

THE RELATIONSHIP BETWEEN MINDSET AND STUDENTS
WITH SPECIFIC LEARNING DISABILITIES

by

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ABSTRACT

THE RELATIONSHIP BETWEEN MINDSET AND STUDENTS WITH SPECIFIC LEARNING DISABILITIES

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The purpose of this research study is to address differing achievement motivation and academic performance in students who have learning difficulties. Based in social psychology, inferring theories relating to motivation behaviors, the goal of this study is to find out if growth mindset skills can be taught to students with a specific learning disability. A specific learning disability is a disparity found in an individual's basic psychological processing. The Individuals with Disabilities Education Act Of 2004, (IDEA) identifies these students as those who lack the perfect ability to understand spoken or written language, thus adversely affecting their ability to attend to, and achieve, at grade level reading, writing, and math.

Mindset is what everyone believes about their capabilities, affecting the way we think and learn. Research shows there are two mindsets: growth (Incremental Theory) and fixed (Entity Theory). A growth mindset is preferable and can be learned. People with a growth mindset believe their intelligence and abilities develop over time with practice. Some individuals with learning disabilities have compromised learning motivation and social skills. Many of these students have a fixed mindset. Yet other

students, with same disability, have a growth mindset and eventually become self directed in their learning.

This study will contrast growth mindset to fixed mindset. A single case design study was used to compare mindsets. Implicit Theory instruments were administered to determine fixed or growth mindset. An intervention followed, teaching growth mindset skills to those students with specific learning disabilities demonstrating a fixed mindset.

ACKNOWLEDGEMENTS

Inspiration for this study belongs to my former student, Noah. I will always be grateful for having met him. While teaching Noah, a student with a specific learning disability, I became curious about the effects of schooling on his learning motivation and behavior. I watched as this vulnerable individual grew, moving forward in the educational system, to become a successful learner.

Thank you to the students, parents and administration at Rio Dell Elementary School District who participated in this project, allowing me to continue with my studies. Achieving a Master of Arts in Education required a strategic plan, developed over time, and crafted by the demands of a career which could sustain my family. Unexpectedly, this plan parallels the education path of those individuals I assist daily as an education specialist; to gain intellectual and functional skills that improve on what has been accomplished thus far, thereby becoming better learners.

Returning to school to complete my Master's was a difficult but necessary venture that required support from my family, along with the generous guidance of numerous staff and faculty members at Humboldt State's College of Education. Thank you, Greta and Rich Macey for your patience. Thank you to my extended Hartmann Family on the Atlantic East Coast. Thank you, Peggy Kirkpatrick, Jayne McGuire, David Ellerd, Thomas Cook, and Eric Van Duzer. Each one of you offered me your time and assistance, helping me through this process. Final thanks goes to Ann Diver-Stammes, for reminding me that nothing is more important than family.

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CHAPTER ONE

INTRODUCTION

Research has shown that individual brains process information differently. People with learning disabilities have brains that work differently from others. The National Association of Special Education Teachers (NASSET, 2006), describes learning disabilities as a group of disorders that vary from person to person, usually having average intelligence. For example, an individual may be able to 'read' fluently, yet can't comprehend what they read. Another, may have trouble with math calculations, or not be able to process what people are saying, while someone else may have trouble in multiple areas. These individuals also often lack the coping skills necessary to compete and achieve in a rigorous academic environment, one of the first major life obstacles for students with disabilities

The U.S. Department of Education's Annual Report to Congress, 2010, states that learning disabilities are common. One in every five Americans, including children ages 6 through 21 has some form of learning problem. The affect of learning difficulty on self-concept and motivation for learning, also widely varies from person to person. Students with a specific learning disability do not achieve with the same aptitude as their peers without learning disabilities. These students are familiar with seeing grades that are marked incomplete, D, or F, on their work.

When children are taught to measure themselves from their successes, they also may learn to measure themselves from their failures, and tend to focus on their

performance being judged rather than on learning. This circumstance often initiates a helpless attitude and promotes escape behaviors. However, some students identified with learning disabilities are able to achieve and show growth in academic areas. Is this due to a growth mindset? Can a growth mindset be taught to students who are identified as having a specific learning disability, and will it improve their academic performance? The objective of this study is to compare a growth mindset to a fixed mindset. An intervention will examine the belief skills these students need to realize their potential for learning, promoting a growth mindset, in spite of academic performance measures.

CHAPTER TWO

LITERATURE REVIEW

Introduction

This literature review examines the challenges students with learning disabilities face and the belief skills these students need to realize their potential for learning. The first section, Special Education Overview, summarizes how students are referred to special education, evaluation, and implementation of an individual education plan (IEP). Also included in this section; a description of specific learning disabilities and discussion in relation to inclusion programs. The next section, Achievement Motivation Behaviors, looks at achievement behaviors in relation to self-concept, task performance, and the school community students with disabilities attend. The third section, Incremental Theory distinguishes learning styles, comparing growth mindset to fixed mindset. The final section includes a summary of literature reviewed.

Special Education Overview

The Individuals with Disabilities Education Act (IDEA) guarantees that the more than 6.5 million eligible infants, toddlers, children, youth, and adults with disabilities are protected against discrimination, and given the right to receive an appropriate education equal to that of other individuals without a disability (Individuals with Disabilities Education Act, 2004). IDEA Law requires that children and youth (ages 3 to 21) with disabilities receive an education with disability support, in the least restrictive environment, that is similar or equal to, a regular classroom with their peers in a

community school. (Humboldt-Del Norte Special Education Local Plan Area (SELPA), 2006).

Referral, assessment, and individual education plan.

Referral procedures for IDEA services can begin once a child has been identified, between birth and 2 years of age (IDEA, 2004). School children, students ages 3 through 21, can also be identified by each state's county local education agency (IDEA, 2004). Each school district is responsible for developing a system that will identify, refer, assess and monitor students who are eligible to receive special education service. These services are measured and reviewed annually. Eligibility for the initial service is re-evaluated every three years (IDEA, 2004).

Students attending elementary school, identified as having learning difficulties, can be referred for evaluation by different people, including a school principal, teacher, parent, or school nurse (Humboldt-Del Norte SELPA, 2006). A comprehensive referral includes monitoring an identified student's progress while calculating the effectiveness of interventions received during appropriate grade level core curriculum (Canter, 2004; IDEA, 2004). After the referral is submitted in writing, an assessment plan is developed for a psychological educational based evaluation to determine the present levels and functional achievement in any, or all areas of academics, health, intellectual development, language (speech or communication), motor development, and social-emotional adaptive skills (Humboldt-Del Norte SELPA, 2006). Evaluations require school districts to gather data from systematic academic, psychological, and health

assessments. Exceptions to this protocol may require a medical doctor's diagnosis of disability (Humboldt-Del Norte SELPA, 2006). Evaluation determination of a disability leads to eligibility for special education service and the configuration of an individualized education plan, IEP (Humboldt-Del Norte SELPA, 2006; IDEA, 2004).

Students with special needs may be eligible for special education service in one, or more, of the 14 separate disabling conditions; Autism, Deaf-blindness, Deafness, Developmental delay, Emotional disturbance, Hearing impairment, Intellectual disability, Multiple disabilities, Orthopedic impairment, Other health impairment, Specific learning disability, Speech or language impairment, Traumatic brain injury, and Visual impairment including blindness (IDEA, 2004; National Dissemination Center for Children with Disabilities (NICHCY), 2009). Individually, states define disability within IDEA Law and determine who is eligible for special education under IDEA law (Humboldt-Del Norte SELPA, 2006; NICHCY, 2009).

An IEP team is formed with members, including the parent guardian, school psychologist, special education teacher, general education teacher, school principal, and other providers who contribute and support the IEP (Humboldt-Del Norte SELPA, 2006; IDEA, 2004; Special Education Information System (SEIS), 2011). An IEP encompasses personalized education services and disability related supports offering a variety of accommodations and resources which allow students with disabilities to access general education curriculum at their ability level (Peterson & Hittie, 2003). The IEP team meets annually to monitor the level of ability achieved, annual goals met, and appropriateness

of modifications, accommodations, and educational setting of services for each student with learning disabilities. Every three years eligibility criteria are also assessed, evaluated and reviewed by the IEP team. (Humboldt-Del Norte SELPA, 2006; IDEA, 2004; SEIS, 2011).

Specific learning disabilities.

