The Effect of a Growth Mindset on Student Achievement Among Students with a Disability

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THE EFFECT OF A GROWTH MINDSET ON STUDENT ACHIEVEMENT AMONG STUDENTS WITH A DISABILITY

A Dissertation Presented to
The Faculty of the Educational Leadership Doctoral Program
Western Kentucky University
Bowling Green, Kentucky

In Partial Fulfillment
Of the Requirements for the Degree
Doctor of Education

By
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THE EFFECT OF A GROWTH MINDSET ON STUDENT ACHIEVEMENT AMONG STUDENTS WITH DISABILITIES

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Date:
I dedicate this dissertation to my husband, Clint, and son, Walker. Thank you both for the sacrifices made so that I could achieve this dream. Your love and encouragement every step of the way has meant the world to me and so now it is my turn to support both of you in fulfilling your dreams!
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THE EFFECT OF A GROWTH MINDSET ON STUDENT ACHIEVEMENT AMONG STUDENTS WITH DISABILITIES

Kristin Line Froedge            May 2017  92 Pages
Directed by: Antony D. Norman, Kelly Davis, Marguerita DeSander, and Gary Houchens
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The purpose of this study was to investigate to what extent the mindset of students with disabilities relates to their Student Growth Percentile (SGP) on the K-PREP in both reading and math. In addition to exploring the influence of student mindset on academic growth, the study also examined if a correlation exists between teacher mindsets and mindsets of their students. This quantitative study utilized 2015 K-PREP assessment data from the Kentucky Department of Education and a mindset survey developed by the researcher. Participants for this study included 145 middle school students with disabilities and 46 middle school teachers from six districts within the Green River Regional Educational Cooperative.

Results from this study indicate that a student’s mindset scale score does have a small predictive value on both reading and math SGPs. Those having a growth mindset are predicted to have a significantly higher SGP. Results indicated an inverse relationship between teachers’ mindset and students’ mindset at the school level. This study suggests that one way in which to close the achievement gap for students with disabilities is addressing psychological barriers and promoting a growth mindset.
CHAPTER I: INTRODUCTION

One of the greatest challenges for educators today is improving educational outcomes for students with disabilities. In a time when “student performance and achievement are often seen as the only indicators of school success,” (Carter, 2012, p. 177), school leaders are charged with closing the achievement gap between students with disabilities and their non-disabled peers. Amongst a long lasting educational reform movement, many changes to bridge the gap of educational opportunities for these students have surfaced. Yet not one of them has demonstrated significant progress in closing the achievement gap.

When it comes to achievement, most people tend to think of intelligence. Although the disabilities of some students are indicative of an intellectual gap, other students with disabilities display similar intellectual ability as their non-disabled peers. Educators often debate the modifiability of intelligence, but regardless of personal stance, complacency about poor academic achievement is not acceptable. Just as Protzko, Aronson, and Blair (2013) assert, intelligence is an important factor in terms of success in life. These students’ lives matter and the willingness of educators to go the extra mile to ensure that they have adequate opportunities once they leave their care is critical.

A lack of academic self-efficacy often compounds the challenge of low academic and intellectual achievement for students with disabilities. Self-efficacy is belief in one’s ability to achieve success (Bong & Skaalvik, 2003); while mindset is more about the attitudes one has about his or her intelligence (Dweck, 2000). Both self-efficacy and mindset influence the academic trajectory students tend to take and affects the effort they
exert, their motivation, perseverance, and resiliency, as well as their postsecondary outcomes (Carroll et al., 2009).

The U.S. Department of Education (2013) acknowledges the impact of these non-cognitive factors and predictors on student. Emerging trends in educational and brain-based research explore and expose the critical need for educators to consider these variables in student learning and performance. One of the questions still unanswered is how we can measure in a meaningful way these non-cognitive factors and what role they should play in any future accountability model.

Regardless of the intellectual capacity of individual students with disabilities, their mindset pertaining to their intelligence is a highly influential factor (Dweck, 2000; Jensen, 2005). Understanding the relationship between mindset and intelligence can unlock a host of potential new ways to meet the needs of students. The U.S. Department of Education (2013) published a brief, *Promoting Grit, Tenacity, and Perseverance: Critical Factors for Success in the 21st Century*, that urges schools to consider how they are addressing non-cognitive aspects of student learning:

A growing corpus of research evidence suggests that these factors can be just as important as intellectual abilities for success, and new research programs are exploring ways to promote these factors. Several private foundations have recently initiated programs to push the frontiers of theory, measurement, and practices around these and related factors, particularly for at-risk and vulnerable students. (p. v)
The Problem Defined

Students with disabilities exceed 12% of all students attending public schools in Kentucky (KDE, 2013). All students with disabilities are guaranteed a Free Appropriate Public Education (FAPE) under Section 504 of the Rehabilitation Act of 1973. From 1973 to the present, the U.S. Congress has enacted a host of legislative measures to provide opportunities that are more equitable for students with disabilities. From the Rehabilitation Act (1973) to reauthorization of the Individuals with Disabilities Education Act (2004), policy makers have attempted to improve education for this population. However, the issue of educational equity has long been a concern of legislators and has led to new systems of accountability. Kentucky has initiated multiple assessment and accountability systems over the past few decades to comply with federal mandates for delivering a high-quality education for students with disabilities.

Kentucky’s student testing system, known as the Kentucky Performance Rating for Educational Progress (K-PREP), consists of a series of assessments reporting achievement and growth in reading and math of students in grades 3-8 and grades 10-11 as well as achievement data on subpopulations as required by the 2002 No Child Left Behind Act (NCLB). High stakes testing has become the norm for states to hold educators accountable for student performance. However, these tests in isolation are not strong enough to eradicate the achievement gap (Miller & Moore, 2006). More research is needed on the effects of reform and accountability for students with disabilities.

The sizeable achievement gap that exists between students with disabilities and their non-disabled peers is a common trend among schools across the country. The U.S. Department of Education’s effort to address this gap is evident in NCLB (2002) and in
the recent reauthorization of the Act now known as the *Every Student Succeeds Act* (2015). One of the primary purposes of this Act is, “closing the achievement gap between high and low performing children, especially the achievement gaps between minority and nonminority students, and disadvantaged children and their more advantaged peers” (NCLB, §1001). The Kentucky School Report Card for 2014-2015 denotes a difference of 24% of students with disabilities in elementary school meeting math proficiency standards in comparison to their non-disabled peers. That percentage rose to 27.3% at the middle school level and 24.5% for high school. Even larger gaps were recorded for reading achievement. A 22.1% gap exists across the state between students with disabilities and their non-disabled peers meeting proficiency standards in reading for elementary students. That gap rose to 32.7% for students with disabilities in middle school and 40.7% once those students reached high school.

Research suggests a connection between a students’ mindset and their achievement. Social cognitive theory and attribution theory both contend that belief about one’s own ability is directly associated with behavior and achievement (Wolters, Fan, & Daughtery, 2013). Dweck (2006) asserts that adolescents with growth mindsets reach higher levels of achievement than those with fixed mindsets. A growth mindset is the belief that a person’s intelligence can increase with effort while a fixed mindset is the belief that a person’s intelligence is predetermined and limited. However, existing research poses a threat to external validity in that the characteristics of its subjects may not offer the same results for this particular subgroup. In other words, because of the stark achievement gap between students with disabilities and their non-disabled peers, among other differences, the same results may not hold up.
Teachers’ mindsets also play a role in the learning climate of a classroom (Gutshall, 2013). If a teacher’s growth mindset can be linked to higher student achievement for students with disabilities, then dialogue about the implications of psychological interventions should follow. Psychological interventions are simply strategies used to enhance students’ subjective school experiences (Spitzer & Aronson, 2015). Current research supports the use of psychological interventions to raise student performance levels; however, caution in using these types of interventions in isolation is imperative (Yeager, Walton, & Cohen, 2013). Including psychological interventions within a student’s individual education plan may help bridge the achievement gap between students with disabilities and their non-disabled peers (Spitzer & Aronson, 2015). However, research has not yet substantiated the actual significance of mindset on achievement and growth for students with disabilities.

**Purpose of Study and Central Research Questions**

To provide a fundamental context for readers, this study reviews the implications of reform efforts through federal and state legislation for students with disabilities. With a focus on Kentucky public schools, namely those within the Green River Regional Educational Cooperative, the researcher further investigates the relationship between the previous years’ achievement growth for students with disabilities and their mindset. Statistical analysis of the gathered data helped to gain a better understanding of how state educational reforms may need to incorporate a psychological component to make needed progress in closing the achievement gap for these students. This study sought to answer the question: To what extent does a growth mindset relate to their Student Growth Percentile (SGP) on the K-PREP among students with disabilities? The following
empirical research questions were used to determine the relationship between disabilities, mindset, and achievement growth:

1. For students with disabilities, to what extent does their mindset predict their reading SGP, controlling for socio-demographic variables?

2. For students with disabilities, to what extent does their mindset predict their math SGP, controlling for socio-demographic variables?

3. For students with disabilities, to what extent do their teachers’ mindsets predict their own personal mindset?

Participants in this study were 6th-8th graders from six districts in the GRREC region who have one of the following disabilities: Mild Mental Disability (MMD), Emotional or Behavioral Disability (EBD), Other Health Impaired (OHI), or Specific Learning Disability (SLD). These disability categories were selected for the study due to their diverse scope of needed supports and cognitive ability. MMD is the only cognitive disability among the four considered for this study. The Kentucky Department of Education provides annual individual student reports that convey student achievement and growth scores on the end of year assessments, the Kentucky Performance Rating for Educational Progress (K-PREP). The individual student reports for reading and math on the Spring 2015 test were used for this study. The K-PREP is a blend of norm-referenced and criterion-referenced elements. The researcher also gave a researcher-developed eight-question mindset survey to all participants to determine if they had a growth, fixed, or neutral mindset in regards to their academic performance and intelligence. Reading, math, and special education teachers of the student participants also completed the survey to compare the mindset of students and their teachers. The survey was modeled after
Dweck’s online mindset survey (Dweck, 2006) and validated through psychometric evaluation and content validity index prior to use for this study. Other data, including socio-demographic data and special education data used in this study, were extracted from Infinite Campus, the Kentucky’s School Information System (KSIS).

**Conceptual Framework**

While the intent of the study is to examine the relationship between mindset and student’s academic growth, additional factors were considered. These include the student’s personal factors such as gender, ethnicity, and socio-economic status as well as educational factors such as the student’s disability and least restrictive environment. For this study, socio-economic status was determined by qualification for free and/or reduced price meals by being members of households receiving assistance under the Assistance Programs (SNAP, KTAP, Medicaid, Foster) or of household with incomes within the limits on the Federal Income Eligibility Guidelines. However, due to the classified nature of this information at the district level, not all district contacts could provide such data to the researcher. Participating district assigned district contacts to collect and report data to the researcher. Each student’s disability category in based on Kentucky’s regulations and each district’s policy and procedures for determining eligibility. The Admission and Release Committee determines for each student and reports in the Individual Education Plan least restrictive environment as more than 80% in the regular education setting, 40-80% in the regular education setting, or less than 40% in the regular education setting. Results of the study accounted for and controlled for the socio-demographic variables to get a more accurate correlation between mindset and student growth.
Significance for the Study

Best practices for students with disabilities continue to evolve as new research becomes available. There has been no study conducted to determine whether, and to what extent, a relationship exists between mindsets and student growth for students with disabilities. This study is particularly important because the knowledge gained may lead to improvements in current programming for students with disabilities. Individual districts may utilize data to inform decisions regarding the instructional practices as they relate to mindsets. The long-term benefits could include changes in service models that include psychological interventions for students with disabilities or specific training for teachers in regards to mindset. The ultimate goal is to increase student learning and see growth in every student, regardless of disability. Another important benefit of this study will be the contribution to the literature on growth mindsets.

Operational Definitions

Important terms are defined below to provide consistency and understanding for readers of this study.

- **Accountability** – Kentucky’s Unbridled Learning assessment and accountability system that is designed to provide in-depth information about the performance of students, schools, districts and the state (KDE, 2014).

- **Co-teaching** – The shared responsibility of teaching among the regular and special education teachers who serve students with disabilities and their non-disabled peers (Eaton, Salmon, & Wischnowski, 2004).

- **Emotional Behavioral Disability (EBD)** – A child, when provided with interventions to meet instructional and social-emotional needs, continues to
exhibit one (1) or more of the following, when compared to the child’s peer and cultural reference groups, across settings, over a long period of time and to a marked degree: (1) severe deficits in social competence or appropriate behavior which cause an inability to build or maintain satisfactory interpersonal relationships with adults or peers, (2) severe deficits in academic performance which are not commensurate with the student’s ability level and are not solely a result of intellectual, sensory, or other health factors but are related to the child’s social-emotional problem; (3) a general pervasive mood of unhappiness or depression; or (4) a tendency to develop a physical symptoms of fear associated with personal or school problems. This term does not apply to children who display isolated inappropriate behaviors that are the result of willful, intentional, or wanton actions unless it is determined through the evaluation process that the child does have an emotional-behavioral disability (707 KAR 1:002).

- **Fixed Mindset** – A fixed mindset represents the belief that one’s intelligence is set in stone, unable to be changed (Dweck, 2006).

- **Growth Mindset** – A growth mindset represents the belief that one’s intelligence is something that can be cultivated through effort (Dweck, 2006).

- **Inclusion** – A practice of serving students with disabilities in the general education classroom with appropriate supplementary aides and services (Roach, 1995).

- **Individualized Education Plan (IEP)** – A written statement for a child with a disability that is developed, reviewed, and revised in accordance with 707 KAR 1:320 (707 KAR 1:002).
● **Least Restrictive Environment (LRE)** – To the maximum extent appropriate, children with disabilities are educated with children who are not disabled; and special classes, separate schooling, or other removal of children with disabilities from the regular educational environment occurs only when the nature or severity of the disability of a child is such that education in regular classes with the use of supplementary aids and services cannot be achieved satisfactorily (Title I, B, 612, a, 5).

