I think the misunderstanding (...) is that it’s only the perseverance part that matters. But I think that the passion piece is at least as important. If you are really, really tenacious and dogged about a goal that’s not meaningful to you, and not interesting to you, then that’s just drudgery. It’s not just determination, it’s having a direction that you care about.” (Dweck, 2016).

Discovering what students are passionate about is essential when developing Grit. Without passion, perseverance toward meeting a long-term goal could seem like purgatory, resulting in an increased in interfering behaviors such as shutting down, work refusal, work avoidance, and lack of effort (Duckworth & Gross, 2014; Duckworth, 2013; Hochanadel & Finamore, 2015; Park et al., 2017). The first step in developing passion is to provide students with opportunities to explore different areas of interest. This is done by nurturing students' curiosity and willingness to explore new topics and have new experiences. The areas of interest that lead to passion need to be developed through trial and error and effortful practice. This leads to the second aspect of developing passion, and that is practice.

A Case for Effortful and Deliberate Practice

Duckworth explored the relationship between Grit and achievement in a longitudinal study involving 175 students, ranging in age from 5 to 15 years of age, participating in the Scripps National Spelling Bee. Prior to the competition, the students completed the Grit Scale and a standardized cognitive ability test. In the weeks leading up to the spelling bee, students recorded how much time and how they prepared for the competition. Findings correlated a positive relationship between the amount of time invested in practice with going further in the competition. Almost as important as the time spent was the type of practice the student engaged in. There were primarily three types of practice used by the spelling bee participants. The first

method of practicing spelling skills was through verbal leisure activities. This would include activities such as reading for enjoyment and word games in which spelling was indirectly targeted. Being quizzed or drilled by another person was the second form of preparation engaged by the participants. The final method of study involved an independent study of word spelling and origins. Results found that students who deliberately practiced specific skills that exceeded their current skill level were more successful than those who used quizzes or engaged in leisure activities. (Duckworth et al., 2011).

Developing a Purpose

The first step in helping student develop Grit is by helping them identify their “why”. This is when individuals identify a long-term or higher-order goal that they are passionate about. Second, they need a safe learning environment that challenges them enough to reach their “higher-order goal.” One factor cannot thrive without the other. It is unlikely that a student, regardless of how passionate or clear their purpose, will succeed if their environment does not provide the rigor to challenge their skills.

Duckworth (2011) developed a “**Goal Hierarchy**” to help individuals develop their Higher-Order Goals. The Goal Hierarchy is made up of three levels. First, are the **Low-Level Goals**. These are small actions one can take to accomplish another goal or task. They are specific and short-term, such as a student needing to fill out his planner so that he can remember what homework needs to be accomplished that night. The next tier of the Goal Hierarchy is the Mid-Level Goals. **Mid-Level Goals** are the next step(s) needed to achieve a **Top-Level** goal. Using the example above, a student writes down homework assignments in his planner (Low-Level Goal), so he can remember what assignment needs to be completed that night and then uses that tool to complete all of his homework assignments (Mid-Level Goal). As illustrated in the

example, there can be several mid-level goals depending on the situation. There can only be one Top-Level Goal, usually general and abstract. Building on the previous example, the Top-Level Goal in this instance could be wanting to be a better student.

Hope

Hope is an intricate part of Grit because it is embedded in developing interests, practice, and purpose. Grit depends on a different kind of hope. Hope in Grit has nothing to do with chance or luck. It is believing that you can accomplish your goal despite setbacks or challenges through effort and practice. It is an “I try again” attitude. Duckworth indicated that hope, as it refers to Grit, provides students a feeling of control over outcomes. It turns from “I hope I can do better on the test.” to “I can do better on the test if I start studying sooner.” People who have hope are described as being optimists, where people who have little hope are viewed as pessimists. The hope that gritty people have has nothing to do with luck and everything to do with getting up again (Duckworth et al., 2011).

GROWTH AND FIXED MINDSET

Until recent years, most of the research has focused on cognitive skills, such as long and short-term memory, visual processing, and attention. That was until psychologist Carol Dweck presented her research on Mindsets. Mindset refers to a person's belief about themselves or their self-theory about themselves. Henry Ford once said, “Whether you think you can or you can’t, you are right.” This quote is a perfect example of the definition of Mindset. Students’ Mindsets can be applied to all areas in their live, such as academics, athletics, musical skills, etc.

Researcher Carol Dweck is a pioneer in the research regarding Mindset and its effects on academic achievements and self-esteem. The Mindset of a student can significantly affect academic achievement, social relationships, and opportunities. Studies have shown that students

with a Growth Mindset receive higher grades on individual assignments and unit tests, have a higher grade point average (GPA), a higher graduation rate, a better attendance rate, lower disciplinary referrals, and are reported to enjoy and value academics more than students with a Fixed Mindset (Bryan, 2003; Dweck et al., 2014) Waxman et.al, 2002; Yeager, et. al. 2019). Dweck's original research identified two Mindsets, a Fixed Mindset and a Growth Mindset. In her later works, she introduces a third Mindset which is referred to as a "False Mindset." This section will focus on the differences between a Fixed, Growth, and False Mindset and explore their role in Grit and how they affect academic achievement by reviewing relevant research.

In her book *Mindset*, Dweck described a Fixed Mindset as when "people believe their basic qualities, like their intelligence or talent, are simply fixed traits. They spend their time documenting their intelligence or talent instead of developing them. They also believe that talent alone creates success—without effort" (2016). Students with a Fixed Mindset believe their cognitive abilities are a limited resource that cannot be developed (Dweck, 2016; Dweck et al., 2014; Hochanadel & Finamore, 2015; Yeager et al., 2019; Yeager & Dweck, 2012). These students think in terms of absolutes. They either are or are not able to do a skill and are concerned more about proving how smart or capable they are rather than trying to improve a skill. Research has found that students with a Fixed Mindset are more likely to be afraid to try because of the fear of failure or embarrassment. These students view effort and failure as proof they are incompetent or incapable. This is especially true when they compare themselves to their more successful peers. In the educational setting, students with a Fixed Mindset are more likely to engage in negative self-talk (i.e., "I can't") and have poor self-esteem (i.e., "I'm stupid"). Dweck (2016) indicated that these students are afraid of failure, therefore more likely to engage in interfering behaviors such as work avoidance and non-compliance. This can look like a

student putting off a big project until the night before the due date or shutting down in the classroom. In the mind of students with a Fixed Mindset, it is better to blame failure on a lack of effort rather than try and fail because this would mean they were incapable. Students with a Fixed Mindset may also have difficulty prioritizing goals and demonstrate less self-control. Their focus is on avoiding failure. For example, instead of tackling a large project, like writing a thesis, the student chooses another, lower priority task to avoid the task that intimidates them. Teachers, especially those working with students with special education needs, witness these behaviors every day in their classrooms.