The focus of this research study is students with specific learning disabilities. Identification of students with specific learning disabilities varies among county-operated school districts (Humboldt-Del Norte SELPA, 2006; NICHCY, 2009). Psychological educational assessments define the processing disorder that creates a discrepancy between ability and achievement for these students (Humboldt-Del Norte SELPA, 2006).

This disorder can occur in visual, auditory, attention, and cognitive areas of conceptualization, association, and expression, involved in understanding language, and communication (Humboldt-Del Norte SELPA, 2006; IDEA, 2004). Students with specific learning disabilities cannot process adequately to listen, think, or speak, within the academic setting, and are adversely affected in basic reading, writing and math skills (Humboldt-Del Norte SELPA, 2006; IDEA, 2004; NICHCY, 2009; SEIS, 2011).

Inclusion programs.

School inclusion places students with learning disabilities in their grade level classroom with students who do not have disabilities (Dupuis, Barclay, Holmes, Platt, Shaha, & Lewis, 2006). This is a protected right under IDEA inclusion law (IDEA, 2004). Inclusion allows students with disabilities to receive educational services at their

grade level in the least restrictive way possible (IDEA, 2004). The least restrictive environment incorporates trained school staff to provide students, who have learning disabilities, the maximum extent of appropriate support possible while actively teaching these students with disabilities to learn to develop independence and achieve alongside their peers who do not have disabilities (Dupuis et al., 2006). All students are valued and active participants in an educational setting that encourages opportunity and success (McLeskey & Waldron, 2011).

Students with disabilities should only be educated in separate facilities if their needs are severe and cannot be met without supplementary aids and services (McLeskey & Waldron, 2011). Segregated classrooms accommodate children with learning disabilities in a small contained classroom. This environment employs specifically trained teachers with special material to further students' cognitive needs, social development, and self-confidence (Peetsma, Vergeer, Roeleveld & Karsten, 2001).

An inclusive program allows for special education services to be offered, with the benefit of not excluding children with learning disabilities from interacting with peers without learning disabilities (Peetsma et al., 2001). IDEA clearly indicates that the least restrictive environment for individual students with a disability is a general educational setting that can accommodate and provide support services (IDEA, 2004). Students targeted by this mandate come from two types of special education: mild to moderate and moderate to severe. It is precisely for the students with relatively minor disabilities that inclusion will have the greatest impact (Peetsma et al., 2001). However, the

appropriateness of students with learning disabilities being placed in general education classrooms, continues to be a debated question regarding service models for curriculum instruction in inclusion programs (Zigmond, 2003).

IDEA 1997 redefined the delivery of instruction to all students, especially those in special education. Students with disabilities have to be educated with students without disabilities and receive access to the general education curriculum. (Zigmond, 2003). Non-segregated classrooms require accommodations in the delivery of instructions and inevitably, modifications in the application of content standards (Zigmond, 2003). Special-needs students educated in regular classes tend to do better academically and socially, more than students in non-inclusive settings (Peetsma et al., 2001). However, students with learning disabilities do not perform well on cognitive tasks, and function less well psychosocially as students without learning disabilities (Peetsma et al., 2001). Although inclusion programs seem to work out well in general, for some students particular attention should be paid to the psychosocial development when they are placed in an inclusive setting (Peetsma et al., 2001).

The original intent and focal point of inclusion highlights self-esteem and peer relationships for all students (Dupuis et al., 2006). Recent practice continues this focus while emphasizing a broader school experience that exposes special needs students to a general education curriculum (Ford, Davern, & Schnorr, 2001). Each student with special needs can now access the referenced curriculum through differentiated instruction (Pugach & Wagner, 2001). In the true spirit of IDEA law, how students are taught will

likely influence what and how much students learn (Roach & Elliott, 2006). However, service interventions have to accommodate these educational needs by promoting growth, no matter how modest, toward the educational expectations of the larger student population (Pugach & Warger, 2001). This educational setting exposes all students to social engagement while they access curriculum content standard (Zigmond, 2003).

Achievement Motivation Behaviors

Motivation also contributes to students' learning (Peetsma et al., 2001), and academic engagement is affected by learning initiation and performance-avoidance in front of peers (Bong, 2004). Students who lack a positive self-image from negative learning experiences are often at risk for social development problems as well (Frederickson, Simmonds, Evans, & Soulsby, 2007; Peetsma et al., 2001). Special measures taken to help students with learning disabilities cannot easily be shown to lead to social acceptance and/or cognitive development in either regular or special education (Frederickson et al., 2007; Peetsma et al., 2001). Students who display low motivational self-beliefs in academics are likely to face other areas with similar beliefs (Bong, 2004). A significant amount of support is necessary for students with learning difficulties to achieve academic success in a general education classroom, and they are prone to more personal separation in the classroom than their peers. This can even often lead to less progress and negative outcomes (Frederickson et al., 2007).

A variety of influences have a direct affect on students' incentive to achieve and on their learning (Linnenbrink & Pintrich, 2003). Motivation to learn is influenced by

self concept, task performance, and community (Battistich, Solomon, Kim, Watson, & Schaps, 1995; Bong, 2004; Fredrick & Turner, 2003; Fuchs, Fuchs, Karns, Hamlett, Katzaroff, & Durka, 1997; Heyman & Dweck, 1992; Linnenbrink & Pintrich, 2003; Peetsma et al., 2001). Best practice methods demonstrated in intervention strategies and special education programs will also address students' frustration tolerance and emotional behavior to increase learning on three general levels: cognitive ability, effort, and attitude for students in general education and special education (Battistich et al., 1995; Frederickson et al., 2007; MacIver, Stipek, & Daniels, 1991; Peetsma et al., 2001).

Self-concept.

Although adequate teacher support is essential for students to fully engage, a measure of individual motivation is necessary (Bong, 2004, Hanushek, Kain & Rivkin, 2002). Self-concept can influence students' motivation in one area as well as influence other areas with the same beliefs (Bong, 2004). Students with learning disabilities typically struggle to believe in themselves and have less self determination (Konrad, Fowler, Walker, Test, & Wood, 2007). Comparing students with learning disabilities and those without learning disabilities highlights the difference between self-perception in academic skills to self-perception in non-academic skills (Tabassam & Grainger, 2002). Self-perception has a significant impact on the motivation of students with learning disabilities (Konrad et al., 2007; Linnenbrink & Pintrich, 2003; Tabassam & Grainger, 2002).

Self-concept is essential in a variety of learning performance situations (Bandura, 1997) and describes a general belief people have regarding their ability in any area which they feel they are good, without predicating an outcome (Linnenbrink & Pintrich, 2003). Self-concept is further influenced by self efficacy beliefs and attribution style (Tabassam & Grainger, 2002). Self-efficacy refers to the individual belief that one can successfully carry out specific tasks (Schunk, 1991). It is the judgment an individual places on a specific performance ability in each area (Linnenbrink & Pintrich, 2003; Whyte, Saks, & Hook, 1997). Attribution refers to the implication of control an individual has over their achievement, when explaining an event outcome (Tabassam & Grainger, 2002; Weiner, 1992). For example, learners explain their failures due to a lack of effort, or that they didn't try, rather than their lack of ability (Homsma, Van Dyck, DeGilder, Koopman, & Elfring, 2007). Positive and negative attributions assigned to event outcomes reflect the amount of internal and external controls individuals manipulate to preserve their self-image (Homsma et al., 2007; Tabassam & Grainger, 2002; Weiner, 1992).

Students with learning disabilities often demonstrate a propensity toward negative academic attributions (Tabassam & Grainger, 2002). These components, self-concept, efficacy beliefs, and attribution can indicate patterns of failed efforts often result in learned helplessness for students with learning disabilities (Margolis & McCabe, 2004; Tabassam & Grainger, 2002; Thomas & Pashley, 1982). Repeated failures discourage learners from attempting to learn new strategies in academic areas in which they have already performed poorly (Whyte, Saks, & Hook, 1997). As a result, post-school

negative outcomes for the students with learning disabilities remain a concern (Konrad et al., 2007). It therefore becomes important to continue to examine interventions which build coping skills which monitor frustration, tolerance, and persistence in academic learning (Ames, 1992; Fuchs, Fuchs, Karns, Hamlett, Katzaroff, & Dutka, 1997; Konrad et al., 2007; Thomas & Pashley, 1982).

Task performance.