● **Mild Mental Disability (MMD)** – A child with cognitive functioning that is between two and three standard deviations below the mean, adaptive behavior deficit that is between two and three standard deviations below the mean, a severe deficit exists in overall academic performance including acquisition, retention (707 KAR 1:002).

● **Other Health Impairment (OHI)** – Limited strength, vitality, or alertness, including a heightened alertness to environmental stimuli, that results in limited alertness with respect to the educational environment that is due to chronic or acute health problem, such as acquired immune deficiency syndrome, asthma, attention deficit disorder, attention deficit hyperactivity disorder, diabetes, epilepsy, a heart condition, hemophilia, lead poisoning, leukemia, nephritis, rheumatic fever, sickle cell anemia, Tourette’s syndrome, or tuberculosis; and adversely affects a child’s educational performance (707 KAR 1:002).

● **Special Education** – Specially designed instruction, at no cost to parents, to meet the unique needs of the child with a disability including instruction in the
• **Specific Learning Disability (SLD)** – A disorder that adversely affects the ability to acquire, comprehend, or apply reading, mathematical, writing, reasoning, listening, or speaking skills to the extent that specially designed instruction is required to benefit from education (707 KAR 1:002).

• **Students with Disabilities (SWD)** – Students who have been evaluated in accordance with Kentucky regulations, as meeting the criteria for autism, deaf-blindness, developmental delay, emotional-behavior disability, hearing impairment, mental disability, multiple disabilities, orthopedic impairment, other health impairment, specific learning disability, speech or language impairment, traumatic brain injury, or visual impairment which has an adverse effect on the child’s educational performance and who, as a result, needs special education and related services (707 KAR 1:002).

**Assumptions and Limitations**

The researcher held the following assumptions regarding this study. The first assumption was that the K-PREP scores from the Kentucky Department of Education were valid and reliable. Another assumption was that the results of the student and teacher surveys were also valid and reliable. The surveys were validated using an expert panel to determine the content validity index. The final assumption was that the information pulled from Infinite Campus (KSIS) was accurate.

This study had several delimitations that bound the study in a way to make it more manageable for the researcher. Within the scope of this quantitative study, the
population is from a restrictive geographical location and identified using a cluster sampling method. In regards to the ecological validity, limitations based on context, a potential threat would be the novelty or disruption effect, where a change in routine or being asked to do something new or different may influence student response (McMillan & Schumacher, 2005). District Contacts were responsible for collecting the data and administering the surveys, which may be someone with whom the students were not familiar with nor part of their normal day. Another limitation was that the sample came from six districts within the Green River Regional Educational Cooperative (GRREC) in Kentucky. Students sampled from other districts outside of the GRREC region may have different results.

Conclusion

Chapter I is an overview of the systemic problem facing public education today, a significant achievement gap between students with disabilities and their non-disabled peers. Setting up the study, the introduction will appraise the effect of mindset on students with disabilities to make a case for psychological interventions with this population. The following chapter presents an extensive review of the literature about students with disabilities, their academic growth and achievement, and mindset relating to their intelligence.
CHAPTER II: LITERATURE REVIEW

The intent of this study is to determine the relationship between student academic growth and mindset for students with disabilities. An extensive review of the literature is a necessary first step in the process. Although there is a host of information on special education, the field of research on mindset has just emerged in the past two decades. Practical implications of the research have yet to be established for this population.

Starting with national legislation and reform efforts related to special education, this literature review will trace the history of education for students with disabilities. An examination of student achievement and accountability in the state of Kentucky will communicate the gap between students with disabilities and their non-disabled peers, with careful attention brought to the access of curriculum for these students. The researcher will also provide a review of current literature on mindsets, including self-efficacy and attribution theories. This literature review will conclude with a generalized look at psychological interventions that can potentially modify behavior and outcomes.

A Historical Context

“A high level of shared education is essential to a free, democratic society and to the fostering of a common culture, especially in a country that prides itself on pluralism and individual freedom” (National Center on Excellence in Education [NCEE], 1983, p. 7). Education has a profound impact on our global economy, yet the federal report, A Nation at Risk: The Imperative for Educational Reform (NCEE, 1983), outlines many shortcomings of the American education system. While more Americans are being educated, the outcomes are not promising.
Horace Mann once said, “Good education is the great equalizer of American society” (as cited in Growe & Montgomery, 2003, p. 23). Education in general adds value to individual’s quality of life (NCEE, 1983; Protzko et al., 2013). These truths have spurred on the efforts of lawmakers to reform education and encourage more suitable and sustainable outcomes for all students, including those with disabilities. The debate continues to intensify regarding the proper role and best practices for educating this special population (Sherman, Fuchs, & Fuchs, 1996).

Legislation and Reform

Prior to the Rehabilitation Act of 1973, many students who had a disability did not have access to appropriate educational opportunities. They were explicitly excluded from public schools and general population. Many students with disabilities were removed from their communities and confined to residential placements that provided limited educational opportunities (Simpson, 2012). The Civil Rights movement spurred on advocates to fight for rights of the disabled. A groundbreaking court case, Brown v. Board of Education in Topeka (1954), began to change the landscape of education for future generations. While the case challenged the common practice of ‘separate but equal,’ for African-American children, it benefited all minority students (Simpson, 2012). Litigation for students with disabilities soon followed, adding additional protections and rights for these students.

The Rehabilitation Act was the first of its kind. The Act declared it discriminatory to exclude or segregate individuals that had a disability. The law entitles children to a public education comparable to that provided to children who do not have disabilities, with disability broadly defined to include any person who has a physical or
mental impairment that substantially limits one or more major life activities, has a record of such impairment, or is regarded as having such an impairment. (Aron & Loprest, 2012, p. 99)

Shortly after, another attempt to bolster the disparity for students with disabilities came in the form of the *Education for All Handicapped Children Act*, also known as Public Law 94-142. This Act was passed in 1975 as a response to the financial burden that educating students with disabilities was placing on schools. Federal financial assistance could be provided to districts that provided students with disabilities free appropriate public education (Bateman, Bright, O’Shea, O’Shea, & Algozzine, 2007). Two fundamental changes this law brought about were the implementation of Individual Education Plans (IEPs) and training at the collegiate level that specialized in working with students with disabilities (Keogh, 2007).

Following this new standard for educational practices, the U.S. Department of Education in 1979 commissioned the Office of Special Education Programs (OSEP) to provide leadership and support for people with disabilities in regards to inclusion, equity and opportunity (C. Stein, personal communications, August 24, 2016). As these laws were enacted, support was provided, and more attention was given to these children, services began to improve.

In 1990, the reauthorization of the *Education for All Handicapped Children Act* overhauled current legislation and the future for students with disabilities. This reauthorization came with a new name, *Individuals with Disabilities Education Act* (IDEA). Among some of the changes were an acknowledgement of parental rights, defined terms, and provision for related and transition services, and additional required
personnel training (Simpson, 2012). The cornerstone to this reauthorization was that any school receiving federal funds must provide Free Appropriate Public Education (FAPE) to all students with disabilities (Zirkel, 2013). This regulation incited further legal action as districts struggled to meet the extensive requirements of this law. IDEA was again reauthorized in 1997 (Wright, 2004).

In 2001, President George Bush endorsed and signed into law NCLB. This act guaranteed access to high-quality education to all children (Lewis, 2003). The means to do this is through high standards and a goal of proficiency of those standards by all students. The focus was on closing the achievement gap for underperforming students. NCLB heightened pressure on schools to demonstrate adequate yearly progress to escape escalating consequences (Hout, Elliot, & Frueh, 2012). This level of federal accountability for teachers and administrators was unprecedented.

The reauthorization of IDEA in 2004, called the Individuals with Disabilities Education Improvement Act, continued this mantra of access to the general curriculum and rigorous standards for students with disabilities (Teal, 2013). With both laws, more and more special needs students began spending more time in the general education classroom to comply with least restrictive environment (LRE) mandates. Another part of IDEA (2004) was the requirement for special education teachers to be highly qualified. Other changes made included additional due process requirements, disciplinary procedures for students with disabilities, flexibility in SLD eligibility, and funding (Smith, 2005).

In December 2015, the Every Student Succeeds Act was signed into law. In response to the waivers that states requested to opt out of NCLB requirements, this bill
attempts to guarantee opportunities for all students. Giving some decision-making power back to states and local education agencies allowed them to implement solutions that work rather than a one-size-fits-all federal response is one of several improvements (The White House, 2015). One of the implications of the change in law is the number of students eligible to take the alternate assessment. Darrow (2016) explains that only 1% of all students will be eligible for this assessment. This cap means more students will be required to take the general state assessment and therefore held to much higher academic standards, which will ultimately influence where they are served to ensure access to the full curriculum. Access must go beyond exposure and further promote progress (National Down Syndrome Congress, 2016).

Another significant change is that the language of ESSA encourages an approach to education that places a high value on music and the arts. Often students with disabilities have limited opportunity to engage in classes outside of the core content due to their academic deficits and need for supplemental services. However, Darrow (2016) expects their opportunity to broaden as the focus of a well-rounded education program continues to grow.

A third result of NCLB and ESSA for students with disabilities comes in the form of identification practices. Because of the growing number of students identified with a Specific Learning Disability (SLD), Response to Intervention (RTI) was a sensible response that also met the demand of NCLB. Although RTI is a general education initiative, it became seen as an appropriate tool to identify students with a learning disability instead of the original discrepancy model. Johnston (2011) identifies assumptions surrounding the implementation of RTI in regards to its effectiveness.
ESSA will continue to allow the use of RTI as an appropriate model for determining SLD eligibility.

With these changes, and even with some of the enduring components, students with disabilities are spending more time served in inclusive settings. Some of the benefits of inclusion encompass social justice, equal opportunity, and higher expectations (Obiakor, Harris, Mutua, Rotatori, & Algozzine, 2012). There is delineation however between policy and practice. Effective implementation of an inclusive model of services require general education acceptance of responsibility for all students, professional development among educators in appropriate differentiation strategies, and a collaborative environment that is supported from the top down.

In summary, ESSA will continue to promote high standards of education for all students, including those with special needs. The progress made in terms of identification and service delivery will be maintained. The accountability for students with disabilities however, will likely be more substantial as the spotlight on outcomes for this population has widened. The nuances between NCLB and ESSA will continue to develop as states begin to work through the details.

Students with Disabilities

Today, students with disabilities receive more wide-ranging services and supports than ever before. The progress they have made has far surpassed the imagination and expectation of educators’ nation-wide. However, there continues to remain an achievement gap between them and their non-disabled peers. The U.S. Department of Education (2010) documents the national impact of IDEA in a report entitled *Thirty-Five Years of Progress in Educating Children with Disabilities Through IDEA*:
• There are more children receiving early interventions. A longitudinal study that tracked 3,000 preschool students receiving services in the early 2000s indicated that close to 16% stopped receiving those services annually over the course of two years because they no longer needed specially designed instruction.

• More students with disabilities are accessing the general education curriculum in neighborhood schools as opposed to separate schools. In 2008, neighborhood schools served 95% of all students with disabilities, and most of these students were taught in the general education classroom for at least a portion of their day.

• More students with disabilities are receiving services under IDEA, both in Part B and Part C. From 1995 to 2007, nearly 23% more students, ages 3-5, were found eligible to receive special education services under Part B and those under the age of 3 receiving services has more than doubled.

• More students with disabilities are graduating high school. From 1997 to 2008, there have been over 16% more students with disabilities graduating with a regular diploma and a 21% decrease in special education dropouts in that same time frame.

• Post-secondary outcomes have improved for students with disabilities. There has been a 17% increase in students with disabilities enrolling in some form of post-secondary education from 1987 to 2005 and a 15% increase in employment of those students.

Outcomes for students with disabilities have certainly improved, primarily due to the implementation of IDEA. Other legislative efforts have also contributed to the positive outcomes for these students. These students make up nearly 14% of all students
nationally, totaling over 6.7 million children nation-wide (Aron & Loprest, 2012). Aron and Loprest acknowledge the accomplishments yet suggest that students with disabilities still face disparity in regards to achievement, expectations, and opportunities.

**Disabilities and Eligibility Criteria**

In the commonwealth of Kentucky, for a student to qualify for special education services, they must have a disability; the disability must adversely affect their educational performance and they must demonstrate a need for specially designed instruction. IDEA (1997) recognizes the following fourteen primary disabilities (divided into high, moderate and low incidence categories): functional mental disability, mild mental disability, autism, specific learning disability, orthopedic impairment, other health impairment, emotional behavioral disability, deaf, blind, deaf/blind, multiple disability, traumatic brain injury, speech impairment, and developmental delay.

In 2011, 13.6% of Kentucky’s students were identified as a student with a disability compared to 12.9% nation-wide (“Data Display: Kentucky,” 2013). While each district must follow Kentucky Administrative Regulations in regards to their identification practices, there is variability in district policies and procedures related to the process due to broad interpretation of the law. This variation may threaten reliability of data collected on these populations.

The Legislative Research Commission (2011) suggests great differences among Kentucky districts and among states in the prevalence of students with disabilities overall and in particular categories. Data also indicate dramatic fluctuations over time in the percentages of students with disabilities and among disability categories. There is little evidence, however, that differences in identification rates among states or districts are
explained primarily by differences in student populations. This raises questions about the criteria used to identify students for special education in different states and districts (Legislative Research Commission, 2011).

Other than speech or language impairment, Other Health Impairment (OHI) is the largest represented disability category for students with disabilities in Kentucky in 2011, closely followed by Specific Learning Disability. “Other health impairment is a catchall category for students whose health and conditions reduce their abilities to perform in the educational setting” (Aron & Loprest, p. 2012). Table 1 outlines the breakdown of special education students by disability.