GROWTH MINDSET

The Effects of a Growth Mindset on Academic Achievement

Students with a Growth Mindset view intelligence or ability as a skill that can be developed and improved through effort and practice. They approach failure or obstacles as an opportunity to improve and develop a skill. For example, upon receiving a poor grade on a test, the student with a Growth Mindset will take the opportunity to evaluate what they can do to improve on their next attempt. Do they need to change how they studied for the test? Do they need to increase the times and duration of their study sessions? Research has found students who have a Growth Mindset are more successful across all domains of school. They tend to have a sense of belonging in their community (academic and social) and are not easily derailed by challenges; they view school as being important to their future success, are able to postpone immediate gratification, seek out new experiences and opportunities, and remain engaged in working towards their goals for a longer duration.

In a study of ninety-nine diverse students of different genders, cultural backgrounds, socio-economic status, and races, the Growth Mindset was found to positively correlate with

academic gains (Blackwell et al., 2007). The average math skills of the participants fell in the 35th percentile as measured by a standardized mathematics test. Both the control group and the experimental group received eight twenty-five-minute interventions. Students in the control group were given instruction in the areas of brain physiology, study skill, and anti-stereotypical thinking. The participants in the experiment received instruction on the premise of the Growth Mindset that intelligence is malleable and can be developed. The experimental group scored higher on another standardized math assessment than the control group. Teachers reported an improvement in motivation, attitude toward school, and improved academic performance in 27% of the students in the experimental group compared to only 9% in the control group.

In a more recent study, a random sampling of students of varying demographics received Growth Mindset interventions. Like the previously mentioned study, there was a positive correlation between Growth Mindset Interventions and academic performance (Snipes, 2017). In 2003 seventh-grade students were provided two ninety-minute interventions regarding Mindset—one at the beginning and another at mid-year. In addition, students in the experimental group were asked to develop a web page demonstrating their newfound knowledge of both the Growth Mindset. Alternately, the control group learned about the dangers of drug use. The students in the experimental group who learned about the Growth Mindset scored significantly higher than the students who learned about the dangers of drug use on standardized achievement tests (Dweck, 2016).

STRATEGIES TO FOSTER GRIT AND MINDSET

Evidence linking Grit and the Growth Mindset to academic achievement suggests that providing direct instruction and interventions in non-cognitive skills can change outcomes. Some research has found that schools that incorporated character training or direct instruction of non-

cognitive skills were likely to see more academic success than schools that did not (Yeager et al., 2012, Duckworth & Dweck, 2019; Dweck, 2016; Yeager & Dweck, 2012; Hochanadel & Finamore, 2015). The research suggested that adding character development curriculum into the classroom has been correlated with improved self-esteem, a more favorable attitude toward school and education, and improved academic outcomes. Students who are Grittier and possess a Growth Mindset are more willing to take risks and take advantage of learning opportunities (Yeager et al., 2019; Yeager & Dweck, 2012).

Several interventional and training programs have been developed to teach the Growth Mindset in the classroom. However, research has found mixed results on the effectiveness of such programs in developing the Growth Mindset. Earlier studies related implicit teaching of the Growth Mindset had long term effects on students' motivation, beliefs about their ability, and achievement (Dweck et al., 2014; Yeager et al., 2019). Whereas other studies found the direct teaching of the Growth Mindset, independent of the general curricula, had only a short-term effect or no effect at all on the above-mentioned characteristics (Zeeb et al., 2020). The hypothesized reason for the failure or short-term effects of teaching the Growth Mindset in isolation from the general education classroom was due to the absence of educators influence on students' beliefs. Dweck argued that Mindset interventions are not enough on their own. Teachers have a direct influence on student learning and their beliefs about their abilities.

Promoting Non-Cognitive Factors such as Grit and the Growth Mindset

Provide a Safe and Secure Learning Environment

Creating a safe and secure learning environment is important for fostering the Grit and the Growth Mindset in the classroom. Providing a secure learning environment means more than providing physical safety. It is also providing a student-based environment that reflects each

student's cultural background and developmental stage (Dweck, 2016; Dweck et al., 2014; Hochanadel & Finamore, 2015; Yeager & Dweck, 2012). Aside from providing a safe physical environment, the learning environment should foster the development of non-cognitive skills.

A learning environment that promotes a Growth Mindset encourages risk-taking and celebrates mistakes and the learning that comes from them. This begins with developing relationships with students. Trust and respect are two essential components of the classroom learning environment. If students do not respect and trust their teachers or if a teacher isn't respectful of students and their families, the learning environment will not be as nurturing, and the teacher's classroom management strategy won't be as effective. A lack of trust and respect will also cause children to feel unsafe and uncomfortable in the classroom, which may lead to children having behavioral problems.

The teacher's Mindset plays a significant role in providing a supportive environment for Grit and the Growth Mindset. Research suggests students of teachers who have a growth Mindset are likely to have better self-esteem, achieve higher grades, and are more likely to take risks (Dweck, 2016; Yeager et al., 2019). A teacher with a Fixed Mindset is likely to view situations, such as student behaviors or skills, as unchangeable, therefore, more likely to give up or place blame. A Fixed Mindset teacher is more apt to internalize criticism or difficult situations, believing it reflects their skill. Alternatively, the teacher with a Growth Mindset seeks to understand the "why" behind behavior and then searches for solutions. The Growth Mindset Teacher provides a model from which students can learn. One of the most important ways a teacher can facilitate The Growth Mindset and Grit is by the language used in the classroom, especially when providing feedback to students.