Personal successes also affect self-concept. A certain amount of generalization spreads across domains, and is expected, when examining students' personal self-concept (Bong, 2004; Duda & Nicholls, 1992; Nathanson, 1992; Peetsma et al., 2001). This generalization helps add context to students' academic success, or failure, attributed patterns of achievement, and the consequence of consistency in ability (DaFonseca, Cury, Bailly, & Rufo, 2004; Fuchs et al., 1997; Wigfield & Eccles, 1992). Conflicting research also has shown achievement differences exist between subject areas regarding students' success in a perceived task ability, confidence, or work-avoidance, when participating in school activities (Bong, 2001; Duda & Nicholls, 1992). Students who are highly motivated in one area may, or may not, be eager in other areas (Bong, 2004). If self-concept defines the value students place on a task, and their willingness incentive to engage in the activity (Bong, 2004; Nathanson, 1992; Peetsma et al., 2001), then the perceived task value will affect the importance, usefulness, or interest for students. (Bong, 2004; Fuchs et al., 1997; Wigfield & Eccles, 1992). Continued research in pairing high/low motivating academic tasks with self-concept affects may illustrate a

generalized way that students feel about themselves (Bong, 2004). Therefore, classroom curriculum, emphasizing performance driven assessments, places learning disabled students in a precarious position (Canter, 2004).

School community.

Students' concept, ability, and performance are also affected by school community, morale, and classroom dynamics (Bong, 2004; Battistich et al., 1995; DeFronseca et al., 2004). Students are most inclined to reach the expectations that they perceive to be important in their school classroom, or learning environment (Ames, 1981; Bong, 2004; Battistich et al., 1995; Swing & Peterson, 1982). However, students generally maintain certain beliefs about schooling that are separate from their beliefs about specific subject areas (Brint, 2006; Frederickson & Turner, 2003). Students with and without learning disabilities also show significant differences in patterns of achievement based upon their socio-economic background (Brint, 2004; Gould, 1996; Nathanson, 1992; Nehring, 2009). Yet, adherence to a systematic learning experience does not consider unconscious thought, or the experience of internal and external controls placed on neural pathway learning (Dewey, 1938; Lakoff, 2008; Nathanson, 1992). Individual culture, emotion, and tolerance merge into social realms of significance for all students struggling to learn and understand (Dewey, 1938; Lakoff, 2008; Nathanson, 1992).

There are many variables that shape individuals' beliefs, attitudes, motivation to be curious, and persistence in learning challenges and difficult tasks (Bong, 2004). These

variables can facilitate or hinder achievement behavior (Bong, 2004). A student's inherent self value will also influence and directs intellect, behavior, and motivation (Linnenbrink & Pintrich, 2003).

Incremental Theory

Students' achievement motivation can be reflected in their personality, and the outcome of this is noted in individual classroom behavior (Ames, 1981). When a significant amount of certain recognized achievement exists for individual students, with and without learning difficulties, it can lead to progress and positive outcomes (Frederickson, Simmonds, Evans, & Soulsby, 2007). The foremost question asked, regarding all students, is why do some individuals rise above their assessed cognitive aptitude to achieve and other individuals achieve below their assessed capability (Heyman & Dweck, 1992).

Each individual learns differently, yet the rules governing what counts as success or failure continue to determine our perceptions of intelligence (Gardner, 1983; Elliot & Dweck, 2005). What an individual believes about their capabilities, affects the way they will think and learn (Dweck, 2000). These perceptions can alter the way students learn and achieve, in many contexts (Steele, 2010). Each individual has a belief mindset regarding their intelligence ability, in any domain (Dweck, 2004). Psychologists Carol Dweck and Mary Bandura identified two theories of intelligence, entity and incremental (Dweck, 2000). Students with fixed mindsets (Entity Theory) believe their intelligence and abilities are inborn and do not change (Steele, 2010). These students want to look

smart and advance by their performance (Dweck, 2000). A person with a fixed mindset views effort as a sign of weakness, and that talent is what creates success. These individuals give up easily, and do not follow through tasks requiring greater effort (Dweck, 2000). Contrary, students with a growth mindset (Incremental Theory) believe their intelligence, abilities, and talent develop over time and with practice. Individuals with this mindset have a malleable intelligence. These students are concerned with getting smarter by learning and setting goals. These individuals demonstrate effort, focus, and resilience (Steele, 2010). Furthermore, Dweck's research also shows that those who hold a growth mindset work harder, learning more by challenging themselves. They allow failure experiences to cultivate skills needed for accomplishment.

Summary

The literature I reviewed suggests further examination of achievement motivation behaviors, incorporating incremental theory for students with specific learning disabilities. Cognitive theorist, Albert Ellis, ascertained self-belief in cognitive thought determined learning capacity (Ellis & Harper, 1975). Although belief theory brushes up against incremental theory, Dweck explains incremental theory comprises of a belief system with a motivational component. It is important for students with disabilities to be motivated learners and become self sufficient, so their dependency on helpless attitudes and escape behaviors diminish.

Current incremental theory research studies related to students with disabilities has received little attention and are inadequate. Growth mindset literature highlights

intervention studies featuring students without learning disabilities; however an inclusive educational setting exposes more vulnerable students, those with learning disabilities, to a challenging and difficult situation. Special education services for these students, supports their classroom curriculum through interventions that mitigate, modify and differentiate curriculum, but these interventions do not teach the motivational skills necessary for learning growth and self development. Many social and emotional factors are associated with learning difficulties. The individual's need for validation further complicates classroom learning and often leads to enabled helplessness and poor choices (NASSET, 2006).

Interventions that teach incremental theory show students how to 'grow' their brain. A growth mindset encourages a malleable intelligence that performs well when challenged. Students learn strategies to expand their intelligence by engaging in academics and become persistent in accomplishment. Distinguished psychologist, Carl Rogers, states that self concept is dynamic; it is a learned behavior which gradually emerges as an individual matures (Rogers, 1961). If a growth mindset can provide students, without disabilities, motivation to learn and be successful, can it teach students with learning disabilities self sufficiency over dependence? Once students with disabilities believe they can perform well, they may persist and demonstrate a stronger work ethic through determination.

This study will attempt to answer the question: Can a growth mindset be taught to students who are identified as having a specific learning disability, and will it improve

their academic performance? I will identify a small group of students with learning disabilities, who have a fixed mindset, and offer them an intervention that teaches a growth mindset. This study is intended to raise awareness for educators and suggest strategies that promote students' improved self-concept toward developing achievement motivation behaviors, especially students with learning disabilities.

Chapter Three will present the methodology used to carry out this research.

CHAPTER THREE

METHODOLOGY

Introduction

Implicit Theory Scales of Intelligence and Personality (Appendix E and F) were used to identify four student participants, two from grade 4 and two from grade 5 at Rio Dell School District, who have a specific learning disability and a fixed mindset. All instruments used were adapted from Carol S. Dweck's *Self Theories: Their Role in Motivation, Personality, And Development*, 2000. These four students were then taught skills to promote a growth mindset. Intervention curriculum was developed by Carol S. Dweck, Ph. D. at Stanford University and Lisa Blackwell, Ph. D. at Columbia University. One researcher conducted this study while serving as the resource program specialist at Rio Dell School District.

Participants

There were eighteen students found, in grades three through eight, identified with specific learning disabilities. Student volunteers were recruited from the Special Education Resource caseload in grades five through eight. After a file review, documents showed each student's formal cognitive assessment records, indicating a specific learning disability in one or more of the areas Attention, Auditory Processing, Visual Processing, and/or Cognitive Processing.

Permission was obtained from administration at Rio Dell School District (Appendix A) to conduct research. Parents of students, who had specific learning

disabilities, were telephoned to discuss the project. After sharing with them the full nature of the study (Appendix B), parental consent (Appendix C) was obtained. Once parent consent was given, each of the 18 students with a specific learning disability were met with individually discuss the project, and complete the assent form. Participants selected are the eight students who gave their assent to volunteer (Appendix D).

The risks in this study were minimal and no greater than those ordinarily encountered in daily life or during the performance of routine classroom assessments and examinations. Students were free to withdraw and discontinue participation at any time. Of the eight student volunteers who completed the initial mindset questionnaire (Implicit Theory Scales: Appendix E and F), four qualified to participate in the intervention. Each of the four students chosen received a fixed mindset score on their pre-intervention assessment. Student work samples were collected with other student documents, and test scores.

Setting

The entire case study took place in the resource classroom at Rio Dell Elementary School District. After four students were identified having a fixed mindset, intervention commenced. Students participated in eight 30 minute growth mindset learning sessions (Brainology[®], 2002-20012). Learning sessions were administered during afternoon study periods, once or twice per week. Students worked with the researcher individually or in groups of two. Participation in this study took a total of 5-6 hours over a period of six weeks from March through May 2013.