Specific Learning Disability (SLD) is one category that has evolved in terms of eligibility criteria for identification. While the definition of SLD has remained constant, the method of evaluating and determining eligibility has broadened. The Education for all Handicapped Children Act required institutions to use a severe discrepancy model that compared a student’s intellectual ability and academic achievement or performance in one or more areas: oral expression, listening comprehension, written expression, basic reading, reading comprehension, mathematics calculation, or mathematics reasoning (Coomer, 2015). However, with the reauthorization of IDEA in 2004, states could not require the use of the severe discrepancy model for identification purposes. All states have now permit the use of response to intervention (RTI) as a viable method of identifying SLD (Coomer, 2015). Kentucky allows districts to use either the severe discrepancy model or response to intervention method for declaring eligibility.
Table 1

*Percentage of KY Special Education Students Ages 6-12 by Disability Category in 2011*

<table>
<thead>
<tr>
<th>Disability Category</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>High Incidence</strong></td>
<td></td>
</tr>
<tr>
<td>Speech or Language Impairment</td>
<td>23.65%</td>
</tr>
<tr>
<td><strong>Moderate Incidence</strong></td>
<td></td>
</tr>
<tr>
<td>Other Health Impairment</td>
<td>17.34%</td>
</tr>
<tr>
<td>Specific Learning Disability</td>
<td>16.62%</td>
</tr>
<tr>
<td>Mild Mental Disability</td>
<td>14.62%</td>
</tr>
<tr>
<td>Developmental Delay</td>
<td>8.43%</td>
</tr>
<tr>
<td>Orthopedic Impairment</td>
<td>0.54%</td>
</tr>
<tr>
<td><strong>Low Incidence</strong></td>
<td></td>
</tr>
<tr>
<td>Emotional-Behavioral Disability</td>
<td>6.02%</td>
</tr>
<tr>
<td>Autism</td>
<td>4.15%</td>
</tr>
<tr>
<td>Functional Mental Disability</td>
<td>3.66%</td>
</tr>
<tr>
<td>Multiple Disabilities</td>
<td>3.38%</td>
</tr>
<tr>
<td>Hearing Impairment</td>
<td>0.74%</td>
</tr>
<tr>
<td>Visual Impairment</td>
<td>0.57%</td>
</tr>
<tr>
<td>Traumatic Brain Injury</td>
<td>0.27%</td>
</tr>
<tr>
<td>Deaf/Blindness</td>
<td>0.02%</td>
</tr>
</tbody>
</table>

*Note.* Adapted from “Appropriate Identification and Service of Students with Disabilities: Special Education Eligibility, Funding and Personnel Training,” Legislative Research Commission, 2013, p. 10.

**Student Achievement**

Student achievement is the ultimate goal of education. Student achievement is typically measured in terms of outcomes on a set of performance expectations. However, “as a result of the pressures of educational reform and high-stakes assessment, some schools run the risk of foregoing active, student-centered learning activities for building test-taking skills and memorization of discrete facts” (Faulkner & Cook, 2006, p. 1). The complexity of high-stakes testing as it seeks to gauge where students are in their learning as well as hold educators accountable has been scrutinized for many years.
High Stakes Testing in Kentucky

In 1990, the Kentucky Education Reform Act (KERA) became the first real legislation that led to high-stakes assessment and accountability within the state (Simpson, 2012). With this came a change in instructional practices as pressure increased for both teacher and student (Faulkner & Cook, 2006; Lile, 2012). There is now a moral dilemma that many leaders and educators face in terms of making decisions regarding what is best for the school versus what is best for the student (Willis, 2011).

Since the inception of NCLB, state assessments and accountability systems have informed and directed classroom practices across the country. Schools and districts are assessed to determine if they met Adequate Yearly Progress in both reading and math (Simpson, 2012). The questions of reliability and validity are always scrutinized when it comes to state accountability assessments. In 2007, a quantitative study was carried out that compared Kentucky’s state math assessment to respective National Assessment of Educational Progress (NAEP). This study looked at results of fourth and eighth grade students from both assessments in years 1996 and 2003 and indicated a strong positive correlation between the two tests. “NAEP has become the de facto measure of accuracy for all state assessments as defined by No Child Left Behind” (Lile, 2012, p. 24).

After House Bill 53 was passed in 1998, the Kentucky Board of Education was charged with revising the accountability system and therefore adopted an interim system known as the Commonwealth Accountability Testing System or “CATS” to meet the demands of NCLB (Hatchett, 2010; Simpson, 2012). The CATS test encompassed both nationally normed and standards-based components (VanMeter, 2005). Seven content areas were tested with financial rewards for districts meeting state goals (Traylor, 2013).
The current assessment system for Kentucky, Unbridled Learning’s Next Generation Accountability System, first implemented in 2011-2012, was a much more comprehensive model that consisted of multiple measures, including a college and career readiness component as a result of Senate Bill 1 in 2009 (Traylor, 2013). The first implementation year, schools were assessed solely on the learners in areas of achievement, gap, growth, college and career readiness, and graduation rates. Since then program reviews in Arts and Humanities, Practical Living, and Writing were added, as well as measures from the Professional Growth and Effectiveness System for teachers and leaders (KDE, 2014b). Table 2 is an overview of the accountability model.

Table 2

Unbridled Learning Overview of Accountability Model

<table>
<thead>
<tr>
<th>Next-Generation Learners</th>
<th>Next-Generation Instructional Programs and Support</th>
<th>Next-Generation Professionals</th>
<th>Next-Generation Schools/Districts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Achievement</td>
<td>Program Reviews</td>
<td>Percent Effective Teachers</td>
<td>Overall Accountability Score</td>
</tr>
<tr>
<td>Gap</td>
<td></td>
<td>Percent Effective Leaders</td>
<td></td>
</tr>
<tr>
<td>Growth</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>College/Career Readiness</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Graduation Rate</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: KDE (2012)

Achievement is determined by individual student performance on given assessments. Performance is reported as a raw score as well as translated into classifications of Distinguished, Proficient, Apprentice, or Novice. The gap group referred to in this model includes students who fall into any of the following non-duplicated categories; African-American, Hispanic, Native American, Students with Disability, Free/Reduced, and Limited English Proficiency. These groups have been
identified as typically under-performing (Traylor, 2013). NCLB requires reporting on these sub-populations.

Part of the accountability for Kentucky schools is the individual student growth component. The Student Growth Percentile (SGP) “focuses on the relative standing of a student from year to year compared to the student’s academic peers” (Allred, Draut, Ellis, & Liguori, 2014). Points are awarded to schools and districts based on number of students demonstrating at least typical growth from the previous year, indicated by a SGP of 40 or higher (Traylor, 2008).

The college/career readiness component is determined by students’ successful completion of academic and/or technical indicators of attainment (KDE, 2012). Lastly, the graduation rate is based on the Average Freshman Graduation Rate (AFGR), a cohort model (Traylor, 2013). Table 3 summarizes the performance measures at each grade range.

Participation in statewide testing is expected of all students, regardless of disability. “Debate continues on the appropriateness of using the same tests and standards for assessing students with and without disabilities and on the use of accommodations in test taking” (Aron & Loprest, 2012, p. 112). There is an Alternate Assessment that is an option for students with more severe disabilities as determined by the Admission and Release Committee (ARC). In 2011-2012, 8% of students with disabilities in 4th grade participated in the alternate assessment and 11% of students with disabilities in 8th grade participated in the alternate assessment (“Data Display: Kentucky,” 2013).
Table 3

*Performance Measures for Next-Generation Learners*

<table>
<thead>
<tr>
<th>Grade Range</th>
<th>Achievement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elementary</td>
<td>K-PREP Test in: reading, math, science, social studies and writing</td>
</tr>
<tr>
<td></td>
<td>K-PREP Test in: reading, math, science, social studies and writing</td>
</tr>
<tr>
<td>Middle</td>
<td>K-PREP Test in: reading, math, science, social studies and writing</td>
</tr>
<tr>
<td></td>
<td>K-PREP Test in: reading, math, science, social studies and writing</td>
</tr>
<tr>
<td>High</td>
<td>End-of-Course Test in: Algebra II, Biology, US History, and English II</td>
</tr>
<tr>
<td></td>
<td>K-PREP Test in: on-demand writing</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Gap</th>
<th>Growth</th>
<th>College/Career Readiness</th>
<th>Graduation Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elementary</td>
<td>Reading and Math</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Middle</td>
<td>Reading and Math</td>
<td>EXPLORE</td>
<td>NA</td>
</tr>
<tr>
<td>High</td>
<td>PLAN to ACT</td>
<td>College/ Career Readiness Rate</td>
<td>AFGR*/Cohort Model</td>
</tr>
</tbody>
</table>

*AFGR is Averaged Freshman Graduation Rate.

Source: KDE (2012)

**Achievement Gap**

There is no question that an inequality in achievement exists across the nation, as well as internationally, in the educational systems, yet the extent of that inequality creating significant performance gaps is worth exploring (Montt, 2011). Montt conducted a cross-national study to investigate factors that appear to influence achievement inequality. He found that certain systems and practices “amplify the effect of socioeconomic background on achievement” (p. 63). Tracking is a common practice with regards to special education services as well due to the lack of full funding and limited amount of resources available to schools. Other factors that influenced
achievement inequality were teacher quality, opportunities to learn, intensity of schooling, and allocation of resources (Montt, 2011).

The purpose of NCLB’s Adequate Yearly Progress (AYP) requirements is to expose the academic disparity among groups of learners, compelling schools to address the issue of achievement gaps (Anderson, Medrich, & Fowler, 2007). Miller and Moore (2006) claim that “in spite of these reforms, the performance gap has been highly resistant to educators’ best efforts to reduce it” (p. 3).

The Kentucky School Report Card for 2014-2015 indicates a gap between students with disabilities and their non-disabled peers larger than any other categorical group other than students with Limited English Proficiency. Table 4 displays the percentage of students scoring proficient or distinguished by students across the state of Kentucky. In most areas, the total number of students scoring proficient or distinguished was over double that of those in special education.

Table 4

<table>
<thead>
<tr>
<th>Student Category</th>
<th>Reading Elementary</th>
<th>Reading Middle</th>
<th>Reading High</th>
<th>Math Elementary</th>
<th>Math Middle</th>
<th>Math High</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Students</td>
<td>54.2</td>
<td>53.8</td>
<td>56.8</td>
<td>48.8</td>
<td>42.8</td>
<td>38.2</td>
</tr>
<tr>
<td>African Americans</td>
<td>32.7</td>
<td>31.4</td>
<td>34.2</td>
<td>30.5</td>
<td>21.0</td>
<td>22.8</td>
</tr>
<tr>
<td>Limited English Proficiency</td>
<td>23.3</td>
<td>11.4</td>
<td>5.6</td>
<td>24.2</td>
<td>12.2</td>
<td>19.8</td>
</tr>
<tr>
<td>Free/Reduce</td>
<td>44.1</td>
<td>42.9</td>
<td>44.3</td>
<td>38.6</td>
<td>31.2</td>
<td>27.4</td>
</tr>
<tr>
<td>Students with Disabilities</td>
<td>32.1</td>
<td>21.1</td>
<td>16.1</td>
<td>24.8</td>
<td>15.5</td>
<td>13.7</td>
</tr>
</tbody>
</table>


In a longitudinal study conducted to examine the proficiency rates in reading on high stakes testing in North Carolina over a span of 5 years, results indicated an initial
gap of 42% difference between students with a learning disability meeting proficiency rate compared to their non-disabled peers. At the end of the 5-year study, the gap had decreased to 27% difference between those same populations. Another note to consider is that over those five years, there was an 11% increase in those identified LD by the district, which may impact those overall numbers (Schulte, Villwock, Whichard, & Stallings, 2001).

Hansford and Hattie (1982) found a correlation between intelligence and achievement of $r = 0.51$ and an effect size of $d = 1.19$. “This high relationship accounts for what many researchers call the “Matthew effect,” which is based on the biblical notion that the rich get richer and the poorer get poorer or do not gain as much” (Hattie, 2009, p. 41). Walberg and Tsai (1983) have also conducted a study to determine if the degree of achievement is proportional to “initial endowment (p. 360).” They found that the advantages of prior educational background are both collinear and cumulative, which may prove to be a barrier in closing the achievement gap for years to come.

**Access to Curriculum**

Darling-Hammond (2010) acknowledges the opportunity gap that is based on access to resources and its play on the achievement gap of minority groups including students with disabilities. Special education is far from a one-size-fits-all model. Aron and Loprest (2012) note that the variability of services hinges on the severity of the disability. The Admission and Release Committees (ARC) have been given the authority to determine the least restrictive environment, prioritize goals, and establish appropriate accommodations and modifications needed to access the curriculum.

Kauffman, McGee, and Brigham (2004) state,
We sell them short when we pretend that they have competencies that they do not have or pretend that the competencies we expect of most students are not important for them. Like general education, special education must push students to become all they can be. Special education must countenance neither the pretense of learning nor the avoidance of reasonable demands. (p. 620)

Zigmond, Klo, and Volonino (2009) declare that special education has always centered around three primary questions: what, where and how. In the past, special education primarily provided students with different standards and skills than what was provided to non-disabled peers, such as social skills, speech, adaptive skills, etc., yet now holds those students accountable to the same academic and performance standards as all students. With that change, a movement towards inclusion of special education populations into the general education classroom followed.

There are two common extreme suppositions that can lead to the maltreatment of students with disabilities: denying their disability, therefore not providing accommodations, modifications, or specially designed instruction; or the opposite, accommodating them to the point that the work is no longer an accurate portrayal of their actual ability (Kauffman et al., 2004, p.613). Both scenarios are problematic in that they fail to assist students with disabilities in reaching their highest potential.

The placement of students with disabilities directly affects their access to grade level curriculum. Darling-Hammond (2010) references the finding of multiple studies that claim “students placed in the lowest tracks or in remedial programs tend to experience instruction geared only to rote skills, working at a low cognitive level on fill-in-the-blank worksheets and test-oriented tasks that are profoundly disconnected from the
skills they need to learn” (p. 55). IDEA (2004) requires schools to serve students in the least restrictive environment. Placement decisions should begin with considering the general education setting and moving along the continuum of placement options until the LRE is agreed upon by the ARC (Marx et al., 2014). LRE is a decision made on an individual basis for each child receiving special education services.