The Importance of How We Praise

Studies have shown that something as simple as changing how we provide positive feedback to students can help facilitate the Growth Mindset. A study of 5th-grade students from diverse cultural, socioeconomic, and racial backgrounds found praising student effort (e.g., “You must have studied for a long time to get this score.”) promoted the Growth Mindset. While praising a student for their intelligence and abilities (e.g. “You are smart at math.”) or providing general praise (e.g., “Good job”) promoted the Fixed Mindset.

The students who were praised for their ability were less likely to want to attempt challenging tasks and internalized the challenges and failures as meaning they lacked ability. In contrast, the students who were praised for their effort were more apt to take on challenging tasks. When faced with failure, they believed that they would be able to develop the skill. Furthermore, the students who received praise regarding their effort outperformed the students whose abilities were praised on future academic tasks (Mueller & Dweck, 1998).

However, Dweck warned educators that the Growth Mindset is more than just effort. Indeed, effort is an important component of the Growth Mindset, but is only part of the equation to facilitate learning. Often people praise the effort of the child to make them feel good about themselves in the short-term but fail to follow through with the learning portion of the equation. This is sometimes referred to as the False Mindset. This is when people use the correct language associated with the Growth Mindset but fail to teach the student how to embrace and overcome that obstacle. Despite best intentions, this supports a Fixed Mindset in students because students believe that if they “try their best”, they can give up without learning the skill. In this instance, a teacher or student with a Growth Mindset would acknowledge the effort but then help the student analyze their process to learn from their mistakes (Dweck, 2016; (Brock & Hundley, 2016).

Below are examples of performance-based praise that promotes a Fixed Mindset and examples of process-based praise that encourages a Growth Mindset (Mueller & Dweck, 1998).

Instead of This (Person-Praise)	Try This (Process-Praise)
Great job! You must be smart at this.	Great job! You must have worked really hard.
See, you <i>are</i> good at English. You got an A on your last test.	You really studied for your English test and your improvement shows it.
You got it! I told you that you were smart.	I like the way you tried all kinds of strategies on that math problem until you finally got it.
You are such a good student!	I love the way you stayed at your desk, you kept your concentration, and you kept on working. That's great!

Provide Opportunities for Failure

Students are more likely to take risks in environments where the teacher has developed a safe learning environment built on trust and respect. Failure is likely to accompany risk. The students with a Fixed Mindset are more apt to internalize failure, seeing it as a reflection of their self and abilities. While a student with a Growth Mindset views failure as an opportunity for development.

Like Grit and the Growth Mindset, dealing with failure is a skill that needs to be taught. A society that puts too much emphasis on talent will often minimize the value of effort. Adults, both teachers and parents swoop in to minimize or “rescue” a student from the discomfort of struggling. Students are quick to learn that if they cannot succeed right away, wait a bit and adults will come to rescue them. Many refer to this as learned helplessness and over parenting/over teaching.

This does not mean adults should stand back and let a student struggle to the point of frustration or to the detriment of their confidence. Adults should step in to support students when there is a safety concern; students reach a point of frustration when learning is not possible; when the student does not have the foundation skills to complete a higher order task; or when the student is not making progress after receiving multi-tier interventions (Berg & Pietrasz, 2017; Finley, 2014; Garofalo, 2016; Tocino-Smith & Juliette, 2019).

Failure provides opportunities for students to receive feedback on their strengths as well as their areas of need as a way of improving a skill to meet a goal. An example of this would be the study involving the participants of the National Spelling Bee. The students who targeted skills they identified as being areas of weakness were more successful than students who engaged in tasks that were easy for them (Duckworth et al., 2011). Failure is a masterful teacher when reframed as a constructive and essential part of learning. Educators can facilitate a Growth Mindset regarding failure by setting high standards, giving specific feedback, and allowing students the time, space, and support to make the revisions. Students need to be taught problem-solving skills.

The first way teachers can teach problem-solving is to model the Growth Mindset and effective problem-solving activities. Teachers need to be willing to make mistakes in the classroom in front of their students. Then, model effective problem-solving activities through think-alouds and asking open-ended questions like: What am I feeling; What is the problem? What are possible solutions? What would happen if...? What will I try? (Berg & Pietrasz, 2017; Dweck et al., 2014; Finley, 2014; Hochanadel & Finamore, 2015; Yeager et al., 2019).

During her journey of researching Grit, Duckworth found that a person's Mindset played a significant characteristic in developing Grit. Those with a Growth Mindset scored better on the

Grit Scale than those with a Fixed Mindset (Duckworth et al., 2007; Duckworth, 2013; Yeager et al., 2019). Individuals who believed their skills could be developed through hard work and practice were more likely to sustain their effort. Alternately, those who thought their skills were static and could not be improved failed to see the purpose of continuing working on a goal if they did not achieve success early on. Duckworth is currently collaborating with Dweck to investigate the correlation between Grit and Mindset.

Research has shown that the human brain can develop new neurons and make new synaptic connections (research), which means that skills can be developed through effort and practice. Neuroimaging of the brain during learning has shown that the different Mindsets engage different brain regions. The regions of the brain associated with semantic processing showed more activity in students with the Growth Mindset (Mangels et al., 2006). The increased activity in the brain suggests additional learning.

Growth Mindset and environmental factors are to be considered. If the classroom supports the development of Grit and a Growth Mindset, which includes building relationships, educating students about Grit and the Growth Mindset, providing meaningful opportunities to learn, and providing opportunities to practice failure. This education begins with providing a supportive environment. This researcher firmly believes that teaching begins and ends with relationships as well.

Before being able to help students develop non-cognitive skills, educators need to provide a safe and supportive learning environment. Many schools have incorporated Social-Emotional-Learning curriculums to develop character traits. This provides students the opportunities to learn about Grit and Growth Mindset. An environment that not only accepts but expects students to make mistakes.