Intervention

Brainology[®] is a research based intervention software curriculum teaching growth mindset. Students are taught to be better learners as they are guided throughout the twelve week program. Participants engage in online lessons teaching basic strategies following animated characters and engaging in interactive activities introducing the two mindsets (growth and fixed), the brain, its shape, behavior, and how to build it to make memory stronger.

My intervention applied an adopted Brainology[®] curriculum, simplified into six offline teaching units (Appendix I). My lesson plans for elementary school students incorporated power points and printable activities available to educators who enroll in a trial demo account, allowing access to Brainology[®] software and supplementary materials.

Each lesson plan began with an introduction to new material followed by recalling the previous learned material. Presentations included colorful PowerPoint photos with captions, worksheet activities, and scripted discussion prompts to engage students. PowerPoint slides gave basic information about the brain's size, function, needs, and how it grows when given proper nutrition, exercise and sleep (Appendix J and Appendix K). Worksheet activities directed students to reflect on what they learned about fixed and growth mindsets (Appendix L). Discussions prompted student experience in context of personal behavior (Appendix M and Appendix N).

Students were also prompted, throughout the school day, to help recall and strengthen growth mindset skill lessons. Students with specific learning disabilities receive classroom accommodations to be able to learn and make similar progress to their peers without disabilities. Accommodations used during this research study included: working one-on-one or in a small group with a teacher, note taking support, close proximity to instruction, short breaks, cues and prompts to remain attentive, extended time to respond, one direction at a time, repetition, and rephrasing

Results from post intervention questionnaires identifying growth or fixed mindset using Implicit Theory Scales (Appendix E and F), and Confidence Measures (Appendix G and H) are compared to results from pre intervention questionnaires illustrated in graphs presented in Chapter Four (Figure 1 through Figure 4)..

CHAPTER FOUR

RESULTS

The following graphs compare students' responses to mindset questionnaires employing Implicit Theories of Intelligence, and Implicit Theories of Personality (Appendix E and F) signifying growth or fixed belief. Questionnaires were also used to chart participants' confidence in their intelligence and personality (Appendix G and H). These measures were used in conjunction with implicit theory scales to verify Dweck's suggestion that implicit theories are a stronger predictor of an individual's judgment and action, when facing set back's or negative events, than are an individual's confidence in their attributes (Dweck, 2000). When students with learning disabilities are participating in academic activities, they may not be eager to engage in the activity if self-concept defines the value these students place on a task. Furthermore, their willingness to engage will affect the outcome (Bong, 2001; Duda & Nicholls, 1992; Fuchs, Fuchs, Karns, Hamlett, Kataroff, Dutka, 1997; Wigfield & Eccles, 1992). This research study employed confidence measures to examine how growth mindset intervention affects the individual's confidence in these said attributes.

Questionnaires given twice during the study, once before the intervention in March 2013, and after the intervention in May 2013, collected data used to make mindset comparisons to illustrate effectiveness of an intervention promoting a growth mindset. Data was collected from students' responses to a series of questions asking them to disagree or agree (on a six-point scale) with statements like "You have a certain amount

of intelligence, and you really can't do much to change it" (Entity Theory) or "No matter who you are, you can change your intelligence a lot" (Incremental Theory). Results from these measures are found in the following: Figure 1. Implicit Theories of Intelligence Scale for Children – Self, Figure 2. Implicit Theories of Personality – Self.

Data was also collected from students' responses to a series of questions asking them to check the sentence that is most true for them followed by asking how true this statement is for them like "When I get new work in school, I am usually sure I will be able to learn it" (high confidence) or "When I get new work in school, I often think I may not be able to learn it" (low confidence). These questions were followed with asking "very true for me" to "not very true for me" (six point scales). Results from these measures are found in the following: Figure 3. Confidence in Intelligence – Self and Figure 4. Confidence in Personality – Self.

Analysis of Data

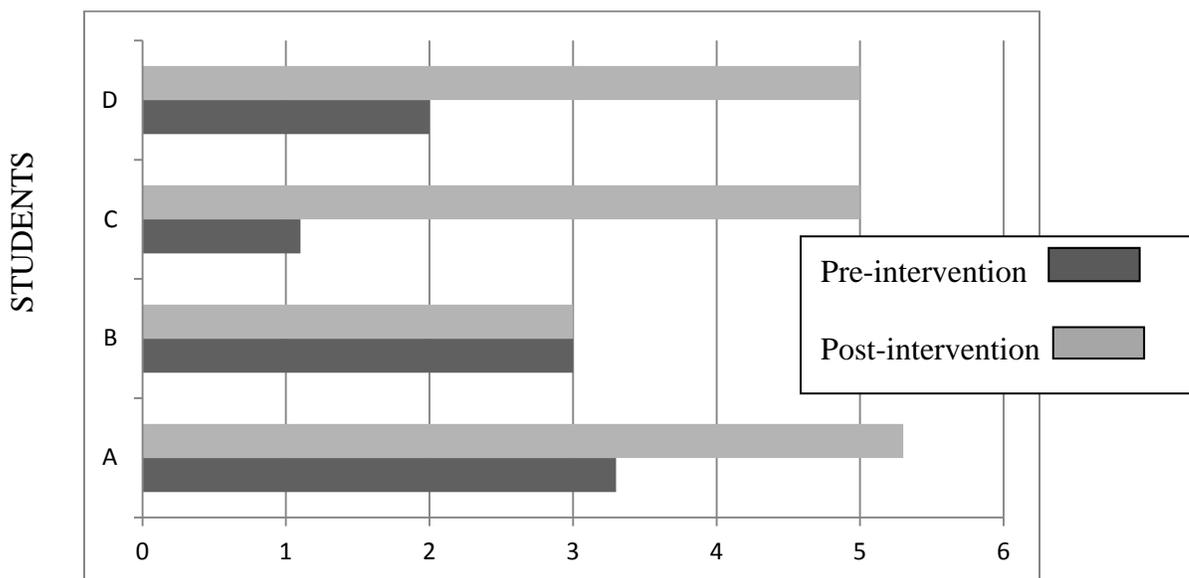
Implicit Theories of Intelligence and Personality correspond to an individual's assumption regarding their abilities, thus affecting learning motivation, judgment, and emotional behaviors (Dweck, 2000). Figure 1 compares data measuring students' self belief about their intelligence before and after an intervention. Figure 2 compares data measuring students' self belief about their personality. In both figures, students responded to questions inferring a growth mindset (Incremental Theory) or a fixed mindset (Entity Theory). Scores identified mindset using Likert-type scales: 1-agree strongly to 6-strongly disagree. A score of 3 or less indicates a fixed mindset. These

scores show an individual has a fixed mindset, and is an entity or product learner. A score of 4 or more indicates an individual has a growth mindset, and is an incremental or process learner. A score of 3.3 or 3.7 indicates an individual has a borderline mindset (Miller, n.d.).

Confidence measures show how positive individuals feel about their abilities when facing difficult situations or events, but these measures do not infer mindset (Dweck, 2000). The confidence measures administered in this study are used in combination with implicit theories to demonstrate that implicit theories are stronger predictors of judgment and actions than an individual's confidence in their ability (Dweck, 2000). Figure 3 measures show students' confidence in their intelligence during academic activities, and Figure 4 measures show students' confidence in their personality during certain work and social situations. Situational questions are followed with Likert-type scales: 1-very true for me to 6-never true for me, measuring the degree of confidence students have relative to their intelligence and personality. Each student's total confidence measurement is equal to the difference between their high confidence data and low confidence data. Line charts compare pre-intervention and post-intervention totals for each student in a series.

Figure 1 pre-intervention results show Student B (3.0), Student C (1.1), and Student D (2.0) have fixed mindsets with scores tallied between 1 and 3. Student A (3.3) has a borderline mindset. Figure 1 post-intervention results suggest the beginnings of a growth mindset belief for Student A (5.3), Student C (5.0), and Student D (5.0) with scores tallied at 5 or greater. Student B (3.0) post-intervention results do not deviate from the pre-intervention score, indicating a stagnant fixed mindset. The difference in Student B's results may be due to the participant's learning disability, a processing difficulty directly related to reasoning which may affect comprehension. This variable suggests Student B may require more intervention to understand growth mindset concepts.