In 2011, 77.3% of students with disabilities were served at least 80% of their day in the regular education classroom, 18.3% were served 40-79% of their day in the regular education classroom, and 9.6% were served less than 40% of their day in the regular education classroom (“Data Display: Kentucky,” 2013). As one might expect, those identified with a low-incidence disability are significantly more likely to be placed in more restrictive settings including separate schools, residential or home/hospital placements. The National Center for Educational Statistics (NCES) reports that .5% of students identified with a speech/language impairment compared to 24.4% of multiple disabilities and 31.3% of deaf/blind students were served in restrictive placements in 2009 (Kurth, Morningstar, & Kozleski, 2014).

Dessemontet, Bless, and Morin (2012) conducted a study that compared the effects of placement, separate schools versus being fully included into general education classrooms, for 76 students with cognitive disabilities. Their results indicated a significant positive difference in literacy skills for those students included in the general population. While there was not a significant difference in math skills and adaptive behavior, researchers indicated the both groups made adequate progress in those areas. This study provided empirical support of inclusive practices for students with cognitive disabilities.
In addition to placement, consideration is the access to high-level courses and college or career preparatory pathways. Based on the Kentucky School Report Card for 2014-2015, 66.9% of all students in the state met college or career ready benchmarks, whereas only 25.8% of students with disabilities met those benchmarks. Grubb and Lazerson (2007) note that “individuals are more likely to find their skills becoming obsolete because of the pace of technological change” (p. 2). Oftentimes students with disabilities spend the majority of their time in remedial classes, which do not prepare them for the workforce in which they will enter once they graduate high school.

**Mindset**

The emerging research on brain development has set the stage to change the course of education for the future. “The view of a ‘static’ brain is decidedly out of date. Yet the most amazing new discovery about the brain might be that human beings have the capacity and the choice to be able to change our own brains” (Jensen, 2005, p. 10). This idea is in stark contrast to the longstanding view that the brain remained reasonably constant over time. Alfred Binet, the developer of first test to measure intelligence, also believed that intelligence was malleable and that it can be altered by educational practices (Dweck, 2006).

Evidence suggests that the way in which educators use information about intelligence may directly affect the achievement of students with disabilities in their classroom. In an analysis of studies related to the labeling of special education students, Osterholm, Nash, and Kritsonis (2007) agree that these labels generate stereotypes. Educators often lower their expectations for these students, which can directly affect their effort and achievement. However, through their understanding the malleability of an
individual’s cognition and intellectual ability (Buschkuehl & Jaeggi, 2010; Schwartz & Begley, 2002), teachers can profoundly affect student’s achievement by providing constructive learning opportunities in the classroom (Jensen, 2013).

Most educators lack strong background knowledge in cognitive science (Ricci, 2013) which can cause them to struggle in their understanding of such concepts. Educators need more literature and professional development to help them grasp the concept of the impact of a students’ mindset in regards to their achievement in school.

**Growth and Fixed Mindset**

Carol Dweck is one of the leading researchers today of mindset theories. She outlines two different theories of intelligence and their corresponding mindset. An entity theory is one that perceives the intelligence to be static or constant. Those holding this view are considered to have a fixed mindset (Dweck, 2000). The entity theory comes from the belief that some innate ability is what determines their success (Gregory & Kaufeldt, 2015). On the other hand, the incremental theory, or growth mindset, stems from the belief that “talents and abilities can be developed through effort, good teaching and persistence” (Gregory & Kaufeldt, 2015, p. 92).

Middle school is associated with great transition. Blackwell, Trzesniewski, and Dweck (2007) assert that middle school “emphasizes competition, social comparison, and ability self-assessment at a time of heightened self-focus” (p. 246). Dweck and Leggett (1988) examined two different studies Bandura conducted related to theories of intelligence of middle grades students. These students could choose a task that varied in difficulty. The first two options indicated a performance goal; the first task being very easy, the second being harder, yet still something they knew how to do. The last option
represented a learning goal, and was something new for students. “We found a clear and significant relationship between students’ theories of intelligence and their goal choices: The more students held an entity theory of intelligence, the more likely they were to choose a performance goal, whereas the more they held an incremental theory, the more likely they were to choose the learning goal” (Dweck, 2000, pp. 20-21).

The biggest difference between the behaviors of students sharing different mindsets is the effort they expend towards learning new things. Those holding to the entity theory feel that the more effort they must put in, the less smart they are (Dweck, 2000). Cain and Dweck (1995) described these students as ones who often demonstrate helplessness in the classroom and give up easily when they fear failure. Those with incremental views, or a growth mindset, are willing to put forth effort to learn new things no matter how difficult it may be. Miller (2013) claimed that promoting a growth mindset encourages students to set goals, persevere when faced with a difficult task, and value effort. The distinction between these two views contributes to the differences in academic outcomes (Dweck, 2000). Fostering a growth mindset among students must first come from a professional growth mindset of the teacher. They must internally believe that all students can learn and grow in their intellectual capacity.

**Self-Efficacy and Attribution Theories**

Shavelson, Hubner, and Stanton (as cited in Bong & Skaalvik, 2003) define self-concept as an individual’s perception of himself. They also describe self-efficacy as “beliefs in one’s capabilities to organize and execute the courses of action required to produce given attainments” (p. 5). Most often these measures are determined by self-reports which consist of an evaluative element, requiring a high level of cognition (Bong...
& Skaalvik, 2003). There is a parallel between self-efficacy and a growth mindset. A growth mindset improves student’s self-efficacy (Baldridge, 2010). Educational implications of self-efficacy are directed at student outcomes such as performance and academic achievement.

“Students arrive at school with an already well-developed self-image of competence or incompetence resulting from messages they have received at home since birth” (Gregory & Kaufeldt, 2015, p. 10). Dweck (2008) also confirms that peoples’ beliefs are developed from infancy and play a role in personality. Early environmental factors are critical components in the brain and overall development of children.

In Hattie’s (2009) research he finds that self-concept has an effect size of $d = 0.43$ and motivation has an effect size of $d = 0.48$. “A sense of confidence is a most powerful precursor and outcome of schooling. It is particularly powerful in the face of adversity” (pp. 46-47). Ackerman and Brown (as cited in Jensen, 2013) claim that when students have experienced a lot of adversity growing up, they generally feel less in control of their lives than those who have not, which may negatively influence their self-efficacy.

Bandura (1986), another well-known researcher of the self-efficacy theory, brings to light another consideration of motivation. “His basic premise is that people will engage in activities if they believe that they are competent in them” (Gregory & Kaufeldt, 2015, p. 22). This notion is really the antecedent to further assumptions related to end results.

Bong and Skaalvik (2003) indicate that academic self-efficacy correlates with student outcomes, including but not limited to task choice, persistence and performance, career selection, and academic aspirations.
In a study of over 500 seventh grade students that compared the achievement, effort, and self-perceptions of students with learning disabilities to their non-disabled peers, Lackaye and Margalit (2006) found that students with learning disabilities had a mean score of 55.38 on the Academic Self-Efficacy Scale compared to a 64.07 mean for those students without a learning disability. When comparing those means to school grades, students with learning disabilities had a mean score of 66.35 and those without a learning disability had a mean score of 73.42. This study concluded that students with learning disabilities need help to boost their self-efficacy, to develop personal goals, and to build skills related to solving difficult problems to increase their overall effort and achievement.

“Attribution theory also deals with how people make sense of their world, particularly with how they explain the things that they observe and experience” (Dweck, 2000, pp. 139-140). Weiner (1972) acknowledges in his review of multiple empirical studies on attribution theory and achievement that there are considerable implications for student achievement and the educational process. He claims that causal attributions influence motivation and persistence. “These behaviors manifestly will influence the degree of learning in academic settings” (Weiner, 1972, p. 213).

Expectations and Motivation

Teachers play a commanding role in the lives of children. Their instruction and disposition influence students in many ways. Jensen (2013) references a study conducted by Coe (2002) that found a significant correlation between teacher’s expectation and student success. The study indicated that teachers’ expectations had an effect size of $d = 1.03$ on student achievement. Hattie’s (2009) meta-analysis of teacher expectation
indicated a smaller, yet still significant effect size of $d = .43$. The power of expectations can stimulate an environment where students can flourish or remain idle.

Kentucky schools began using The Kentucky Framework for Teaching (Danielson, 2011) also known as the Professional Growth and Effectiveness System (PGES) after Senate Bill 1 was passed in 2009 (KDE, 2017). PGES clearly indicates in Domain 2 that exemplary teachers have high expectations for all students in the classroom (Danielson, 2011). With teacher effectiveness being a fundamental component leading to student achievement, it is critical that teachers have the knowledge and skills necessary to assimilate subject matter, and pedagogical and didactic competencies with corresponding mind frames (Zierer, 2015). Dweck (2000) realized that once they understood more about student’s beliefs and mindsets “that created the continual need to validate versus the desire to learn, we could then begin to think about enhancing students’ motivation to learn by changing their beliefs about their intelligence” (pp. 20-21). Multiple studies have attempted to analyze the impact different psychological interventions designed to improve students’ effort and motivation in the classroom.

**Psychological Interventions**

Interventions that demonstrate the power of neuroplasticity of the brain, such as those used to assist students with dyslexia process sounds accurately, or those interventions used with stroke patients to re-gain skills, are evidence that with specific training or interventions the brain can and does change (Baldridge, 2010). Similar interventions specifically related to student’s mindset have been shown to impact individuals’ effort, motivation and self-efficacy, ultimately leading to higher student achievement.
A collection of studies (Yeager et al., 2014) conducted in California investigated the effects of both entity and incremental theories on multiple student variables such as academic performance, health, stress level, etc., as well as the effects of brief social-psychological interventions on student outcomes over time. Results indicated that students who held to the entity theory experienced a host of negative effects, while those who were participated in the intervention, and were taught the incremental theory, experienced more positive student outcomes. This study implied that additional benefits, aside from improved academic performance, were also realized.

Blackwell et al. (2007) tested the effects of psychological interventions specifically on mathematics grades in middle school and found that they could increase motivation in math class simply by teaching students about the malleability of intelligence. Results spanning the two-year study indicated a significant increase in grades post-intervention as compared to those in the control group, not receiving instruction regarding intelligence theories.

A third study (Wehmeyer et al., 2002) that looked closely at a psychological intervention for students with intellectual and learning disabilities also supported the idea that these interventions do lead to improved student outcomes. This study analyzed the effects of the Self-Determined Learning Model of Instruction (SDLMI), which is another strategy or intervention used to help students meet academic goals. Results did in fact show a significant improvement goal-attainment and access to general curriculum over the year when provided the SDLMI intervention compared to those who did not receive the intervention.
These interventions take valuable time, which is often the reason teachers do not utilize them. Time is a limited resource in which teachers feel they are bound to content. The research regarding psychological interventions supports the use of these strategies to support student achievement. Yeager and Walton (2011) discuss the benefits of utilizing brief psychological interventions with students but caution educators in expectations of those interventions. “Social-psychological interventions are not magic. They are not inputs that go into a black box and automatically yield positive results. Instead, they are tools to target important psychological processes in schools” (p. 293).

**Conclusion**

The historical context of education reform with regards to students with disabilities continues to unfold in our nation as lawmakers persist in trying to bridge the achievement gap between these students and their non-disabled peers. Whether that gap ever closes or not, improved outcomes for this population is at the heart of this challenge.

Perhaps an even greater challenge to assessing student outcomes likes in the separating the effects of attributable to specific educational practices form other intervening and coexisting factors such as socioeconomic circumstances and need for supportive services. For this and other reasons, relatively little research has been conducted on the effectiveness of specific special education practices or programs. In addition, the impact of special education for the most students with disabilities is intertwined with their general education experiences and opportunities, including whether they have access to the full range of general education options. (Aron & Loprest, 2012, p. 111)
Research continues to grow in terms of how best to serve students with special needs. Decisions concerning least restrictive environment, appropriate accommodations, modifications to the curriculum, related and transition services and others are determined by the ARC but are ultimately influenced by current best practices. The goal of special education is to provide specially designed instruction and other services to students with disabilities in efforts to afford them an appropriate education and enhance student outcomes.

New research has suggested that student achievement is correlated with their mindset. If this is true of general education students, it is necessary to determine the effects of mindset for students with disabilities on academic achievement. Current research is limited in that it has not yet explored the effects on this population of students. This study seeks to determine the effects of a growth mindset on student achievement for students with disabilities.

If a correlation can be determined, further research could provide guidance as to how educators may intervene to help students change their mindset to improve outcomes in the classroom and on state assessments. Psychological interventions could be integrated into current programming for these students to boost student performance.
CHAPTER III: METHODOLOGY

This study investigated the relationship between student achievement and growth of students with disabilities and their mindset. With a focus on Kentucky public schools, statistical analysis of the data gathered was used to gain a better understanding of how state educational reforms may need to incorporate a psychological component to make needed progress in closing the achievement gap for these students.

Research has been conducted to assess the effect of self-efficacy and beliefs on student achievement. Social Cognitive Theory and Attribution Theory both contend that belief about one’s own ability is directly associated with behavior and achievement (Wolter et al., 2013). Dweck (2006) asserts that adolescents with growth mindsets reach higher levels of achievement than those with fixed mindsets. Dweck outlines the difference between a growth mindset and a fixed mindset. A growth mindset is the belief that a person’s intelligence can increase with effort while a fixed mindset is the belief that a person’s intelligence is predetermined and limited. Additional research exists to guide parents and educators in how to use this information to help adolescents shift their mindset. Ricci (2013) connects this idea with the concept of neuroplasticity and introducing stimuli to promote change within the brain. However, there is a lack of research on the actual influence of mindset on students with disabilities. Existing research pose a threat to external validity in terms of the characteristics of its subjects may not offer the same results of this subgroup. This chapter describes the research questions, methodology, and general information regarding the analysis of data.
Research Questions and Design

Based on the literature review, there are additional questions surrounding the ability to generalize previous findings in regards to mindset and academic growth to students with disabilities. This study sought to fill in the gaps by answering the following research question: To what extent does a student’s mindset relate to their Student Growth Percentile (SGP) on the K-PREP assessment among students with disabilities? The following empirical research questions were used to determine the relationship between disabilities, mindset, and achievement growth:

1. For students with disabilities, to what extent does their mindset predict their reading SGP, controlling for socio-demographic variables?