A student's Mindset influences the type of goal the student makes for himself. For example, students with a Fixed Mindset are more likely to develop goals that are performance-based. Performance-based goals emphasize specific skills a student can do, or perform, following instruction. Students demonstrate the ability to apply or use knowledge but cannot necessarily apply the information beyond the constructs of an assessment or the classroom environment. These students are more likely to avoid challenging tasks and exert as little effort as possible.

INTERVENTIONS TO TEACH GRIT AND MINDSET

As stated earlier, the interventions used to teach Grit and the Growth Mindset often take little time and can be integrated into the curriculum. That is not to say students will develop character skills passively. Teachers need to nurture the development of these skills by using various strategies.

Some of the ways Grit can be taught in the classroom is by reading books and watching movies that demonstrate Grit. Later in chapter three, a list of possible books and movies related to Grit and the Growth Mindset will be provided. This activity naturally lends itself to facilitating a discussion about Grit. What does Grit look like? How did the characters in the book/movie show grit? With facilitation from the teacher, the conversation about Grit can be applied to the personal experiences of the students. This is a great opportunity to reinforce problem-solving skills and how the Growth and Fixed Mindset presents in their own lives. Perhaps the most important aspect of teaching Grit in the classroom is through teaching and modeling a Growth Mindset.

The Growth Mindset of Intelligence Intervention

The Growth Mindset of Intelligence Intervention addresses students' beliefs about intelligence. The focus of the intervention is to educate students that the "brain is like a muscle that grows smarter when it undergoes rigorous learning experiences" (Yeager et al., 2019). This intervention teaches students that intelligence is not fixed but capable of growing. This leads students to believe they can develop their academic skills, and failures do not reflect their ability.

GRIT AND THE MINDSET OF STUDENTS WITH LEARNING DISABILITIES

Students with disabilities have the same social, emotional, and environmental challenges as their non-disabled peers. Having a disability complicates the already challenging process of growing up. Research has shown students with disabilities are more at risk of low self-esteem, mental health issues such as anxiety and depression, social-emotional difficulties, juvenile delinquency, and have a lower graduation rate when compared to their peers. These risk factors can extend beyond their educational career. In adulthood, individuals with learning disabilities are more likely to be under-employed, more dependent on others, and have an overall higher rate of dissatisfaction in their lives (Bryon, 2003).

Because of the risk factors students with a learning disability face, it is especially important to help them develop non-cognitive skills like Grit, when confronted with challenges, setbacks, and failures. There is a growing body of evidence that the development of non-cognitive skills has positive implications in all domains. The development of non-cognitive skills has improved academic achievement, increased graduation rates, improved social relationships, and provided skills that promote success into adulthood (Dweck, 2016). If this is the case, would it not be even more important to develop these skills for students who have disabilities? Unfortunately, despite the growing body of research on the role of noncognitive factors in

learning, there is very little information about how these skills relate to students with disabilities. There has been limited research that has suggested students who have a learning disability are more apt to have a Fixed Mindset than their peers (Tuckwiller et al., 2017). A study done by Baird (2009) identified that middle-school and high-school students with a learning disability were more likely to have lower self-efficacy and self-esteem than their peers.

A pilot study used the Self-Theory Scale to measure the general Mindset of high school students with learning disabilities. Unlike the studies listed above, results from the self-reporting questionnaire endorsed this sample of students as having a Growth Mindset. Results from this study also found that optimism had a medium to strong effect on students' Grit and Mindset (Tuckwiller et al., 2017). Findings from this study should be interpreted with caution due to the small sample size and the low reliability of the Self-Theory Scale.

Another study looked at strategies teachers can implement to develop Grit and the Growth Mindset in college students with learning disabilities. Two points of interest resulted from this study. First, students who were knowledgeable about their areas of strengths and needs as they related to their learning disability demonstrated more resiliency, Grit, and a Growth Mindset. Second, results suggested reframing as an effective strategy in helping students develop a Growth Mindset. Teachers can provide support to students by reframing setbacks or challenges more positively (Miller, 2002).

Chapter III will now provide a framework for applying information learned through the Literature Review chapter.

CHAPTER III: APPLICATION OF THE RESEARCH

The research available has made positive correlations between the development of Grit and the Growth Mindset to academic success. Furthermore, research suggests the benefits of non-cognitive skills reach beyond the educational setting into adulthood. Individuals with strong non-cognitive skills are said to be more gainfully employed, achieve high levels of success in their careers, and stay married longer (Gutman & Schoon, 2013; Morrison L. & G., 2013). There continues to be some debate about the most effective way to teach non-cognitive skills, such as Grit and the Growth Mindset. A Google search of “teaching the Growth Mindset” yielded 11,900,000 results (retrieved from Google on May 10, 2022). Because more extensive research is needed to fill in the gaps in the literature as to which programs provide evidence-based practices, finding the correct activities can be daunting.

This researcher investigated several programs designed to develop Grit and the Growth Mindset. There are a plethora of resources available. However, the focus of this researcher was to choose a program that could be differentiated to meet the needs of students with disabilities. The criteria used to choose the program to focus on in this thesis included: It needed to provide research-based interventions; have activities that were appropriate for all developmental levels; and needed to provide multi-sensory learning opportunities. The *Big Life Journal* fits the above criteria.

The Big Life Journal is a resource that helps children develop strong Social-Emotional-Learning and non-cognitive skills, such as Grit and Growth Mindset. They provide printable inspirational stories, colorful illustrations, digital resources, and guided activities that focus on the development of Grit (Growth Mindset Kit, 2021). Although

there are several free resources on the website, the Growth Mindset Kit can be purchased for a reasonable price (<https://biglifejournal.com>).