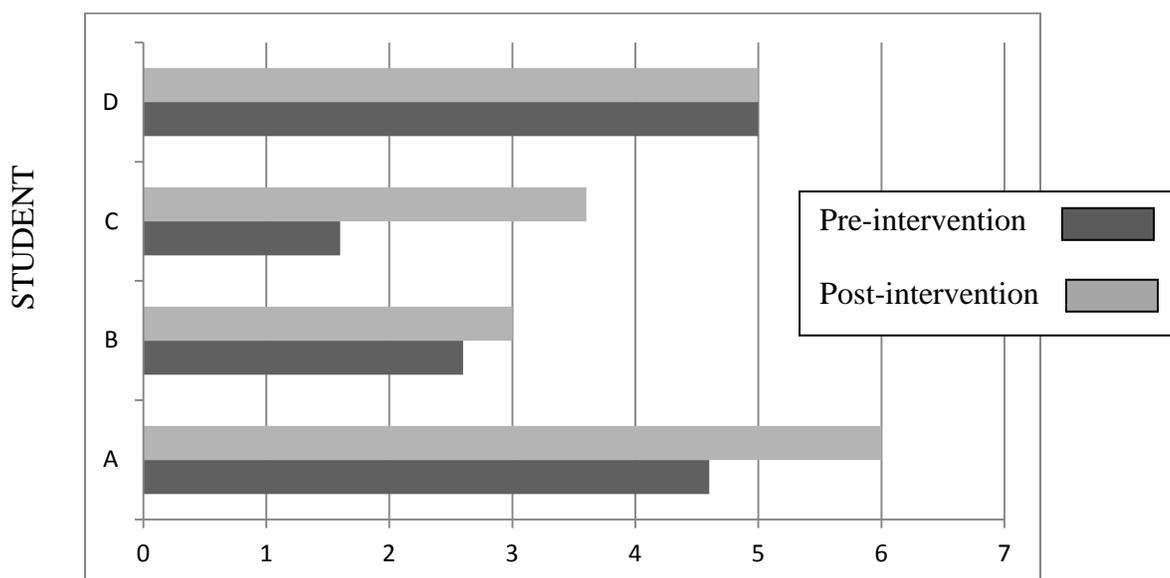
Figure 1. Implicit Theories of Intelligence Scale for Children – Self. Results show difference in mindsets before and after the growth mindset intervention for Student A, Student B, Student C, and Student D.



Mindset Scale: fixed mindset (1-3), borderline mindset (3.3-3.7), growth mindset (3.8+).

Figure 2 pre-intervention results show students vary in their belief about their personality (self judgment and social reaction). Student A (4.6) and Student D (5.0) reveal growth mindset beliefs prior to the intervention with scores tallied between 4 and 5. Student B (2.6) and Student C (1.6) each have a fixed belief with scores tallied between 1 and 3. Post-intervention results show Student A (6.0), Student B (3.0), and Student C (3.6) responded to the intervention. Student D (5.0) reports no growth after the mindset intervention; however, Student D already demonstrates a base knowledge about mindset concepts. Student B does not show a growth mindset belief after the intervention. Student B also struggles with reading, and organizational skills. These difficulties may require more intervention for growth mindset beliefs to emerge.

Figure 2. Implicit Theories of Personality – Self. Results show difference in mindsets before and after the growth mindset intervention for Student A, Student B, Student C, and Student D.



Mindset Scale: fixed mindset (1-3), borderline mindset (3.3-3.7), growth mindset (3.8+).

Figure 3 pre-intervention results illustrate students vary in their confidence about their intelligence. Scale results indicate Student A (13.0) and Student D (17.0) have a high degree of confidence in their intellectual ability prior to the intervention. Student B (1.0) and Student C (0.0) have little confidence in their intelligence. Post-intervention results show Student A (15.0) and Student B (8.0) gained confidence after the intervention. Student C (1.0) responded slightly, and Student D (6.0) shows a negative response to the intervention. Could this loss of confidence be equated with confusion due to the disability? As suggested in Figure 2 with same student, association, and conceptualization difficulty may be the cause of this variable.

Figure 3. Confidence in Intelligence – Self.

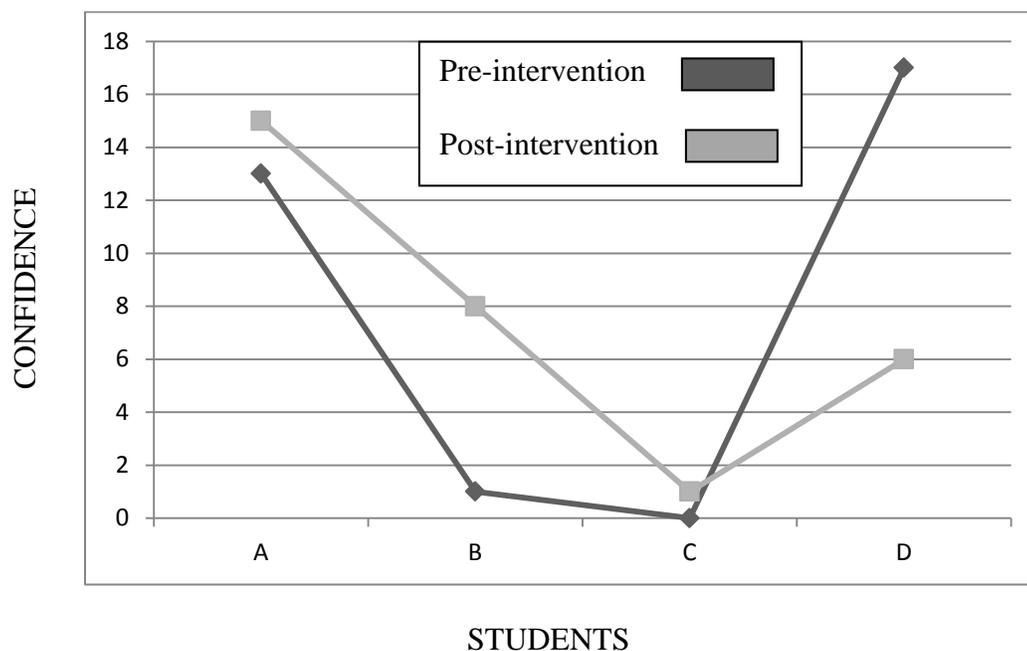
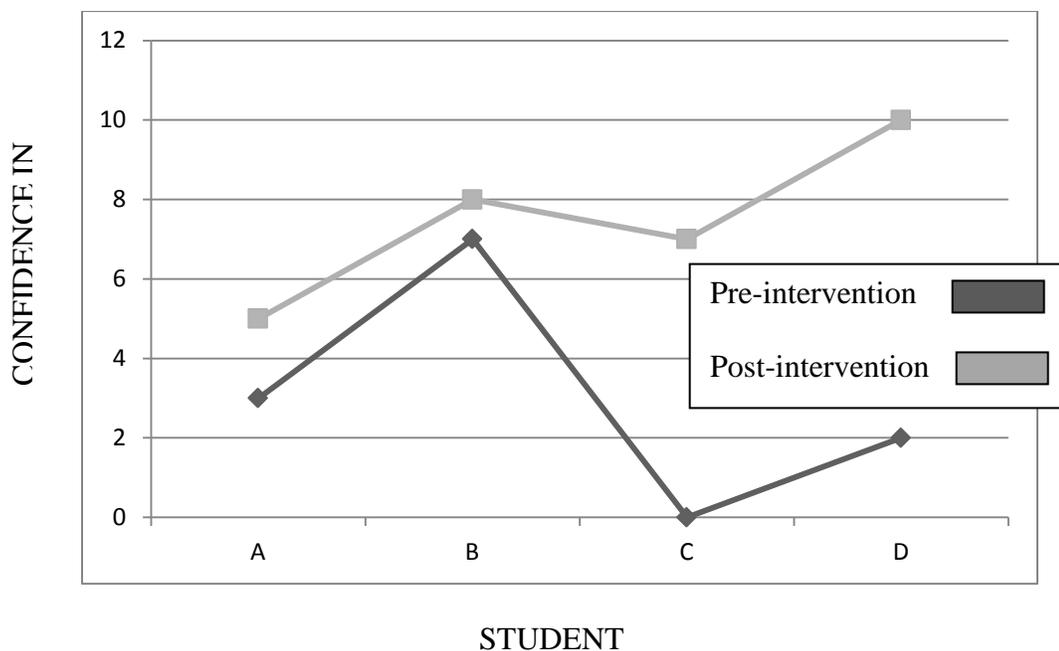


Figure 4 Pre-intervention results show Student A (3.0), Student B (7.0), and Student D (2.0) have some degree of personality confidence prior to the intervention. Student C (0.0) indicates a lack of confidence in personality during social situations. Post-intervention results show a relative growth in personality confidence for all participants. Total confidence for Student A (5.0), and Student B (8.0) is slight, while Student C (7.0), and Student D (10.0) demonstrate significantly higher levels of confidence, after the intervention. Observation notes during the study state Student C and D were anxious to complete their questionnaires in order to attend a different after school activity. Perhaps enthusiastically, without giving full consideration, they made their responses.