2. For students with disabilities, to what extent does their mindset predict their math SGP, controlling for socio-demographic variables?

3. For students with disabilities, to what extent do their teachers’ mindsets predict their own personal mindset?

A quantitative study was conducted to gather data from multiple sources. A multiple linear regression design was selected to facilitate the statistical analysis of the results and carried out using SPSS. The study used deductive reasoning to examine the relationship between the mindset of students with disabilities and their actual student growth.

Participants

This study was conducted in Kentucky, a generally rural state. Six districts from the Green River Regional Educational Cooperative were selected for convenience purposes, both in proximity and familiarity with administration: Edmonson County, Elizabethtown Independent, Green County, Hart County, LaRue County, and Metcalfe
County. Participants for this study include students in sixth, seventh, and eighth grades with a primary disability category of Specific Learning Disability (SLD), Other Health Impairment (OHI), Emotional Behavioral Disability (EBD), or Mild Mental Disability (MMD). These disability categories were selected for the study due to their diverse scope of needed supports and cognitive ability. MMD is the only cognitive disability among the four considered for this study.

Middle school was the target population because assessment results provide a student growth percentile for each of these grades in both reading and math. High school students are not tested consistently in these areas and therefore do not provide sufficient data to determine if a correlation exists between student growth and mindset. Although grades 4-5 do provide a student growth percentile, the concern of student understanding of survey questions caused the researcher to focus the investigation on middle grades.

A selected group of teachers within each district also participated in the study. Any reading, math, or special education teacher of student participants was asked to take the same survey to assess their mindset in regards to their students’ learning. The desired sample size was 200 student participants and 30 teacher participants; however, the actual sample size was 145 students and 46 teachers.

**Instruments**

This study relied on two instruments. One instrument is the Kentucky Performance Rating of Educational Performance (K-PREP). This reading and math assessment, along with a few other core areas, is given to students in grades 3 through 8, 10 and 11 in the spring of each year. K-PREP has been utilized since 2011-2012 and assesses proficiency on common core standards in reading and math (Simpson, 2012).
K-PREP also assesses other content areas, but that data was not used for this investigation. Data used for this study will be from the 2014-2015 school year, released to districts in October of 2015.

The other instrument used for this study is a survey designed by the researcher to assess students’ and teachers’ mindset with regards to their learning in school. The survey was adapted from Dweck’s online mindset survey (Dweck, 2006). Modifications were made to the original survey to ensure valid results for the given population. The scale was altered from a six-point Likert scale to a three-point Likert scale. Students in middle school may struggle with deciphering between strongly agree and agree as well as strongly disagree and disagree. Students selected agree, neutral, or disagree. The number of questions was reduced to eliminate redundancy that may confuse the student as well as to narrow the focus to reflect their beliefs about their personal learning in school. The wording of the survey was also modified. Selected vocabulary better reflects the developmental appropriateness based on the given sample.

**Survey Validation**

Prior to using the survey for this study, it was validated through a psychometric evaluation process. A panel of eight experts from the field were given the survey and asked to assess the relevance, appropriateness, and clarity of each item on the survey using a Content Validity Index (CVI) method (see Appendices A and B). For each item, they selected a response from a four-point Likert scale: (1) Not Relevant/Appropriate/Clear, (2) Somewhat Relevant/Appropriate/Clear, (3) Quite Relevant/Appropriate/Clear, or (4) Very Relevant/Appropriate/Clear. The CVI then describes the proportion of experts in agreement (giving a rating of either 3 or 4), for each item. The items had an
average I-CVI = 1.00 for relevance, I-CVI = 0.99 for appropriateness, and I-CVI = 0.86 for clarity, which are all well above the suggested I-CVI = 0.78, which “could be considered evidence of good content validity” (Polit, Beck, & Owen, 2007, p. 459); however, the researcher revised the survey using the suggestions the experts provided to increase clarity in conveying the intent of each question. After additional survey modifications, a panel of eight experts again assessed the relevance, appropriateness and clarity of each item. Three experts from the first round were among the eight experts that assessed the modified survey to provide inter-rater reliability. After final modifications, the items indicated an average I-CVI = 1.00 for relevance, appropriateness, and clarity.

Table 5 and Table 6 show the results of the survey evaluation related to clarity of the items, which was the primary reason for the initial lower I-CVI and led to the final changes in the survey (see Appendix C).

Table 5

*Ratings on 8-Item Scale by 8 Experts; Items Rated 3 or 4 on 4-Point Clarity Scale for Original Survey*

<table>
<thead>
<tr>
<th>Item</th>
<th>TK*</th>
<th>CB*</th>
<th>BT*</th>
<th>BH</th>
<th>LW</th>
<th>JP</th>
<th>RS</th>
<th>JB</th>
<th>Experts in Agreement</th>
<th>Item CVI</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>-</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>7</td>
<td>0.88</td>
</tr>
<tr>
<td>2</td>
<td>-</td>
<td>✓</td>
<td>✓</td>
<td>-</td>
<td>✓</td>
<td>✓</td>
<td>-</td>
<td>-</td>
<td>4</td>
<td>1.00</td>
</tr>
<tr>
<td>3</td>
<td>-</td>
<td>✓</td>
<td>✓</td>
<td>-</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>-</td>
<td>6</td>
<td>0.75</td>
</tr>
<tr>
<td>4</td>
<td>✓</td>
<td>-</td>
<td>-</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>6</td>
<td>0.75</td>
</tr>
<tr>
<td>5</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>-</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>7</td>
<td>0.88</td>
</tr>
<tr>
<td>6</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>-</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>7</td>
<td>0.88</td>
</tr>
<tr>
<td>7</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>-</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>7</td>
<td>0.88</td>
</tr>
<tr>
<td>8</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>-</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>7</td>
<td>0.88</td>
</tr>
</tbody>
</table>

Proportion Relevant

<table>
<thead>
<tr>
<th>Item CVI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average CVI = 0.86</td>
</tr>
</tbody>
</table>

44
Table 6

*Ratings on 8-Item Scale by 8 Experts; Items Rated 3 or 4 on 4-Point Clarity Scale for Modified Final Survey*

<table>
<thead>
<tr>
<th>Item</th>
<th>TK*</th>
<th>CB*</th>
<th>BT*</th>
<th>KW</th>
<th>KP</th>
<th>BW</th>
<th>RW</th>
<th>KB</th>
<th>Experts in Agreement</th>
<th>Item CVI</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>8</td>
<td>1.00</td>
</tr>
<tr>
<td>2</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>8</td>
<td>1.00</td>
</tr>
<tr>
<td>3</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>8</td>
<td>1.00</td>
</tr>
<tr>
<td>4</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>8</td>
<td>1.00</td>
</tr>
<tr>
<td>5</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>8</td>
<td>1.00</td>
</tr>
<tr>
<td>6</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>8</td>
<td>1.00</td>
</tr>
<tr>
<td>7</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>8</td>
<td>1.00</td>
</tr>
<tr>
<td>8</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>8</td>
<td>1.00</td>
</tr>
<tr>
<td>Proportion Relevant</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>Average CVI = 1.00</td>
<td></td>
</tr>
</tbody>
</table>

The final scale used for this study included eight items. Of the items, four were positive statements and four were negatively worded, with their scores reversed to provide a scaled mindset score.

**Independent and Dependent Variables**

There are several independent variables considered in this study. The control variables are divided into personal and educational. The personal control variables include gender, ethnicity, and socioeconomic status. Literature has established the fact that student achievement is impacted by demographic factors. The two leading facets of family influence that characterize American society include social class and race (Miller & Moore, 2006). In this study, the researcher considered these variables due to their evident contribution to student performance on high-stakes testing.

The educational control variables are grade level, disability, and least restrictive environment. These factors also affect student performance on assessments and may affect results of this study. Not all disabilities are equal in terms of needs and ability.

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Some disability categories are strictly related to the cognitive capacity of students while others are related to other causes not contingent upon cognition. Least restrictive environment must be considered and determined by the ARC. The severity of the disability and need for supports governs the student’s access to the general education curriculum and to what extent they are educated with same age non-disabled peers. Students with disabilities are also allowed reasonable accommodations according to their IEP, provided the accommodations are used regularly in their instructional program (Yell, Katsiyannis, Collins, & Losinski, 2012).

The other independent variable used in this study is students’ and teachers’ psychological orientation: their mindset. Much of Dweck’s research centers on the idea that a student’s mindset is a primary factor in effort and persistence, and ultimately achievement (Dweck, 2006). Along with students’ personal mindset, teachers’ mindset also plays a role in student success. “Teachers’ expectations of students had a staggering 1.03 effect size on student achievement” (Jensen, 2013, p. 37).

The dependent variable examined in this study is the Student Growth Percentile (SGP), measured by the Kentucky Performance Rating for Education Progress (K-PREP) assessment. The SGP takes into consideration a student’s change in performance over time compared to their academic peers. “The academic peers are students who perform very similarly to the student on the test. The student is only compared to students who start at the same place,” (KDE, 2014, slide 10). Students with a SGP of below 30 are considered to have shown low growth. For those with a SGP of 30 to 65 are considered to have shown expected growth, while those with a SGP above 65 is considered to have shown high growth (KDE, 2016).
Procedures and Data Collection

The researcher requested the participation of eight districts within the Green River Regional Educational Cooperative (GRREC) region. Upon initial consent from superintendents from six of those districts, a full Institutional Review Board review was approved. Each district selected a district contact person who would collect the necessary data from students in their district to maintain confidentiality between districts and the researcher.

Once the district contact person was selected, the researcher trained them using a prepared training manual. The district contact then identified students and teachers who were eligible to participate in the study and sought written parental consent and student assent (see Appendices D). For those willing to participate, an identification number was given to protect further personally identifiable information. The identification number included the district’s three-digit number given by the state, followed by the school’s three-digit number, then a 1 for students or a 2 for teachers, and finally a random three-digit number selected by the district contact person. The identification numbers allowed the researcher to disaggregate data by district, school, or student/teacher as needed. The district contact then gathered socio-demographic data from the Kentucky School Information System (KSIS), Infinite Campus, both raw score, performance rating and growth percentile in reading and math, were also recorded in the spreadsheet.

After preliminary information was recorded, the district contact administered mindset surveys to participants. Any accommodation indicated on a student’s Individual Education Plan (IEP) was also provided for the completion of the survey. Surveys were
also administered to any reading, math, or special education teacher of any participating student.

**Data Analysis**

All data collected by the district contact person were then returned to the researcher for data analysis. Multiple linear regression is the most suitable method for analyzing the given data to determine how growth or fixed mindsets predict and increase or decrease on both reading and math SGP, controlling for socio-demographic variables. An exploratory descriptive analysis provided means and standard deviations of each variable. The researcher tested for multi-collinearity. The researcher initially used the following regression model: \( (\text{student growth}) = \beta_0 + \beta(\text{fixed}) + \beta(\text{growth}) + \beta(\text{ethnicity}) + \beta(\text{socio-economic}) + \beta(\text{gender}) + \beta(\text{grade}) + \beta(\text{LRE}) + \beta(\text{disability}) \). Statistical significance of each variable, as well as interactions among variables, was determined. The \( p \) value of each variable was examined to determine whether a variable makes a statistically significant contribution to the model. Residuals were studied to ensure regression assumptions are met and to make sure \( p \)-values are accurate. A Pearson Correlation was conducted to determine the relationship between student’s mindset and the mindset of their teachers. This was conducted at the school level as opposed to an individual level. All variables were coded, and dummy variables were applied to non-dichotomous variables prior to running analyses.

**Ethical Considerations**

Due to the age of the participants, extra care was given to protect the students and their personal data. A full board review was approved by Western Kentucky University’s Institutional Review Board. Safeguards were in place to obtain appropriate both parental
consent and student assent, as well as to conceal student’s identity. A district contact person from each participating district collected the data and assigned identification numbers that corresponded between surveys and other student information. All those involved in the data collection process signed a confidentiality agreement that declared their guarantee to protect the confidentiality of all information including verbal communication, written record or observations regarding any student or teacher participating in the study.

The only known risk that this study posed was loss of instruction or activity for the 5-15 minutes that the student was removed from class to take the survey. The district contact, however, was trained and asked to administer the student during non-instructional time if possible. There may also have been some psychological discomfort in answering the survey questions.
CHAPTER IV: RESULTS

Both federal and state mandates support high quality education for students with disabilities, urging districts to assist these students in meeting proficiency standards. Many schools across the nation, despite efforts, have only seen modest growth in achievement for this population. The increase in accountability for educators for this sub-population has led to the implementation of a variety of strategies and the grasping of any theory that claims to increase academic achievement for this group.

This study seeks to answer the question: To what extent does a growth mindset relate to student growth among students with disabilities? Three empirical research questions were analyzed to determine the relationship between disabilities, mindset, and achievement.

1. For students with disabilities, to what extent does their mindset predict their reading student growth percentile (SGP), controlling for socio-demographic factors?
2. For students with disabilities, to what extent does their mindset predict their math SGP, controlling for socio-demographic factors?
3. For students with disabilities, to what extent does their teacher’s mindset correlate to their own mindset?

Scale Reliability

Prior to the study, the researcher addressed validity of the scale through a psychometric evaluation process where a panel of experts reviewed and rated the scale, which produced a Content Validity Index of 1.00 for relevance, appropriateness, and clarity. A pilot study was not conducted to test for reliability due to time constraints.
However, the researcher used the responses of the 145 student participants to see if similar scores across indicators by different people produced reliable results. The 3-point Likert survey consisted of eight questions related to a single construct, mindset. Answers for questions 2, 4, 6 and 8 were reversed prior to recording scores. Table 7 includes reliability statistics for the survey used in this study. The Cronbach’s Alpha was 0.713, which indicates an adequate correlation between survey items. Question 6 had the lowest item mean at 1.87, but would not significantly change the Cronbach’s Alpha if deleted.