When developing Grit, the Big Life Journal suggests the following activities to teach Grit:

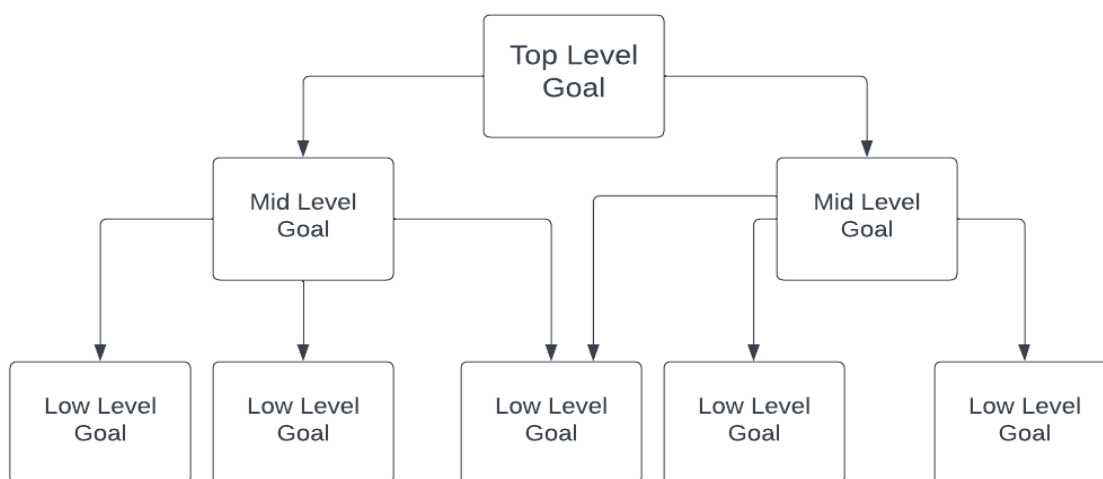
1. ***Help Children Find Their Purpose:*** Educators help children find their passion in life through developing goals.
2. ***Have Students Conduct Grit Interviews:*** Students interview family members about a time they showed Grit.
3. ***Shares Stories of Gritty Famous People:*** This resource provides pintables of how famous people relevant to students demonstrated Grit in their lives.
4. ***Teach Grit Through Nature:*** Explore what Grit in nature looks like by reading a poem by Tupac Shakur called “The Rose that Grew from Concrete.”
5. ***Teach About Grit Through Literature:*** Read and discuss stories, movies, or songs about Grit and Perseverance.
6. ***Ask, “What is the Hard Part?”:*** This activity stitches students, identifies challenges, and brainstorms possible solutions.
7. ***Follow the Hard Thing Rule:*** This is an activity that can be done individually or as a group (at school or home). First, each person must do something hard. Second, they must finish what they started (show perseverance). Finally, individuals are empowered to choose their own “hard thing.”
8. ***Grit the Pie Exercise:*** The pie represents a challenge the student is facing. Each piece of the pie represents a cause of the problem. How students describe the cause will help

identify if they have a Growth or Fixed Mindset or if they are blaming themselves or others.

This thesis will focus on applying how to “Help Students Find Their Purpose”. As mentioned previously, one of the gaps in the literature related to Grit is the absence of passion (Duckworth, 2013; Hochanadel & Finamore, 2015; Laursen, 2015). The purpose-finding activity is strongly related to the Goal Hierarchy developed by Duckworth. (2016)

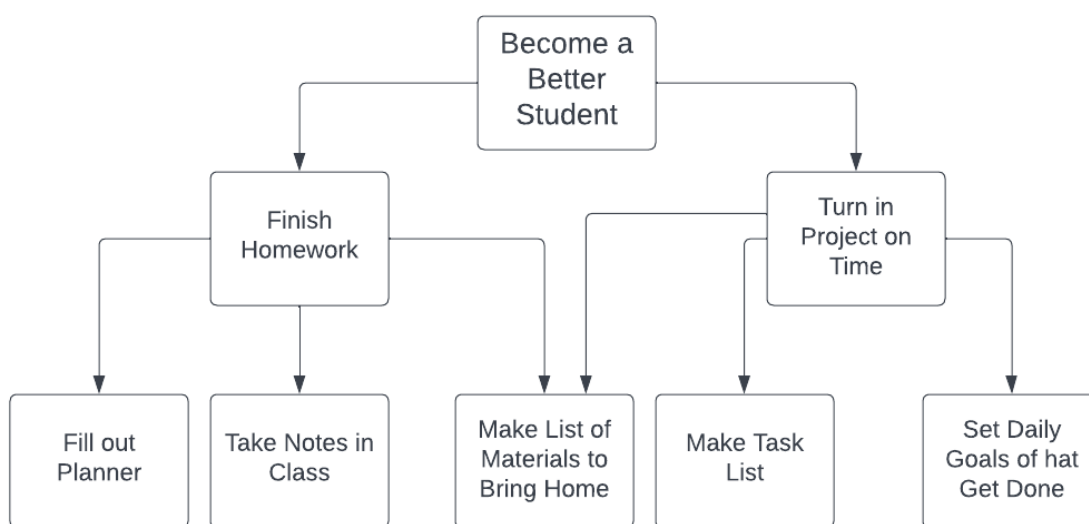
Part I: Prioritizing Goals to help develop Grit

This researcher has heard a common quote, “A goal without a plan is just a wish.” It is a perfect way to describe a Top-Level Goal that does not have Mid and Low-Level Goals to support it. Duckworth (2016) developed a “Goal Hierarchy” to help individuals develop their