Figure 4. Confidence in Personality – Self.



CHAPTER FIVE

CONCLUSION

This experimental study has shown that students with specific learning disabilities respond to growth mindset intervention (see Figures 1 and 2 for measures). Implicit theory questionnaires administered with a growth mindset intervention introduce students to malleable intelligence and raise awareness by showing what growth mindset beliefs looks like. While teaching the growth mindset intervention, I watched students' cultivate awareness of their intellect, and embrace new belief skills as they learned about their brains and discussed academic challenges, emotion, and effort. A growth mindset vocabulary alone can provide a foundation where students develop progressive learning skills. A growth mindset curriculum teaches students how to work with their brain, strengthening it by accruing new knowledge until they reach mastery.

Students understand malleable intelligence when they discover they don't need to achieve everything in one moment, or that success isn't based on one assessment, but rather a process developed over a period of time by expanding their intelligence. My observations during this study infer, with practice students with learning disabilities can learn to manage their attention, memory, and emotion for the acquisition of a malleable intelligence. A growth mindset belief directs students, of all levels, to value learning as something to be cultivated, taking small steps, moving forward to what lies ahead while continuing to learn with eager anticipation rather than fearful degradation.

Limitations of the study

My findings, being similar to those mentioned in other incremental theory studies, show a growth mindset can be taught to students who are identified as having a specific learning disability. Some data variables result from student responses to implicit theory questionnaires. This result may indicate that students with learning disabilities struggled to comprehend the language used during the six week intervention period this study took place. It is difficult for students with learning disabilities to comprehend new content and mastery without repeated exposure or rephrasing key elements. These learners often struggle with the memory skills necessary to engage and respond with meaning.

The purpose of this study was to address differing achievement motivation and academic performance in students who have learning difficulties. If different implicit theories of intelligence are indeed related to contrasting motivational patterns, then teaching students to think of their intelligence as malleable should cause them to display more positive motivation in the classroom. However, the brevity of this study does not allow for recognizable indicators showing improved academic performance.

Summary

Educators working with students struggling at grade level are committed to raising their students' achievement ability by creating opportunities for them to learn. How do teachers, support these students without enabling them? How do we minimize the amount of helpless attitudes and cultivate a healthy mindset which ultimately will lead them to self directed learning.

Before we can introduce students to the concept of the malleable mind, we must learn to recognize the two mindsets within ourselves. Through this process we become better equipped at teaching a growth mindset, letting it become the culture in our classroom environment. Researcher, Carol Dweck talks about how educators commonly misuse praise with students, believing that intelligence is a major factor involved in achievement. Unfortunately, this type of praise (*person praise*), does not build confidence or learning motivation. Instead it fosters an entity theory of intelligence one which focuses only on the end product and is harmful to tasks that require students to apply effort.

The language used for successful learning should embrace effort (*process praise*) and hard work, that which seeks learning challenges. Praise research shows that certain words can encourage different mindsets. For students with learning disabilities, growth mindset learning may expose their vulnerabilities. Consequently, many of these learners don't want to take this risk. Educators who use praise for the effort students ensue can help all learners develop growth mindset skills, where students learn to embrace challenges and accept mistakes as part of the learning process.

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APPENDIX A

DISTRICT REQUEST TO DO RESEARCH

RE: Intervention Plan and Risk / Benefit for student participation (Grade 4 through Grade 8).

The Study: The purpose of this qualitative research study is to address differing achievement motivation in students who have learning difficulties. The goal of this study is to find out if a *growth mindset* (Incremental Theory) can be taught to students with specific learning disabilities (SLD).

Mindsets are beliefs everyone has about their most basic abilities, affecting the way we think and learn. Research shows there are two mindsets, growth (Incremental Theory) and fixed (Entity Theory). People with a *growth mindset* believe they can develop their intelligence, abilities, and talent over time with practice. This view creates a love for learning and resilience that is essential for accomplishment. On the contrary, people with *fixed mindsets* believe basic intelligence and abilities are inborn and set. They believe that talent alone creates success, and view effort as a sign of weakness. Research also has shown that those who hold a *growth mindset* work harder, learning more by challenging themselves and allowing failure as tools to cultivate skills needed for achieving mastery.

Mindset can be further intensified by how praise is used and received. Research practices have shown when adults praise children for their intelligence only; it backfires and fosters a maladaptive self theory, thus creating helplessness and stereotypes. It is my hope to motivate students in the resource program by teaching a *growth mindset*. Furthermore, this study will show students how to monitor their learning behavior, increase their focus, and thereby take ownership for learning.

The Setting: This study will take place during Rio Dell's regular school day. I have adapted Growth Mindset Lesson Units from research-based curriculum, *Brainology*[®]. *Mindset Works*. If you agree to this study, Tier III students with a SLD, will be asked to complete an initial mindset assessment. This 30-answer assessment will determine if students have a *fixed mindset* or *growth mindset*. The final student selection will be based on those with *fixed mindsets*. This initial session will be followed by four learning units, each with two parts. There will be one post assessment session to collect final data (see intervention timeline below). The entire case study will take approximately six weeks to complete. Assessments and Learning Units will take place in the Resource classroom during afternoon study periods, twice per week for 30 minutes per lesson. Lesson Units teach basics about the brain, its behavior, how to build it, and make memory stronger.

Selection, Documentation, and Confidentiality: Initial student selection for the study, will be chosen from the resource caseload. Students between the ages of 10 and 14, with a current SLD evaluation, will be reviewed to determine students' appropriateness. Other documents to be reviewed are District Assessments and student work samples. Parent Consent Forms will be necessary for permitting minors to participate in the research. However, student participation is voluntary and they or their parents can choose to discontinue at any time during the study.

Risk/Benefit: Interviewing minors about their learning challenges' and teaching them positive belief skills are a reasonable risk in relation to the expected benefit for both participants and society. If a student decides to participate, she/he is free to withdraw and discontinue participation at any time. Although there is some stereotype concern when intervention groups pull-out from their general education classroom to receive support services, any threat to their (peer) identity from such an exclusion, typically dissolves once students recognize the benefit received with additional support and improved academic success. Therefore, any measure of perceived personal risk or discomfort to the participants is negligible. If you have any questions now, or later, you may contact my academic advisors, Dr. David Ellerd (826-5851), or Dr. Eric Van Duzer (826-3726). Thank you for your consideration.

**Mindset Theory is developed by Carol S. Dweck, Ph. D., Stanford University Psychologist. MindSet Works and Brainology Curriculum are developed by Carol S. Dweck, Ph. D, and Lisa Blackwell, Ph. D. Funded in part by the US Department of Education Institute of Education Sciences.*

Intervention Timeline

- Week 1** Initial Mindset Assessment Profile and Introduction to Mindset Theory
- Week 2** Topic - Unit I: Brain Basics
Learning Goal - Students will be able to reflect and discuss the brain as a control center, its structure (appearance), function, and needs (food and sleep). Students will also learn about what is required to maintain readiness to learn and how attention and concentration are supported. The concept here is that all of our brains continue to grow for the rest of our lives with healthy lifestyle choices.
- Week 3** Topic - Unit II: Brain Behavior
Learning Goal - Students will learn that the brain sends chemical messages through a network of nerve cells that are responsible for thoughts, taking tests and making choices. Students will also learn how emotions (anxiety, fear, anger, and unhappiness) affect their thinking.

Strategies will be taught for managing negative emotions and enhancing positive ones.

- Week 4** Topic - Unit III: Brain Building
Learning Goal - Students will learn about changes in the brain (plasticity), and how intelligence can be developed through repeated use and mental exercise, but is limited from labeling and stereotype.
- Week 5** Topic - Unit IV: Brain Booster
Learning Goal - Students will learn about memory and study strategies to benefit from the way the brain works, learns, and remembers.
- Week 6** Review Lesson to reinforce the understanding of growth mindset and apply for improved academic performance. Post Mindset Assessment Profile.