Table 7

*Reliability Statistics*

<table>
<thead>
<tr>
<th>Cronbach's Alpha</th>
<th>Cronbach's Alpha Based on Standardized Items</th>
<th>N of items</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.713</td>
<td>0.71</td>
<td>8</td>
</tr>
</tbody>
</table>

**Descriptive Statistics**

There were 46 teacher participants involved in this study. Table 8 describes the teacher participants according to socio-demographic variables. All teacher participants teach grades 6th-8th. Teachers were selected to participate if they were a reading, math, or special education teacher of any student participant. Teachers were not directly associated with a particular student in the study because many of them taught several student participants and student participants might have had more than one of the surveyed teachers in a particular district.

There were 145 student participants. Any student in the six participating districts that were eligible for special education services under the MMD, EBD, OHI, or SLD categories in grades 6th-8th were asked to participate. Only those who had returned parental consent and student assent were included in this study. Table 9 describes the
student participants in terms of socio-demographic factors. Due to confidentiality and
district policies, some districts were unable to obtain socio-economic status, which is why
data on only 65 students are reported for this variable.

Table 8

*Descriptive Statistics of Socio-Demographic Variables for Teacher Participants*

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>District</td>
<td></td>
<td></td>
</tr>
<tr>
<td>District A</td>
<td>46</td>
<td></td>
</tr>
<tr>
<td>District B</td>
<td>5</td>
<td>(10.9)</td>
</tr>
<tr>
<td>District C</td>
<td>3</td>
<td>(6.5)</td>
</tr>
<tr>
<td>District D</td>
<td>18</td>
<td>(39.1)</td>
</tr>
<tr>
<td>District E</td>
<td>6</td>
<td>(13.0)</td>
</tr>
<tr>
<td>District F</td>
<td>9</td>
<td>(19.6)</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>15</td>
<td>(32.6)</td>
</tr>
<tr>
<td>Female</td>
<td>31</td>
<td>(67.4)</td>
</tr>
<tr>
<td>Role</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regular Education Teacher</td>
<td>31</td>
<td>(67.4)</td>
</tr>
<tr>
<td>Special Education Teacher</td>
<td>15</td>
<td>(32.6)</td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>46</td>
<td>(100.0)</td>
</tr>
</tbody>
</table>

The survey produced scale scores from 8 to 24. Those scoring 20 or above were
considered to have a growth mindset. Those scoring in the range of 13-19 did not
demonstrate a clear mindset and were recorded as having a neutral mindset. Those
scoring 12 or below were considered to have a fixed mindset. Figure 1 shows the
variance in mindset among the student participants. Figure 2 shows the variance in
mindset among the teacher participants. There were 58 students and 34 teachers whose
survey indicated a growth mindset. There were 80 students and 12 teachers whose
survey indicated a neutral mindset. Only seven students and no teachers had a fixed mindset based on the survey.

Table 9

Descriptive Statistics of Socio-Demographic Variables for Student Participants

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>District</strong></td>
<td>145</td>
<td></td>
</tr>
<tr>
<td>District A</td>
<td>16</td>
<td>(11.0)</td>
</tr>
<tr>
<td>District B</td>
<td>21</td>
<td>(14.5)</td>
</tr>
<tr>
<td>District C</td>
<td>25</td>
<td>(17.2)</td>
</tr>
<tr>
<td>District D</td>
<td>50</td>
<td>(34.5)</td>
</tr>
<tr>
<td>District E</td>
<td>14</td>
<td>(9.7)</td>
</tr>
<tr>
<td>District F</td>
<td>19</td>
<td>(13.1)</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td>145</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>90</td>
<td>(62.1)</td>
</tr>
<tr>
<td>Female</td>
<td>55</td>
<td>(37.9)</td>
</tr>
<tr>
<td><strong>Grade</strong></td>
<td>145</td>
<td></td>
</tr>
<tr>
<td>6th</td>
<td>54</td>
<td>(37.2)</td>
</tr>
<tr>
<td>7th</td>
<td>49</td>
<td>(33.8)</td>
</tr>
<tr>
<td>8th</td>
<td>42</td>
<td>(29.0)</td>
</tr>
<tr>
<td><strong>Disability</strong></td>
<td>145</td>
<td></td>
</tr>
<tr>
<td>MMD</td>
<td>42</td>
<td>(29.0)</td>
</tr>
<tr>
<td>EBD</td>
<td>11</td>
<td>(7.6)</td>
</tr>
<tr>
<td>OHI</td>
<td>37</td>
<td>(25.5)</td>
</tr>
<tr>
<td>SLD</td>
<td>55</td>
<td>(37.9)</td>
</tr>
<tr>
<td><strong>Ethnicity</strong></td>
<td>145</td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>124</td>
<td>(85.5)</td>
</tr>
<tr>
<td>Black or African American</td>
<td>6</td>
<td>(4.1)</td>
</tr>
<tr>
<td>Hispanic/Latino</td>
<td>3</td>
<td>(2.1)</td>
</tr>
<tr>
<td>Two or more races</td>
<td>7</td>
<td>(4.8)</td>
</tr>
<tr>
<td>Native Hawaiian/Other Pacific Islander</td>
<td>5</td>
<td>(3.4)</td>
</tr>
<tr>
<td><strong>Socioeconomic Status</strong></td>
<td>65</td>
<td></td>
</tr>
<tr>
<td>Free/Reduced Lunch status</td>
<td>55</td>
<td>(86.2)</td>
</tr>
<tr>
<td>Paid Lunch status</td>
<td>9</td>
<td>(13.8)</td>
</tr>
<tr>
<td><strong>LRE</strong></td>
<td>145</td>
<td></td>
</tr>
<tr>
<td>&gt;80% of day in general education programs</td>
<td>114</td>
<td>(78.6)</td>
</tr>
<tr>
<td>40-80% of day in general education programs</td>
<td>30</td>
<td>(20.7)</td>
</tr>
<tr>
<td>&lt;40% of day in general education programs</td>
<td>1</td>
<td>(0.7)</td>
</tr>
</tbody>
</table>
Figure 1. Student participant’s mindset bar graph.

Figure 2. Teacher participant’s mindset bar graph.
Student growth percentile (SGP) is determined by the Kentucky Department of Education Office of Assessment and Accountability based on students’ change in performance and achievement in reading and in math over time compared to their academic peers (KDE, 2014, slide 10). Those students with an SGP below 30 are considered to have shown low growth. Students with an SGP of 30-65 are considered to have shown expected growth, while those scoring above 65 showing high growth (KDE, 2016). Table 10 includes descriptive statistics about the student participants SGP in both reading and math, reported by KDE with results from their 2015 spring testing scores. Table 11 breaks down growth into three categories: low, expected and high.

Table 10

**Descriptive Statistics for KPREP SGP in Reading and Math for Student Participants**

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std Dev</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reading SGP</td>
<td>145</td>
<td>1</td>
<td>99</td>
<td>37.82</td>
<td>33.056</td>
</tr>
<tr>
<td>Math SGP</td>
<td>145</td>
<td>1</td>
<td>99</td>
<td>42.87</td>
<td>34.089</td>
</tr>
</tbody>
</table>

Table 11

**Frequency of SGP Categories in Reading and Math (N = 145)**

<table>
<thead>
<tr>
<th>Student Growth Category</th>
<th>Reading Frequency</th>
<th>Reading Percent</th>
<th>Math Frequency</th>
<th>Math Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Growth</td>
<td>75</td>
<td>51.72</td>
<td>65</td>
<td>44.83</td>
</tr>
<tr>
<td>Expected Growth</td>
<td>30</td>
<td>20.69</td>
<td>30</td>
<td>20.69</td>
</tr>
<tr>
<td>High Growth</td>
<td>40</td>
<td>27.59</td>
<td>50</td>
<td>34.48</td>
</tr>
</tbody>
</table>

**Research Question One**

The first research question examined how the K-PREP Reading Student Growth Percentile (SGP) of students with disabilities may be predicted by their mindset, controlling for any significant socio-demographic factors. Due to a significant
The correlation between disability and Least Restrictive Environment (LRE), the researcher removed LRE prior to running the regression. Socio-economic status was also removed due to the number of participants with missing data for this variable.

The first model, (Reading SGP) = β₀ + β(mindset score) + β(gender) + β(disability) + β(grade), resulted in an F statistic of 6.47, $p < .001$. The adjusted $R$ squared is .186, which signifies that the independent variables combined account for 18.6% variability in the student’s reading SGP. None of the socio-demographic variables displayed statistical significance. When taking out the socio-demographic variables, the equation then simply becomes (Reading SGP) = β₀ + β(mindset score), with an $F$ statistic of 36.82, $p < .001$. The adjusted $R$ squared is .199, which indicates 19.9% of the variability in reading SGP is due to student mindset. Table 12 reports model summary and Table 13 reports the coefficient values for this model.

Table 12

*Model Summary for Reading SGP*

<table>
<thead>
<tr>
<th>Model</th>
<th>$R$</th>
<th>$R$ Squared</th>
<th>Adjusted $R$ Squared</th>
<th>Std Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.453$^a$</td>
<td>0.205</td>
<td>0.199</td>
<td>29.581</td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), Survey Score; b. Dependent Variable: SGPreading

Table 13

*Regression Analysis Coefficients (Reading SGP)*

<table>
<thead>
<tr>
<th></th>
<th>$B$</th>
<th>$SE$</th>
<th>$t$</th>
<th>$p$</th>
<th>95% Confidence Interval</th>
<th>VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>-47.52</td>
<td>14.28</td>
<td>-3.33</td>
<td>0.001</td>
<td>-75.72</td>
<td>-19.30</td>
</tr>
<tr>
<td>Survey Score</td>
<td>4.62</td>
<td>0.76</td>
<td>6.07</td>
<td>0.000</td>
<td>3.13</td>
<td>6.15</td>
</tr>
</tbody>
</table>

a. Dependent Variable: SGPreading
Using this model, the residuals suggest slight non-normality, which may impact the accuracy of the confidence intervals and \( p \) values. As Figures 3 and 4 indicate, random error is not normally distributed, therefore possibly violating the underlying assumptions. Efforts were made to transform the data, but non-normality still existed.

After running the regression and examining the residuals, the final model that best predicts a student with disabilities' reading SGP is represented by the equation (Reading SGP) = -47.52 + 4.62 (mindset score). This equation predicts that for every 1 unit the student’s mindset score increases, their Reading SGP increases by 4.62.

![Histogram of residuals for reading SGP model.](image)

\textit{Figure 3.} Histogram of residuals for reading SGP model.
Figure 4. Normal P-plot of regression standardized residuals for reading SGP model.

Research Question Two

The second research question examined how the K-PREP Math Student Growth Percentile (SGP) of students with disabilities may be predicted by their mindset, controlling for any significant socio-demographic factors. As with research question one, due to a significant correlation between disability and Least Restrictive Environment (LRE), the researcher removed LRE prior to running the regression. Socio-economic status was also removed due to the number of participants with missing data for this variable.

The second model, \( (\text{Math SGP}) = \beta_0 + \beta(\text{mindset score}) + \beta(\text{gender}) + \beta(\text{disability}) + \beta(\text{grade}) \), resulted in an F statistic of 8.39, \( p < .001 \). The adjusted \( R \)
squared is .235, which signifies that the independent variables combined account for 23.5% of the variability in the student’s math SGP. Again, none of the socio-demographic variables displayed statistical significance and therefore were removed from the equation. The equation then became (Math SGP) = \( \beta_0 + \beta \) (mindset score), with an \( F \) statistic of 41.5, \( p < .001 \). The adjusted \( R \) squared is .220, indicating 22% variability in math SGP based on mindset score. Table 14 reports model summary and Table 15 reports the coefficient values for this model.

Table 14

**Model Summary for Math SGP**

<table>
<thead>
<tr>
<th>Model</th>
<th>( R )</th>
<th>( R ) Squared</th>
<th>Adjusted ( R ) Squared</th>
<th>Std Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.474a</td>
<td>0.225</td>
<td>0.22</td>
<td>30.114</td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), Survey Score; b. Dependent Variable: SGPmath

Table 15

**Regression Analysis Coefficients (Math SGP)**

<table>
<thead>
<tr>
<th></th>
<th>( B )</th>
<th>( SE )</th>
<th>( t )</th>
<th>( p )</th>
<th>95% Confidence Interval</th>
<th>VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>-49.4</td>
<td>14.53</td>
<td>-3.4</td>
<td>0.001</td>
<td>-78.12, -20.67</td>
<td></td>
</tr>
<tr>
<td>Survey Score</td>
<td>5.01</td>
<td>0.078</td>
<td>6.45</td>
<td>0.000</td>
<td>3.48, 6.55</td>
<td>1.00</td>
</tr>
</tbody>
</table>

a. Dependent Variable: SGPmath

Using this model the residuals suggest slight non-normality, which may impact the accuracy of the confidence intervals and \( p \) values. As Figures 5 and 6 indicate, random error is not normally distributed, therefore possibly violating the underlying assumptions. Efforts were made to transform the data, but non-normality still existed.
Figure 5. Histogram of residuals for math SGP model.

After running the regression and examining the residuals, the final model that best predicts a student with disabilities’ math SGP is represented by the equation (Math SGP) = -49.40 + 5.01 (mindset score). This equation predicts that for every 1 unit the student’s mindset score increases, their Math SGP increases by 5.01.
Figure 6. Normal P-plot of regression standardized residuals for math SGP.