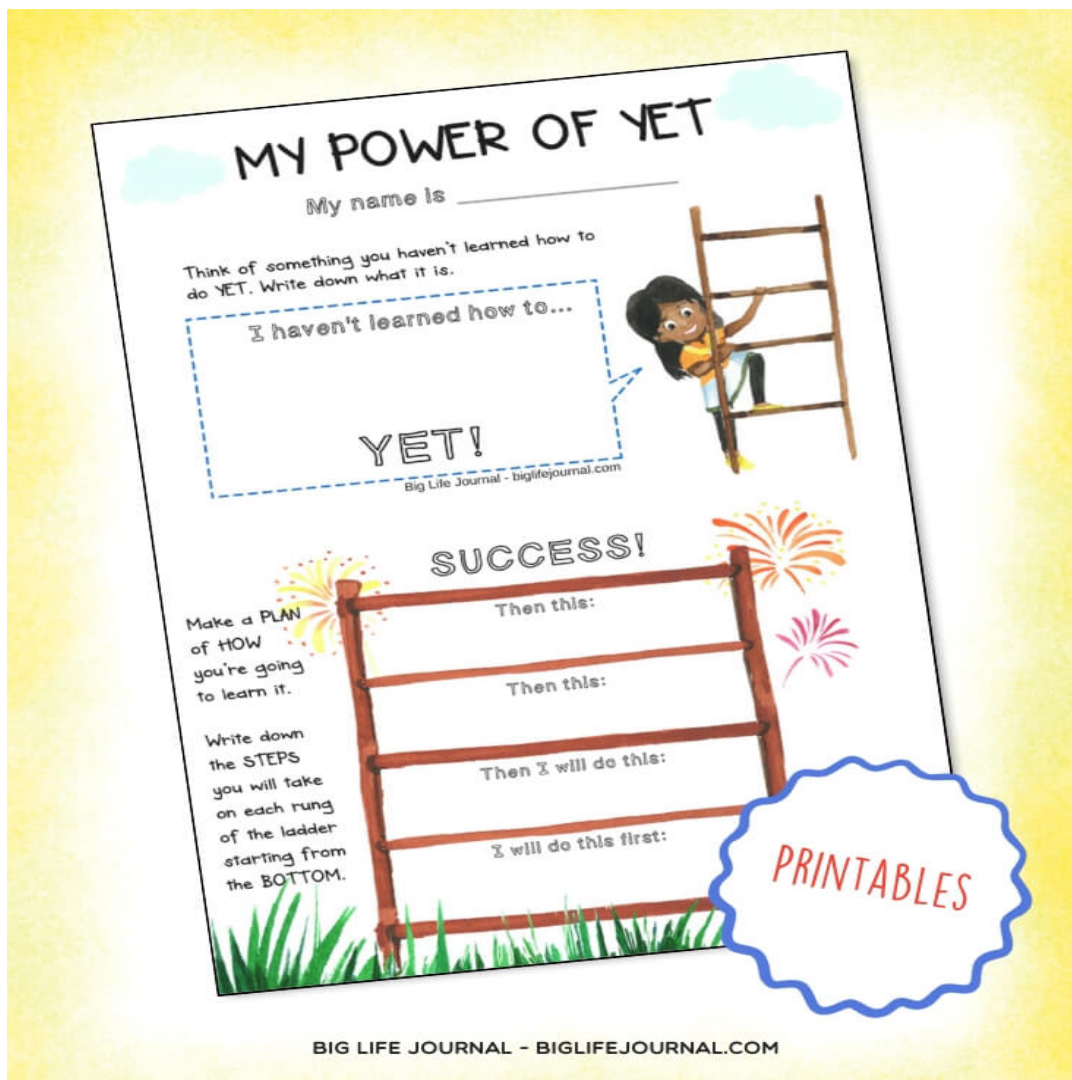
Higher-Order Goals. The Goal Hierarchy is made up of three levels. First are the Low-Level Goals. These are small actions taken daily to accomplish another goal or task. They are specific and short-term actions. The next tier of the Goal Hierarchy is the Mid-Level Goals. Mid-Level Goals are the next step(s) needed to achieve a single Top-Level goal. A Top-Level goal is usually broad and abstract.

One strategy used to help students find their passion, or their “why,” to support Grit and the Growth Mindset is developing a Goal Hierarchy. Below is an example of how a Goal Hierarchy may be used in the classroom.



The Top-Level Goal is Broad and General. In the case of the example provided, the Top-Level Goal is to “become a better student.” The student would identify specific goals to be completed each day (Low-Level Goals), like filling out their planner, taking notes in class, making lists, etc. Low-Level Goals are the tools and strategies used to accomplish a Mid-Level Goal, like finishing homework or turning in a project on time. As illustrated in the example, there can be several Mid-Level goals depending on the situation. The Low-Level and Mid-Level Goals support a single Top-Level Goal.

The printable below taken from the *Big Life Journal* is an example of how the Goal Hierarchy can be differentiated for younger students.



Grit and the Growth Mindset have a symbiotic relationship. Because individuals with a Growth Mindset believe talents and skills can be developed, they are more likely to persevere longer toward a goal. Grit. If an individual believes that failures are due to their fixed traits, there would be little incentive to keep trying. Because the Growth Mindset is such an integral aspect of Grit, Part II of this chapter will focus on how to teach the Growth Mindset.

Part II: Teaching the Growth Mindset

The Growth Mindset of Intelligence Intervention

The Growth Mindset of Intelligence Intervention addresses students' beliefs about intelligence. The focus of the intervention is to educate students that the “brain is like a muscle that grows smarter when it undergoes rigorous learning experiences” (Yeager et al., 2019). This intervention focuses on teaching students that intelligence is not fixed but is capable of growing. This leads students to believe that their academic skills can be developed, and failure is not a reflection of their ability.

What Kind of Mindset Do You Have?



I can learn anything I want to.
When I'm frustrated, I persevere.
I want to challenge myself.
When I fail, I learn.
Tell me I try hard.
If you succeed, I'm inspired.
My effort and attitude determine everything.



I'm either good at it, or I'm not.
When I'm frustrated, I give up.
I don't like to be challenged.
When I fail, I'm no good.
Tell me I'm smart.
If you succeed, I feel threatened.
My abilities determine everything.

Created by: Reid Wilson @wayfaringpath © ① ② ③ ④ Icon from: thenounproject.co

Teaching the Growth Mindset starts with teaching students about the brain. Through developmentally appropriate lessons of brain anatomy and how it functions, students begin to understand the concept of “neuroplasticity” (Ng, 2018). The process of learning and acquiring

knowledge is often compared to making muscles stronger through work. Just like we go to the gym to lift weights, jog on a treadmill, or spin on a bicycle to increase the size and strength of our muscles, challenging schoolwork, repetition of skills, and effortful practice creates more numerous and stronger neural pathways and we will eventually learn (Brock & Hundley, 2016; Ng, 2018). Students begin to understand that the brain can be strengthened in the same way that the muscles in our body can be strengthened through work, challenges, and effort. They learn our brains are constantly changing and creating new neural pathways. This means that everyone is capable of learning and becoming more intelligent, and learning gives students permission to fail and make mistakes over and over as they learn.

The following activities are suggested in the *Big Life Journal* to teach students about the brain and neuroplasticity.