APPENDIX B

PARENT SCRIPTED PHONE CONVERSATION

"Hello, this is Gretchen Hartmann, *Johnny's* resource teacher at Rio Dell School. I am calling because I am conducting a research study with Humboldt State (Arcata). I am contacting you because I want to invite the participation of your son *Johnny* in this study. Is this a good time to discuss this with you?" **Pause for questions**

"I want to learn more about students' motivation when learning new things; and I may find out that I can help some students learn better." **Pause for questions**

"The first step is to invite a few students to complete a survey that has 32 questions about learning motivation, and confidence in learning new things." **Pause for questions**

Then, children who receive certain scores on the questionnaire will be invited to participate in a learning motivation class at school, during afternoon study periods.

Pause for questions

I have a written description of everything I will be doing in the permission/consent form that I would like to give you. "So, is it okay with you if I give *Johnny* this questionnaire?" **Pause for questions**

"Yes? Okay great! I have the permission/consent form you'll need to sign. Can I meet you in the parking lot after school today?" *Or, for middle school students,* "I will give it to *Johnny* to take home today. Please look it over at home, sign and then give it to *Johnny* to return to me at school." **Pause for questions**

"Thank you! Please call me at school if you have any questions."

APPENDIX C

PARENT CONSENT

Dear Parent,

Your child is invited to take part in a project about learning motivation. She was chosen because she is the age that I am interested in studying. With your permission/consent, she will be asked to answer a survey/questionnaire about learning motivation.

The survey/questionnaire has 32 questions. It will be given in the resource classroom at Rio Dell School. It will take 30 minutes. Children who receive certain scores on the survey/questionnaire may be invited to participate in a learning motivation class at Rio Dell School, during afternoon study periods.

Only a few of the students who complete the survey/questionnaire will be invited to participate in the learning motivation classes. If Melissa is asked to join this class, it will be held in the resource program classroom for six weeks. Classes will be held two times a week. Learning motivation classes will last for 30 minutes.

Classes will take place during afternoon study periods and do not take time from regular general education instruction. There are no risks, or discomforts from taking the survey/questionnaire or from participating in learning motivation classes. Students may benefit from learning new ideas that help them in school.

The data collected from your child will include her responses to the survey/questionnaire, and access to her school records, including student work samples. All forms and any information collected from this project will be kept private. All files will be stored in a locked cabinet in the resource classroom at Rio Dell School. All materials will be shredded and destroyed after three years.

If you decide to allow your child to participate in this study, you are free to pull out at any time. If you have any questions, you may contact Gretchen Hartmann, the researcher, at Rio Dell School by phone 764-5694 ext.301, or email at ghartmann@humboldt.k12.ca.us You may also contact Dr. David Ellerd at the College of Education at Humboldt State University 826-5851, or dae11@humboldt.edu Thank you.

Parent Consent:

I understand that Gretchen Hartmann will answer any questions I may have concerning the project at any time. I also understand that my child's participation in any study is entirely voluntary and that I may decline my child's participation to enter this study or may withdraw from it at any time without trouble. I understand that Ms. Hartmann may end my child's participation in the study at any time.

If you have any concerns about this project, or any dissatisfaction with any part of this study, you may contact the IRB Chair, Dr. Ethan Gahtan, at eg51@humboldt.edu or

(707) 826-4545. If you have questions regarding your rights as a participant, you may report them to the IRB Institutional Official at Humboldt State University, Dr. Rhea Williamson, at Rhea.Williamson@humboldt.edu or (707) 826-5169.

I, the parent or guardian of _____, ____ years of age, permit her/his participation in a project about learning motivation by resource teacher, Gretchen Hartmann at Rio Dell School

Signature of Parent or Guardian

Date

Please print your name here.

APPENDIX D
STUDENT ASSENT

Dear Rio Dell Student,

You are being invited to take part in a project about learning motivation. First, you will be asked to answer a survey with 32 questions. It will be given to you in the resource classroom at Rio Dell School. Based on the score of your responses, you may also be one of a few students asked to join a learning motivation class at Rio Dell School.

This class will be in the resource classroom for six weeks. Class meetings are two times a week. They will take place in the afternoon during study periods. They will last for 30 minutes. There are no risks, or discomforts associated with taking the survey or the learning motivation classes. You may benefit from learning new ideas that will help you in school.

The data collected from your responses to the survey/questionnaire and access to your school records, including work samples will be private. All files will be locked in the resource classroom cabinet at Rio Dell School. Everything will be shredded after three years.

If you decide to participate, you are free to pull out at any time. If you have any questions, you can talk with Ms. Hartmann, resource teacher at Rio Dell School.

Student Assent

I understand that Ms Hartmann will answer any questions I may about the project at any time. I also understand that this is voluntary and I can stop at any time. I also understand that Ms. Hartmann may end my participation in the study at any time.

I, _____, ____ years of age, choose to participation in a project about learning motivation by resource teacher, Gretchen Hartmann at Rio Dell School

Signature of Student

Date

Please print your name here.

APPENDIX E

IMPLICIT THEORIES OF INTELLIGENCE SCALE (DWECK, 2000)

Implicit Theories of Intelligence Scale for Children – Self Form*(For Children Age 10 and Older)*

Read each sentence below and then circle the *one* number that shows how much you agree with it. There are no right or wrong answers.

1. You have a certain amount of intelligence, and you really can't do much to change it.

1	2	3	4	5	6
Strongly	Agree	Mostly	Mostly	Disagree	Strongly
Agree		Agree	Disagree		Disagree

2. Your intelligence is something about you that you can't change very much.

1	2	3	4	5	6
Strongly	Agree	Mostly	Mostly	Disagree	Strongly
Agree		Agree	Disagree		Disagree

3. You can learn new things, but you can't really change your basic intelligence.

1	2	3	4	5	6
Strongly	Agree	Mostly	Mostly	Disagree	Strongly
Agree		Agree	Disagree		Disagree

4. No matter who you are you can change your intelligence a lot.

1	2	3	4	5	6
Strongly	Agree	Mostly	Mostly	Disagree	Strongly
Agree		Agree	Disagree		Disagree

5. You can always change how intelligent you are.

1	2	3	4	5	6
Strongly	Agree	Mostly	Mostly	Disagree	Strongly
Agree		Agree	Disagree		Disagree

6. No matter how much intelligence you have, you can always change it quite a bit.

1	2	3	4	5	6
Strongly	Agree	Mostly	Mostly	Disagree	Strongly
Agree		Agree	Disagree		Disagree

APPENDIX F

IMPLICIT THEORIES OF PERSONALITY SCALE (DWECK, 2000)

Implicit Theories of Personality – Self Form (*For Children Ages 9 and Older*)

Read each sentence below and then circle the *one* number that shows how much you agree with it. There are no right or wrong answers.

1. You really can't change what kind of personality you have. You either have a good personality or you don't and you really can't change much.

1	2	3	4	5	6
Strongly Agree	Agree	Mostly Agree	Mostly Disagree	Disagree	Strongly Disagree

2. Your personality is a part of you that you can't change very much.

1	2	3	4	5	6
Strongly Agree	Agree	Mostly Agree	Mostly Disagree	Disagree	Strongly Disagree

3. You can do things to get people to like you, but you can't change your real personality.

1	2	3	4	5	6
Strongly Agree	Agree	Mostly Agree	Mostly Disagree	Disagree	Strongly Disagree

4. No matter who you are and how you act, you can always change your ways.

1	2	3	4	5	6
Strongly Agree	Agree	Mostly Agree	Mostly Disagree	Disagree	Strongly Disagree

5. You can change your personality a lot.

1	2	3	4	5	6
Strongly Agree	Agree	Mostly Agree	Mostly Disagree	Disagree	Strongly Disagree

6. People can always change their personality.

1	2	3	4	5	6
Strongly Agree	Agree	Mostly Agree	Mostly Disagree	Disagree	Strongly Disagree

APPENDIX I

GROWTH MINDSET INTERVENTION LESSON PLANS

Introduction

Week 1: Initial mindset assessment profiles are discussed individually with each of the four students participating. NOVICE Learning goal: students will be introduced to the brain as the control center. Different areas do different things; sending messages.

Create curiosity about our brains. Growth mindset is introduced: ask students what they know about intelligence, and would they like to learn how to grow their intelligence.