Research Question Three

The final research question seeks to determine if there is a correlation between student’s mindset and that of their teachers. To determine if a correlation exists, a mean score for each district per role was found, as seen in Table 16. Table 17 includes the combined simple statistics.
Table 16

*Mean Score for Participant’s Mindset by Role*

<table>
<thead>
<tr>
<th>District</th>
<th>Student Mindset Mean Score</th>
<th>Teacher Mindset Mean Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>19.375</td>
<td>19.600</td>
</tr>
<tr>
<td>B</td>
<td>17.667</td>
<td>21.600</td>
</tr>
<tr>
<td>C</td>
<td>18.800</td>
<td>21.000</td>
</tr>
<tr>
<td>D</td>
<td>18.620</td>
<td>21.111</td>
</tr>
<tr>
<td>E</td>
<td>18.214</td>
<td>21.000</td>
</tr>
<tr>
<td>F</td>
<td>17.474</td>
<td>21.667</td>
</tr>
</tbody>
</table>

Table 17

*Simple Statistics*

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>Mean</th>
<th>Std Dev</th>
<th>Sum</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student Mindset</td>
<td>6</td>
<td>18.358</td>
<td>0.718</td>
<td>110.150</td>
<td>17.474</td>
<td>19.375</td>
</tr>
<tr>
<td>Teacher Mindset</td>
<td>6</td>
<td>20.996</td>
<td>0.745</td>
<td>125.978</td>
<td>19.600</td>
<td>21.667</td>
</tr>
</tbody>
</table>

Correlational analyses were used to examine the relationship between student’s mindset and the mindset of their teachers. Results indicated an inverse relationship between the two variables of -0.897, as seen in Table 18.

Table 18

*Pearson Correlation*

<table>
<thead>
<tr>
<th></th>
<th>Pearson Correlation Coefficients $N = 6$</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Student Mindset</td>
</tr>
<tr>
<td>Student Mindset</td>
<td>1.000</td>
</tr>
<tr>
<td>Teacher Mindset</td>
<td>-0.897</td>
</tr>
</tbody>
</table>

**Conclusion**

The results of this study should be considered with caution based on the sample size and the reliability of the scale used. Research question one indicated a small predictive value of mindset score on students with disabilities SGP in reading. Research
question two also indicated a small predictive value of mindset score on students with disabilities SGP in math. The third research question indicated a correlation of -0.897 between students’ mindset in relation to their teacher’s mindsets based on school level analysis. Chapter 5 will further discuss these results along with implications, limitations and recommendations for future studies.
CHAPTER V: CONCLUSIONS

The purpose of this research project was to determine if there was a relationship between students’ with disabilities mindset and their academic growth from the previous year. Much research exists to support that having a growth mindset positively affects achievement (Dweck, 2006; Gregory & Kaufeldt, 2015; Jenson, 20015; Ricci, 2013). The researcher wanted to determine if those claims were applicable to students with disabilities as well. An eight-question survey sought to determine the mindset of both students with specific disabilities in middle school and their teachers. The study was conducted in six districts within the Green River Regional Educational Cooperative in rural central Kentucky. Mindset scaled scores were then compared to student’s Student Growth Percentile (SGP) in reading and math on the spring 2015 K-PREP assessment.

Results of Findings Related to Question One

For students with disabilities, to what extent does their mindset predict their reading student growth percentile (SGP), controlling for socio-demographic factors?

The mean reading SGP for students was 37.82. Over 50% of students demonstrated low growth, which is considered a SGP of 30 or below. A little over 27% demonstrated high growth, a SGP of 65 or higher. A linear regression was performed to determine the predictive value of a student’s mindset on their reading SGP. The final model that best predicts a student with disabilities’ reading SGP is (Reading SGP) = -47.52 + 4.62 (mindset score). This equation predicts that for every 1 unit the student’s mindset score increases, their reading SGP increases by 4.62%. None of the demographic variables indicated any significant effect on mindset score and therefore they were not included in the final model.
These results are important because findings support the notion that if students were to move from a fixed mindset (a score between 8 and 12) to a growth mindset (a score between 20 and 24), they could theoretically expect to see an increase in reading SGP between 37-74%, which automatically pushes them over into the expected growth range.

**Results of Findings Related to Question Two**

*For students with disabilities, to what extent does their mindset predict their math student growth percentile (SGP), controlling for socio-demographic factors?*

The mean math SGP for students was 42.87. Under 45% of students fell in the low growth category in math, while 34% met high growth benchmarks in math. A linear regression was performed to determine the predictive value of student’s mindset on their math SGP. A final model that best predicts a student with disabilities’ math SGP is 

\[(\text{Math SGP}) = -49.40 + 5.01 \times (\text{mindset})\]

This equation predicts that for every 1 unit the student’s mindset score increases, their Math SGP increases by 5.01%. None of the demographic variables indicated any significant effect on mindset score and therefore they were not included in the final model.

These results are important because findings support the notion that if students were to move from a fixed mindset (a score between 8 and 12) to a growth mindset (a score between 20 and 24), they could theoretically expect to see an increase in math SGP between 40-80%, which automatically pushes them over into the expected growth range.
Results of Findings Related to Question Three

For students with disabilities, to what extent does their teacher’s mindset correlate to their own mindset?

Correlational analyses were used to examine the relationship between student’s mindset and the mindset of their teachers. Results indicated an inverse relationship between the two variables of -0.897. Due to the small sample size, it was not possible to determine a student level correlation, and therefore a school level correlation was the best attempt to answer this question. This finding would suggest that the teachers’ mindset in a district does not directly correlate with the mindset of their students: however, findings are inconclusive.

The validity of the teacher survey poses some concern. There were no teacher surveys that indicated a fixed mindset among the 46 participants, which is highly unlikely. When teachers are asked to self-report, they often have a tendency to determine if there is a desired response and respond accordingly. This is one of the limitations of this study.

Implications for Practice

Although findings found that student’s mindset indicated a small predictive value in both their reading and math SGP, it is important to note that any growth can be significant for students with disabilities. Any efforts that lead to academic growth and achievement must be considered. Other research supports the notion that psychological barriers exists and should be addressed in efforts to close achievement gaps (Sptizer & Aronson, 2015).
Regional educational cooperatives and Districts could use the findings of this study to support the need for additional professional development opportunities for teachers regarding the use of psychological interventions to promote a growth mindset for students with disabilities. Supports in how to imbed these interventions within the general education curriculum will also need to be explored, but will not require as much time as separate or stand-alone curricula.

**Delimitations and Limitations of Study**

**Delimitations**

Several delimitations and limitations of this exploratory study may have had an effect its findings and the ability to generalize results to the larger population. The delimitations of the study include the geographical representation of the participants, sample method and procedures as well as the grade level. The context of the study was bound within a small rural geographical region of Kentucky to make data collection manageable for the researcher. Students sampled from other districts outside of the GRREC region may have different results. A cluster sampling method was also used with the participating districts.

In regards to the ecological validity, limitations based on context, a potential threat would be the novelty or disruption effect, where a change in routine or being asked to do something new or different may affect student response (McMillan & Schumacher, 2005). The surveys were conducted by each District Contact person that was responsible for collecting the data and administering the surveys, which may be someone with whom the students were not familiar with, nor part of their normal day.
The final delimitation was the grade levels used in the study. The researcher was limited to grades four through eight because they were the only grades that had K-PREP Student Growth Percentile data provided by the Kentucky Department of Education. Due to the language of the survey, the researcher only included those in grades six through eight. Considering their disabilities, some of these students may not have fully understood the wording or intent of the questions asked in the survey and therefore their answers may not reflect their actual mindset.

Limitations

The limitations of this study include the reliability of the survey results, the small sample size, the lack of ethnic diversity in participants, and the inability to get student level data to answer research question three. The reliability statistics for the survey used indicated a Cronbach’s Alpha of .713, which denotes an adequate correlation between survey items. Less than 7% of student participants had a fixed mindset and 0% of teacher participants had a fixed mindset, which is not consistent with current research. Over half of the student participants did not have a clear mindset. While the instrument was determined valid in terms of content, clarity, and relevance, the reliability of the survey poses a threat to the findings.

The researcher sought to include 200 student participants in this study, yet only 145 students were eligible to participate within the six participating districts. Parental consent was required for students to participate. Letters were mailed home to students that qualified based on grade and disability specifications. Response rates significantly limited the number of actual participants compared to the number of those that qualified to participate.
The ethnic diversity of participants was also limited. Almost 90% of the student participants were white, and 100% of teacher participants were white. These statistics made it difficult to include ethnicity in the regression since there were so few students representing other ethnic groups. These numbers are not representative of the diversity among students with disabilities in Kentucky schools. A larger sample size may have provided more ethnic diversity, allowing the researcher to determine the predictive value of ethnicity on mindset and SGPs.

As mentioned earlier in this chapter, the intent of research question three was to determine the effect of teacher’s mindset on the mindset of the students with disabilities. The results were limited to school level data rather than individual level data. The data collection process provided data for 46 teachers within the six districts. Because of district practices, some schools had teachers that only taught one grade level and one subject, where other districts had teachers who taught multiple grade levels or multiple subjects. This limited the researcher’s ability to correlate teacher’s mindset with student’s mindset.

**Recommendations for Future Research**

Several recommendations for future research can be established from the results of this study. This study focused on determining if a relationship between mindset and student growth could be found. A future study could use a different instrument to determine mindset to see if a different instrument provides more reliability and different results. Future research should also consider the reliability of the student growth percentiles that are determined by Kentucky Department of Education’s Office of Assessment and Accountability.
Additional research should replicate this study with a larger sample size throughout the state of Kentucky and even possibly on a national level. This would likely provide a more diverse sample, allowing for a closer look at how the socio-demographic variables affect the final regression models this study presented. While this study was unable to associate any significance of gender, ethnicity, grade, socio-economic status on either mindset or SGP, a larger sample may provide a more accurate regression model.

It would also be advantageous to consider a similar study using students at other grade ranges, to include those in elementary and high school. The results could then be studied to determine if contextual variables, such as the delivery type of instruction, impacts mindset as well. The instruments used for this study may not be appropriate for these other grade ranges, yet other instruments, which would likely have to be created, could assess mindset and academic growth over time.

A qualitative study of phenomenological design could explore student perception of mindset considering their disability. Through use of student interviews, data could be collected to describe students’ with disabilities experiences and beliefs about their own ability to achieve. This study would seek to better understand the personal connection between students in special education, identify why they have a certain mindset, and how that mindset affects their performance. A qualitative study would also seek to build rapport with teacher participants in a way that encourages open and honest conversations about beliefs and practices. This quantitative study indicated that zero teacher participants had a fixed mindset, while that is likely not the case. Conversations need to take place in order for teachers to understand the value in their beliefs and practices in the classroom. While still looking to determine the effects of mindset on student growth, this
type of follow-up may provide more insightful analysis and an opportunity to address some of the nuances of this quantitative study via the ability to talk to students as oppose to a simple survey.

An additional qualitative study that may provide valuable information to the field would be an observational study of successful teachers and what they are doing to move students forward. Observational data could determine mindset based on practices and how those practices either push students forward or hold them back.

**Conclusion**

Over the years, significant efforts have been made to close the achievement gap for students with disabilities and their non-disabled peers. A host of legislation has changed the landscape of education for these students attending public schools across the nation. This study supports the premise that a student’s mindset does affect their academic achievement and student growth over time. Districts would benefit from implementing psychological interventions to help promote growth mindsets.

The *Every Student Succeeds Act* (2015) will continue to press towards a commitment to provide students with disabilities a quality education and hold schools accountable for student outcomes. It would be advantageous of districts to make every effort to support these students and their individual academic growth. Psychological interventions may prove to be an effective way to help break down the barriers that are often overlooked. An intentional attempt to move students with disabilities forward will not only benefit our schools, but also benefit our nation.
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Appendix A: Content Validity Index Evaluation for Student & Teacher Mindset Surveys

<table>
<thead>
<tr>
<th>Instrument Items</th>
<th>RELEVANCE</th>
<th>APPROPRIATENESS</th>
<th>CLARITY</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Please rate each instrument item on the following scale: 1 = Not Relevant 2 = Somewhat Relevant 3 = Quite Relevant 4 = Very Relevant</td>
<td>Please rate each instrument item on the following scale: 1 = Not Appropriate 2 = Somewhat Appropriate 3 = Quite Appropriate 4 = Very Appropriate</td>
<td>Please rate each instrument item on the following scale: 1 = Not Clear 2 = Somewhat Clear 3 = Quite Clear 4 = Very Clear</td>
</tr>
<tr>
<td>1. I believe that I am capable of learning.</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>2. I believe that no matter how hard I try, I just can’t achieve mastery.</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>3. I believe that I can change how smart I am.</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>4. I believe I can learn new things, but I cannot really change how smart I am.</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>5. I believe that mistakes are an important part of my learning.</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>6. I believe that if I am really good at something, it must be a natural talent.</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>7. I believe that with practice and effort I can change my basic level of talent.</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>8. I believe that I have a certain amount of intelligence, and there isn’t much I can do to change that.</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
</tbody>
</table>

Part 2 Instructions: In the space below, for any item that you rated low (1 or 2) in appropriateness or clarity, please suggest wording changes that might improve the quality of the item. (If you have differing wording suggestion for students or teachers, please so indicate.)
### Appendix B: Student Survey

**Student ID Number:** ________________________________  **Date:** ___________________

The following questions relate to your thinking regarding your learning in school. Please respond by marking ‘1’ for Disagree, ‘2’ for Neutral (I don’t have an opinion one way or another), or ‘3’ for Agree. There is no right or wrong answer – your first reaction will be the most accurate.

<table>
<thead>
<tr>
<th>Rating</th>
<th>D</th>
<th>N</th>
<th>A</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I believe that I am capable of learning.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>2. I believe that no matter how hard I try, I just can’t achieve mastery.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>3. I believe that I can change how smart I am.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>4. I believe I can learn new things, but I cannot really change how smart I am.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>5. I believe that mistakes are an important part of my learning.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>6. I believe that if I am really good at something, it must be a natural talent.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>7. I believe that with practice and effort I can change my basic level of talent.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>8. I believe that I have a certain amount of intelligence, and there isn’t much I can do to change that.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>
# Appendix C: Teacher Survey

Teacher ID Number: ______________________________ Date: ____________________

The following questions relate to your thinking regarding your student’s learning in school. Please respond by marking ‘1’ for Disagree, ‘2’ for Neutral, or ‘3’ for Agree. There is no right or wrong answer – your first reaction will be the most accurate.