1. *Talk About their Brain*
2. *Share Amazing Brain Facts*
3. *Build a Brain Model*
4. *Create a Brain Poster*
5. *Celebrate Mistakes*
6. *Brainstorm how Neuroplasticity has Already Worked*
7. *Read Elastic Fantastic Brain by Joanne Deak*
8. *Create Interactive Visuals*

Below is an example of a “Create a Brain Poster” from *Big Life Journal*:

GROWTH MINDSET Poster!

PRINTABLE FOR KIDS

I Can Grow My Brain

by _____

MUSIC BOOSTS LEARNING!
What is your favorite song?

The right foods can improve your brain function, memory, and concentration.
What is your favorite healthy snack?

SLEEP IMPROVES YOUR MEMORY AND HELPS YOUR BRAIN SOLVE PROBLEMS.
ZZZZZ
What calls you before you fall asleep?

Did you know your brain works better after you exercise?
Draw or write what sport you like to play!

LAUGHING IMPROVES MEMORY
What makes you laugh?

There are about 100 billion tiny little cells inside your brain called neurons.

Your brain can produce enough electricity to power a light bulb.

Learning something new is like building a bridge between your brain cells. When you practice what you're learning the bridge gets stronger!
Name something new you want to learn.

CHAPTER IV: DISCUSSION AND CONCLUSION

SUMMARY OF RESEARCH

The idea of writing my thesis about how Grit and the Growth Mindset began several years ago while I was a special education teacher at a small charter school in West St. Paul. I remember the feeling I had when the first-grade student made significant gains toward his reading goal. He was so proud of himself, and he could not wait to show off his skills. I wanted to provide him with an opportunity to build his confidence and celebrate his accomplishments. I scheduled a time for us to read "*The Interrupting Chicken* " to the kindergarten class. We practiced reading the book several times until he could read the text with fluency and inflection to show emotion. He beamed with pride as he read the book to the Kindergarteners. A year later, when he was in second grade, he continued to make great progress in his reading goals. When it came time to take the NWEA test in the spring, it was evident that he was putting forth his best effort. As I proctored the test, I observed him using the strategies we used during our service minutes. When we received the results, he made the most progress in his reading score than any other second-grade student! In the third grade, he was exited from special education services. He had met his goal and was reading at grade level. Instances like this remind me of why I became a teacher.

As excited as I was for the first-grade student, I was equally bewildered by the third student. I did not understand why he was not making gains toward his reading goals. I differentiated the lesson to include activities that were of high interest to him. I presented the skills in a multi-modal style. I consulted with other special education teachers. But he still was not making any measurable gains. I felt as though I was failing this student. Why was he unable to make the same progress as the first student?

I then stumbled upon Angela Duckworth's TED talk about Grit. Was it Grit that was the difference between the two students? If it is, can I teach Grit to my students with disabilities? I definitely saw a need for more Grittiness in the students I worked with. All too often, I witnessed students demonstrating maladaptive behaviors like shutting down, noncompliance, and work avoidance. As I researched Grit, the Growth Mindset was identified as being an important aspect when developing Grit.

Stanford researcher, Angela Duckworth, observed similar achievement gaps between students and my experience at West St. Paul's charter school. She observed that her most gifted students were often not the highest achievers in her classroom. Historically, academic achievement has been believed to be correlated with a student's ability. If this was the case, why were some of the students who were believed to have lesser cognitive abilities performing better than those with higher intelligence?

The importance of non-cognitive skills in the role of success has been the topic of much research lately. Non-cognitive skills are skills associated with personality, characteristics, and temperaments, such as perseverance, tenacity, Grit, and Growth Mindset. In psychology, non-cognitive skills are referred to as soft skills and include character traits like openness to experience, conscientiousness, extraversion, agreeableness, and neuroticism. Researchers refer to the use of the different terms or definitions as the "Jingle Jangle Effect." This means the same term as has different definitions or different terms have the same definitions. This is one of the challenges I encountered during my research for this thesis. While reading different journal articles, I noticed the terms "perseverance," "tenacity," and "resilience" were used, although their application would fit the definition of Grit.

This question of why some succeed while others fail inspired Duckworth to study the psychology behind learning and success. She studied the personality traits of successful people in a variety of fields to determine what characteristics successful people shared. In her research, she found that one of the common characteristics shared by successful people was Grit. Duckworth described Grit as the passion and perseverance in pursuing a long-term goal. In the research surrounding Grit, individuals who were identified as being grittier were more likely to experience academic achievement, were more successful in their careers, were more likely to remain in the same career, had lower divorce rates, and higher graduation rates. Although some researchers challenged Duckworth's findings, many believed her results lacked reliability because they did not consider environmental factors, used measurement tools susceptible to biases, and consisted of small sample sizes. Duckworth is the first to admit there is a need for additional research on the role of Grit in success, and if it can be taught.

Duckworth's research identified a person's Mindset as an important part of developing Grit. Carol Dweck is the leader in research related to Mindset. Mindset is a set of beliefs that influence how you perceive the world and yourself. It affects how you think, feel, and behave. According to Dweck, there are two types of Mindsets. First is a Fixed Mindset, meaning a person believes their skills and abilities, like IQ, are static and unchanging. A person with the Growth Mindset believes skills and abilities can be developed through effort and practice. Studies have shown that a Growth Mindset is positively correlated with increased academic achievement, having better self-esteem, and having higher graduation rates. Furthermore, having a Growth Mindset has been shown to have positive effects beyond academics. Dweck indicated that everyone has both the Fixed and Growth Mindset in different areas of their lives. In addition to the two Mindsets mentioned above, Dweck cautions people of the "False Mindset." This is when

educators believe they have a Growth Mindset, but their actions do not support the Growth Mindset. These are the teachers who praise only effort, rather than effort that results in learning. An example of this would be praising a student for putting forth effort, but not providing the necessary feedback to support learning. How often have you heard people say, “You tried your best” and leave it at that. The danger in that reinforces students to try once or twice then give up.