Talk to students about the brain, how it changes and can be developed like a muscle.

Explore what the basic brain looks like, how it's put together, what it does, and the role it plays in life. Address concerns and reflect.

Motivating Mindsets

Week 2: Unit I. Brain Basics. APPRENTICE Learning goal: students will reflect and discuss the brain's anatomy, its structure (appearance), function, and needs (food and sleep). Students will also learn about what is required to maintain readiness to learn and how attention and concentration are supported. The concept here is that our brain can continue to grow, for the rest of our lives, with healthy lifestyle choices.

Discuss behavior and readiness to learn. How does the brain work? How do our life choices affect our brain, our behaviors? Focus on anatomy, attention, and concentration.

Messages That Motivate

Week 3: Unit II. Brain Behavior. ARTISAN Learning goal: students will learn that the brain sends chemical messages through a network of nerve cells that are responsible for thoughts, like taking tests and making choices. Students will also learn how emotions (anxiety, fear, anger, and unhappiness) affect their thinking. Strategies will be taught for managing negative emotions and enhancing positive ones. *Focus on building the brain. How does it learn? We make our brains stronger by learning new things. Brain cells are neuron transmitter, information messengers that create networks. A brain grows through new experiences. Mental exercising makes a brain stronger; through study and practice we can become smarter. Emotion and self regulation during test taking; look for signs of stress, and anxiety. Discuss strategies to manage.*

The Malleable Mind

Week 4: Unit III. Brain Building. ADEPT Learning goal: students will learn about changes in the brain (plasticity), and how intelligence can be developed through repeated use and mental exercise, although this growth can be limited when allowing labeling and stereotype to influence our choices. *Recall neurons and building networks. Explain how memory works and the different steps it makes before reaching long term storage. Discuss strategies to boost memory.*

Molding Mindsets

Week 5: Unit IV. Brain Booster. MASTERY Learning goal: students will learn about memory and study strategies to benefit from the way the brain works, learns, and remembers. *Discuss study strategies while imagining what neurons look like when we struggle, and when we are motivated. Talk about ways to focus attention, practice, and review. The more difficult things are, the more we stretch our brain and the more knowledge we gain!*

Wrap-up

Week 6: Review lesson to reinforce growth mindset beliefs and how to apply for improved academic performance. Administer post intervention questionnaires to four student volunteers who completed the growth mindset intervention.

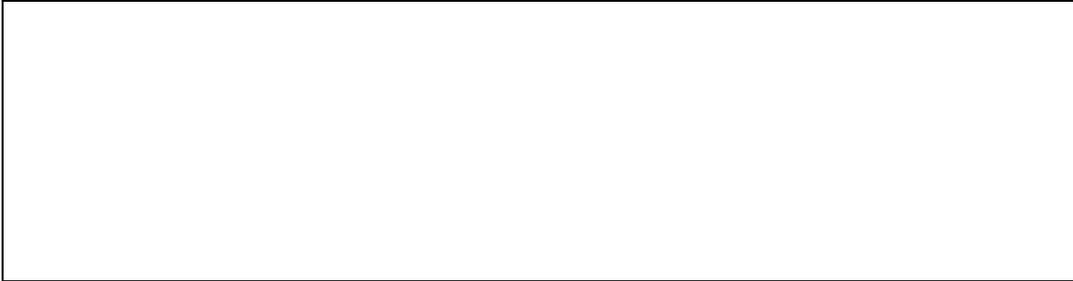
APPENDIX J

WHAT I KNOW ABOUT THE HUMAN BRAIN

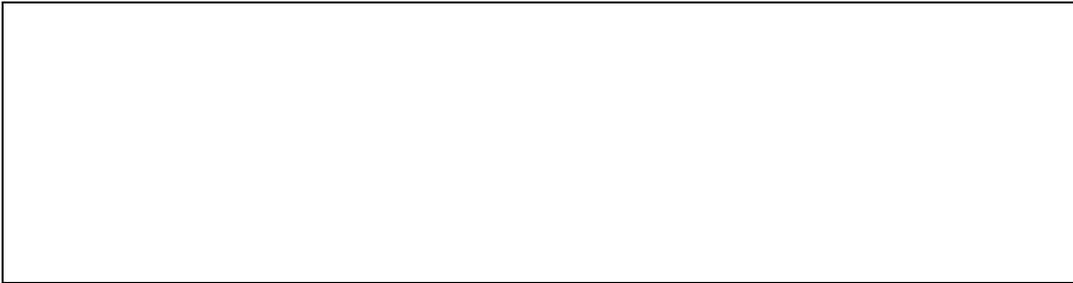
#1 What shape and texture is the brain?

#2 What color is the brain?

Draw a picture of the brain as you envision it.



Did your picture look like a real brain? If not, draw a new one.



#3 How much does the brain weigh?

#4 What size is the brain?

How your brain works

- The neurons in your brain grow every time you learn something new.
- The dendrites stretch and lengthen until they are touching other neurons and the axon gets thicker and thicker.
- When your brain is working the hardest, the little dendrites of your neurons are wiggling the most!
- When people believe they fail because they are not smart, they refuse to try to learn.

APPENDIX K

ADDITIONAL FACTS ABOUT YOUR BRAIN:

1. Your brain eats _____% of the “fuel” you eat.
2. Two things that I can try to eat more of to nutritionally feed my brain are _____ and _____.
3. I need to get _____ hours of sleep because sleep produces _____.
4. Melatonin helps with _____, _____, and it also helps people with _____.
5. Exercise helps my brain to grow _____ and _____ more easily.

REFLECTION: Write a couple of sentences about something that you found interesting about the brain that you didn't know before today. How could this information help you in school?

APPENDIX L

THINKING AND SPEAKING IN A GROWTH-MINDED WAY

DIRECTIONS: Look at the left column of comments that a fixed-minded person might think or say. In the right column, change the words to something that a GROWTH-MINDED person should think or say.

FIXED-MINDED	GROWTH-MINDED
<u>Example:</u> I'm not good at this.	I can get better at this if I practice.
1. It's too hard for me.	
2. I cannot get to school on time.	
3. I'm not good at reading.	
4. I'm stupid.	
5. I'm a bad person.	
6. I'm going to fail the test so why bother studying.	
7. I get bad grades because my teachers do not like me.	

REFLECTION: Write two or three complete sentences that explain what you have learned about “growth-minded language.” Will you attempt to always have positive, growth-minded comments? Why or why not?

APPENDIX M

MY PERSONAL STRESS SYMPTOMS INVENTORY

When I feel under a lot of stress and pressure, which of the following responses do I notice?

Restlessness, fidgeting	Headaches	Nail biting
Feeling exhausted/fatigued	Crying	Heart beats faster
Depression	Dry mouth/ throat	Heartburn
Sleep or go to bed to escape	Aggression & anger	Back and neck tightens up/ aches
Withdrawal from people	Can't concentrate	Boredom
Hands and/or feet feel cold or sweaty	Inability to sleep	Diarrhea
Face feels hot, flushed	Stomach upset/ nausea/ cramps	Tapping fingers/ feet
Legs get shaky or tighten up	Dizziness	Loss of appetite

Let's De-Stress *What works for you?*

*Slow breaths.

*Visualize calm and positive thoughts before/during stressful events.

*Use positive self talk.

APPENDIX N

STAR: STOP, THINK, ACT, & REFLECT

If you're feeling tired, bored and unmotivated...

If you're feeling angry, scared, or frustrated...

- Have you eaten a good breakfast/lunch today? **Your brain uses 30% of the calories you eat!**
- Did you get enough sleep last night? **Your brain needs 9 hours!**
- Did you keep your attention on the lesson when you were trying to learn it?
- Are there distractions in your environment when you are trying to learn?
- Did you use more than one sense to learn this material? (seeing, touching, listening)
- Would you be willing to speak with your teacher, a counselor, or another adult and ask for help?
- Did you use **positive thinking** today instead of negative thoughts?
- Did you approach a new task by **breaking it into smaller parts**?
- Did you focus on **strategies to succeed**?
- Did you give yourself **enough time** to do the task?
- Have you been holding back your effort?
- Are you willing to put in the effort it takes?
- How much time do you need for this and are you giving yourself enough time?
- If you get discouraged, think about how much smarter you are now than you were a year ago.
- Do you consider success easy or hard work? How hard are you willing to work?
- Do you think that other people are aware of how you are feeling?
- Do you believe you can succeed at this? I believe you can!