<table>
<thead>
<tr>
<th>Rating</th>
<th>D</th>
<th>N</th>
<th>A</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I believe that my students are capable of learning.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>2. I believe that no matter how hard my students try, some just cannot achieve mastery.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>3. I believe that my students can change how smart they are.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>4. I believe my students can learn new things, but they cannot really change how smart they are.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>5. I believe that mistakes are an important part of my student’s learning.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>6. I believe that if my students are really good at something, it must be a natural talent.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>7. I believe that with practice and effort my students can change their basic level of talent.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>8. I believe that my students have a certain amount of intelligence, and there isn’t much they can do to change that.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>
Appendix D: IRB Approval Letter

DATE: March 3, 2016
TO: Kristin Froedge
FROM: Western Kentucky University (WKU) IRB
PROJECT TITLE: [803864-2] Student Growth Among Students With Disabilities: Effects of a Growth Mindset
REFERENCE #: IRB 16-301
SUBMISSION TYPE: Amendment/Modification
ACTION: APPROVED
APPROVAL DATE: March 3, 2016
EXPIRATION DATE: January 1, 2017
REVIEW TYPE: Full Committee Review

Thank you for your submission of Amendment/Modification materials for this project. The Western Kentucky University (WKU) IRB has APPROVED your submission. This approval is based on an appropriate risk/benefit ratio and a project design wherein the risks have been minimized. All research must be conducted in accordance with this approved submission.

This submission has received Full Committee Review based on the applicable federal regulation.

Please remember that informed consent is a process beginning with a description of the project and insurance of participant understanding followed by a signed consent form. Informed consent must continue throughout the project via a dialogue between the researcher and research participant. Federal regulations require each participant receive a copy of the consent document.

Please note that any revision to previously approved materials must be approved by this office prior to initiation. Please use the appropriate revision forms for this procedure.

All UNANTICIPATED PROBLEMS involving risks to subjects or others and SERIOUS and UNEXPECTED adverse events must be reported promptly to this office. Please use the appropriate reporting forms for this procedure. All FDA and sponsor reporting requirements should also be followed.

All NON-COMPLIANCE issues or COMPLAINTS regarding this project must be reported promptly to this office.

This project has been determined to be a Minimal Risk project. Based on the risks, this project requires continuing review by this committee on an annual basis. Please use the appropriate forms for this procedure. Your documentation for continuing review must be received with sufficient time for review and continued approval before the expiration date of January 1, 2017.

Please note that all research records must be retained for a minimum of three years after the completion of the project.

If you have any questions, please contact Paul Mooney at (270) 745-2129 or irb@wkut.edu. Please include your project title and reference number in all correspondence with this committee.
Appendix E: Informed Consent Forms

Parental Informed Consent Document

Project Title:
Student Growth Among Students With Disabilities: Effects of a Growth Mindset

Principal Investigator: Kristin Froedge, WKU Educational Leadership, kristin.froedge@wku.edu

You are being asked to allow your child to participate in a project conducted through Western Kentucky University. The University requires that you give your signed agreement to participate in this project.

Kristin Froedge, Director of Special Programs for Elizabethtown Independent Schools, is the primary researcher for this project. You may contact her via email at kristin.froedge@wku.edu if you have any questions. You may speak to your district contact person, who is also available to explain in detail the purpose of the project, the procedures to be used, and the potential benefits and possible risks of participation. You may ask any questions you have to help you understand the project. A basic explanation of the project is written below. Please read this explanation and discuss with the researcher any questions you may have.

If you then decide to participate in the project, giving permission for your child to be surveyed and release their socio-demographic and assessment data, please sign this form and return in the postage-paid envelope provided. You should be given a copy of this form to keep for your records.

Nature and Purpose of the Project: This study is designed to investigate if a correlation between students' mindset and achievement exists. With focus on Kentucky public schools, statistical analysis of the data gathered will be used to gain a better understanding of how state and educational reform may need to incorporate a psychological component in order to make needed progress in closing the achievement gap for these students.

Explanation of Procedures: Each district participating in this study will have a district contact person that collects all data pertaining to the study and submit to the researcher. Each student participant will be assigned an identification number. Once this has occurred, the district contact person will gather socio-demographic data from the Kentucky School Information System, Infinite Campus. The data will be captured in a spreadsheet. The district contact person will pull each participant to take an eight question survey about their mindset about learning. Any accommodations indicated on their Individual Education Plan will also be provided for the completion of this survey. The survey will take anywhere from 5-15 minutes and will be conducted in a room with just the student and district contact person. The last piece of data the district contact person will collect is the student’s math and reading Kentucky Performance Rating for Education Progress (K-PREP) raw score and growth percentile. This information will be found in their student record. Once all data has been recorded in the given spreadsheet, it will be returned with all consent forms to the researcher.

Discomfort and Risks: The only known risk that this study poses is loss of instruction or activity for the 5-15 minutes that the student is pulled to take the survey. The district contact person, however, will be trained to only pull the student during a non-instructional time if at all possible, such as homeroom. There may also be some psychological discomfort in answering the survey questions.
Benefits: The knowledge gained through this study will be used to make improvements to current programming for students with disabilities, and to contribute to the literature on growth mindsets. Each school will get a report that gives them information that can be used to make decisions regarding their students, teachers and achievement data. They will also receive a copy of the final dissertation that will indicate if any correlation exists between these variables.

Confidentiality: Each student participating will be assigned an identification number. The number will be assigned by the district contact person so that no one outside of the study will be able to trace personally identifiable data back to a given individual. The district contact person will collect the data in a given spreadsheet which will be returned to the researcher when complete along with all consent forms.

Refusal/Withdrawal: Refusal to participate in this study will have no effect on any future services you may be entitled to from the University or District. Anyone who agrees to participate in this study is free to withdraw from the study at any time with no penalty.

You understand also that it is not possible to identify all potential risks in an experimental procedure, and you believe that reasonable safeguards have been taken to minimize both the known and potential but unknown risks.

_________________________          _______________________
Signature of Parent                               Date

_________________________
Child’s Name (please print)

* I agree to the release of my child’s academic records for the purposes of the research

(Initial here) ______

Please return this form within the next 5 days or by ___/___/____.

THE DATED APPROVAL ON THIS CONSENT FORM INDICATES THAT
THIS PROJECT HAS BEEN REVIEWED AND APPROVED BY
THE WESTERN KENTUCKY UNIVERSITY INSTITUTIONAL REVIEW BOARD
Paul Moorey, Human Protections Administrator
TELEPHONE: (270) 745-2129
Informed Assent Document

I, __________________________ understand that my parents (mom, dad, or guardians) have given permission (said it’s okay) for me to take part in a project about student mindset and achievement under the direction of Kristin Freedge, a student at Western Kentucky University.

I am taking part because I want to. I have been told that I can stop at any time I want and nothing will happen to me if I want to stop.

Student Signature __________________________ Date __________________________

THE DATED APPROVAL ON THIS CONSENT FORM INDICATES THAT THIS PROJECT HAS BEEN REVIEWED AND APPROVED BY THE WESTERN KENTUCKY UNIVERSITY INSTITUTIONAL REVIEW BOARD Paul Mooney, Human Protections Administrator TELEPHONE: (270) 745-2129
District Consent Document

Project Title:
Student Growth Among Students With Disabilities: Effects of a Growth Mindset

Principal Investigator: Kristin Freedge, WKU Educational Leadership, kristinfreedge@wku.edu

You are being asked to give informed consent allowing Kristin Freedge, student at Western Kentucky University, to conduct research within your district. Each district agreeing to participate in this project will select a district contact person to gather data to provide to the researcher.

If you then decide to participate in the project, please sign this form in the presence of the researcher. You should be given a copy of this form to keep. If you have any further questions or concerns, you can contact the researcher via email at Kristin.freedge@wku.edu.

If you then decide to participate in the project, please sign this form and return to the researcher. You should be given a copy of this form to keep.

Nature and Purpose of the Project: This study is designed to investigate if a correlation between student's mindset and achievement exist. With focus on Kentucky public schools, statistical analysis of the data gathered will be used to gain a better understanding of how state and educational reforms may need to incorporate a psychological component in order to make needed progress in closing the achievement gap for these students.

Explanation of Procedures: Each district participating in this study will have a district contact person that collects all data pertaining to the study and submit to the researcher. Each student and teacher participating will be assigned an identification number. Once this has occurred, the district contact person will gather socio-demographic data from the Kentucky School Information System, Infinite Campus. These data will be captured in a spreadsheet. The district contact person will pull each participant to take an eight question survey about their mindset about learning. For students, any accommodations indicated on their IEP will also be provided for the completion of this survey. The survey will take anywhere from 5-15 minutes and will be conducted in a room with just the student and district contact person. The last piece of data the district contact person will collect is the student's math and reading KPREP raw score and NAEP rating. This information will be found in their student record. Once all data has been recorded in the given spreadsheet, it will be returned with all consent forms to the researcher.

Discomfort and Risks: The only risk that this study poses is loss of instruction or activity for the 5-15 minutes that the student is pulled to take the survey. The district contact person, however, will be trained to only pull the student during a non-instructional time if at all possible, such as homeroom. Teachers will only be administered the survey during their planning period or before/after school. There may also be some psychological discomfort in answering the survey questions.

Benefits: The knowledge gained through this study will be used to make improvements to current programming for students with disabilities, and to contribute to the literature on growth mindsets. Each school will get a report that gives them information that can be used to make decisions regarding their students, teachers, and achievement data. They will also receive a copy of the final dissertation that will indicate if any correlation exists between these variables.
Confidentiality: Each student and teacher participating will be assigned an identification number. The number will be assigned by the district contact person so that no one outside of the study will be able to trace personally identifiable data back to a given individual. The district contact person will collect the data in a given spreadsheet which will be returned to the researcher when complete along with all consent forms.

Refusal/Withdrawal: Refusal to participate in this study will have no effect on any future services you may be entitled to from the University or District. Anyone who agrees to participate in this study is free to withdraw from the study at any time with no penalty.

You understand also that it is not possible to identify all potential risks in an experimental procedure, and you believe that reasonable safeguards have been taken to minimize both the known and potential but unknown risks.

Signature of Superintendent   Date

Witness   Date

THE DATED APPROVAL ON THIS CONSENT FORM INDICATES THAT
THIS PROJECT HAS BEEN REVIEWED AND APPROVED BY
THE WESTERN KENTUCKY UNIVERSITY INSTITUTIONAL REVIEW BOARD
Paul Money, Human Protections Administrator
TELEPHONE: (270) 745-2129
Teacher Consent Document

Project Title:
Student Growth Among Students With Disabilities: Effects of a Growth Mindset

Principal Investigator: Kristin Froedge, WKU Educational Leadership, kristin.froedge@wku.edu

You are being asked to participate in a project conducted through Western Kentucky University. The University requires that you give your signed agreement to participate in this project.

Kristin Froedge, Director of Special Programs for Elizabethtown Independent Schools, is the primary researcher for this project. You may contact her via email at kristin.froedge@wku.edu if you have any questions. You may speak to your district contact person, who is also available to explain in detail the purpose of the project, the procedures to be used, and the potential benefits and possible risks of participation. You may ask any questions you have to help you understand the project. A basic explanation of the project is written below. Please read this explanation and discuss with the researcher any questions you may have.

If you then decide to participate in the project, please sign this form and return to your district contact person. You should be given a copy of this form to keep.

Nature and Purpose of the Project: This study is designed to investigate if a correlation between student’s mindset and achievement exist. With focus on Kentucky public schools, statistical analysis of the data gathered will be used to gain a better understanding of how state and educational reform may need to incorporate a psychological component in order to make needed progress in closing the achievement gap for these students.

Explanation of Procedures: Each district participating in this study will have a district contact person that collects all data pertaining to the study and submit to the researcher. Each student and teacher participating will be assigned an identification number. Once this has occurred, the district contact person will gather socio-demographic data from the Kentucky School Information System, Infinite Campus. The data will be captured in a spreadsheet. The district contact person will pull each participant to take an eight question survey about their mindset about learning. For students, any accommodations indicated on their IEP will also be provided for the completion of this survey. The survey will take anywhere from 5-15 minutes and will be conducted in a room with just the student and district contact person. The last piece of data the district contact person will collect is the student’s math and reading KPREP raw score and NAPD rating. This information will be found in the student record. Once all data has been recorded in the given spreadsheet, it will be returned with all consent forms to the researcher.

Discomfort and Risks: The only known risk that this study poses is loss of instruction or activity for the 5-15 minutes that the teacher is pulled to take the survey. The district contact person, however, will be trained to only administer the survey to teachers during their planning period or before/after school. There may also be some psychological discomfort in answering the survey questions.

Benefits: The knowledge gained through this study will be used to make improvements to current programming for students with disabilities, and to contribute to the literature on growth mindsets. Each
school will get a report that gives them information that can be used to make decisions regarding their students, teachers and achievement data. They will also receive a copy of the final dissertation that will indicate if any correlation exists between these variables.

Confidentiality: Each student and teacher participating will be assigned an identification number. The number will be assigned by the district contact person so that no one outside of the study will be able to trace personally identifiable data back to a given individual. The district contact person will collect the data in a given spreadsheet which will be returned to the researcher when complete along with all consent forms.

Refusal/Withdrawal: Refusal to participate in this study will have no effect on any future services you may be entitled to from the University or District. Anyone who agrees to participate in this study is free to withdraw from the study at any time with no penalty.

You understand also that it is not possible to identify all potential risks in an experimental procedure, and you believe that reasonable safeguards have been taken to minimize both the known and potential but unknown risks.

______________________________  __________________________
Signature of Teacher             Date

______________________________  __________________________
Witness                          Date

THE DATED APPROVAL ON THIS CONSENT FORM INDICATES THAT
THIS PROJECT HAS BEEN REVIEWED AND APPROVED BY
THE WESTERN KENTUCKY UNIVERSITY INSTITUTIONAL REVIEW BOARD
Paul Mooney, Human Protections Administrator
TELEPHONE: (270) 745-2128