I have to admit, while writing my thesis, I realized that I have a False Growth Mindset in regard to my own skills. Take this thesis for example. The project has taken me a long time to complete. I put in a lot of time and effort researching, finding sources, making mind-maps, and charts, but never really making any progress. As I wrote the paragraph above about the False Growth Mindset, I felt as though I was looking in the mirror while writing it. I identified with all of the maladaptive behaviors relating to a Fixed Mindset, such as procrastination, all-or-nothing thinking, prioritizing non-meaningful tasks over working on my thesis. Yet I thought I had a Growth Mindset because “I tried.”

For teachers to facilitate a Grit and Growth Mindset in the classroom, they need to provide a safe and secure learning environment. The classroom should be child-centered, representing diverse cultures, and have developmentally appropriate yet challenging materials. A place where passion, creativity, risk taking, and mistakes are encouraged. But it is unrealistic to expect students to take risks if educators have not developed a relationship built on trust and respect. The foundation of this is by building relationships with students.

One of the most important factors of promoting Grit and the Growth Mindset in the classroom is through teacher modeling. Studies have shown that the students of the Growth Mindset achieve greater academic success, have more confidence and self-worth, and are more willing to take risks.

Modeling non-cognitive skills is not enough to develop Grit and the Growth Mindset in children. Teachers need to facilitate conversations about Grit and what it looks like in their classrooms, homes, and while playing sports. Students need to practice these skills by experiencing failure. The Growth Mindset teacher provides opportunities for students to fail. In the Growth Mindset Classroom, mistakes are celebrated and viewed as an opportunity to learn and grow their skills.

Many schools have incorporated stand-alone character education into their curriculum to teach non-cognitive skills. The jury is still out as to whether these programs have long-term benefits on student behaviors. However, more recent research has suggested a positive long-term correlation between Grit and the Growth Mindset and positive outcomes in all domains of their lives when teachers model and incorporate opportunities to learn and practice these skills into daily lessons.

Although the data collected from the research that is available is promising, there continue to be many questions about Grit and the Growth Mindset. Can Grit, and other character traits, be developed in the classroom? Research suggested it can be, but we do not yet have the information to say “yes” definitively. More specifically, can these traits support students with special needs? Further research is needed, but I believe we will get there with passion, perseverance, and a Growth Mindset.

LIMITATIONS OF RESEARCH

Despite the promising information gained from the research on Grit and the Growth Mindset, there are some inherent limitations to the research. As mentioned earlier in the thesis, one of the challenges researchers encountered was developing a method to measure abstract entities such as Grit and The Growth Mindset. This led to the development of self-reporting questionnaires such as the Original Grit Scale, the Short Grit Scale, and the Mindset Questionnaire. An advantage of self-report data is that it can be easily obtained and requires relatively little resources (time and money to complete). However, the self-report method has inherent limitations that affect the validity of the information. For example, subjects' responses can be influenced by their own conscious or unconscious biases. The answers provided may be influenced by social norms, the subjects' inability to assess their skill reliably, or interpret the questions in a way other than what was intended (Creswell, 2020). In addition, the information gained from self-report methods offers quantitative information; therefore, the studies are correlational in nature.

Both Dweck and Duckworth have met some resistance to their findings due to relatively small sample sizes and not considering environmental factors. Duckworth's work on Grit has been called into question due to the absence of "passion" in her research despite passion being an important part of her definition of Grit.

IMPLICATIONS FOR FUTURE RESEARCH

There is a need to develop more exemplary research on how Grit and Growth Mindset helps students grow their academic and social/emotional skills. In addition, teaching strategies also need to be developed to accomplish Grit and Mindset skills. There is a significant gap in the research on developing Grit and the Growth Mindset, specifically in students with disabilities. Would incorporating character development goals into the IEPs of students with special needs result in higher academic achievement and generalization over the life skills? Are certain non-cognitive skills more important to develop than others, depending on the area of need?

PROFESSIONAL APPLICATION

The primary reason I selected this topic is to investigate how I can better support students in special education to achieve their academic, social, or functional goals. I believe Chapter III provided tools and a framework to start developing these skills. Students, especially those with disabilities, face many risk factors that affect their self-confidence, motivation, and perseverance. In my opinion, students with disabilities often feel that education or school is something that is done to them rather than something they actively participate in. The Grit Hierarchical Framework is a good step toward helping them identify their “why” and the purpose of their learning by relating it to something meaningful to them.

Imagine you were a student with learning disabilities struggling with academics in school. Now imagine believing that regardless of how much time and effort you put in, you would never be able to improve. This is most likely the perception students with disabilities have about education if they have a Fixed Mindset. Can you imagine how defeated and discouraged you would feel every day? What would be the point of putting in the effort or trying if you believed you could not read or do math? It is easy to understand why some students present with

maladaptive behaviors such as refusals, noncompliance, behaviors, or work-avoidance tactics.

Now imagine if you believed that “yes, this is hard, but with effort and practice, I can get better.”

The student with the Growth Mindset has a sense of purpose, hope, and control over his circumstances. This is how I will apply the lesson on developing the Growth Mindset by teaching students how the brain works and that it can grow just like muscles at the gym.

CONCLUSION

This has been a challenging topic yet important to develop for this thesis. Academic success has traditionally been measured by standardized scores and grades, which has resulted in students learning how to “do school” rather than learning how to learn. There has been a shift to reintroduce character education in the classroom in hopes to improve academic achievement of students while teaching them skills to carry over beyond the school setting into everyday life.

Although the impact non-cognitive skills have on education achievement is inconclusive, the findings have positive implications on student success. The characteristics of Grit and the Growth Mindset are two character traits that reoccur in the literature. There is limited research on the impact of Grit and the Growth Mindset in education and even less evidence exploring how these non-cognitive skills affect the academic success of students with disabilities. In my opinion, developing skills such as Grit, perseverance, and a Growth Mindset is especially important in a population who, in addition to the regular stresses of growing up, have the additional stress of having a disability. It is exciting to think of the possibilities.

I have learned many important concepts and principles about Grit and Mindset throughout this process. As stated earlier in this thesis, a teacher’s Mindset plays a substantial role in fostering Grit and the Growth Mindset in students. While writing this thesis, I have identified areas of my life where I need to develop more Grit. But with effort and practice, I am sure I can.

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