INVESTIGATING MINDSET THEORIES: THE IMPLICATIONS FOR CLASSROOM INSTRUCTION AND PROFESSIONAL DEVELOPMENT

by

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INVESTIGATING MINDSET THEORIES: THE IMPLICATIONS FOR CLASSROOM INSTRUCTION AND PROFESSIONAL DEVELOPMENT

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School districts hold innate ability and aptitude at a very high regard (Resnick & Hall, 1998). In contrast, more than thirty years of research show that a focus on effort—not intelligence or innate ability—is the key to success in both school and life (Dweck, 2008). While there is growing research coming from research in cognitive science and social psychology to support this theory, it is still an open vision (Resnick & Hall, 2003). Therefore, the aim of this inquiry was to: (1) investigate how teachers perceive themselves in relation to a fixed or growth mindset, (2) explore how teachers perceive mindset informing instruction, and (3) examine the nature of teachers' professional development related to mindset. The study was conducted at a suburban elementary school outside Pittsburgh, PA. Forty-three teachers responded to the survey. The survey was designed to collect data using multiple choice and open-ended items. The participants were asked to respond to questions regarding teachers' perceptions, classroom implications, and professional development associated with mindset. The researcher found that teachers perceived a strong link between growth mindset and a range of positive student outcomes and that growth mindset has a strong potential for teaching and learning. The study also found that teachers consistently used practices to foster growth mindset in the classroom and that they use common practices to do so. The findings suggest that there is a desire for more effective training and that

professional development may help alleviate some of the perceived challenges teachers face when implementing growth mindset into their teaching expectations and practices.

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ACKNOWLEDGEMENTS

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1.0 INTRODUCTION

Educational systems place a heavy emphasis on the nature of innate ability and aptitude (Resnick & Hall, 1998). As a result, some students never gain an opportunity to engage in a high-demand, high-thinking curriculum (Resnick, 1999). In contrast, more than three decades of research show that a focus on effort—not intelligence or innate ability—is the key to success in both school and life (Dweck, 2008). There is a body of work hoping to break these disappointing cycles of educational reform and create a vision supporting effort-based systems that allow all students to reach high standards of achievement (Resnick, 1999). While there is mounting evidence coming from research in cognitive science and social psychology to support this theory, it is still an open vision (Resnick & Hall, 2003). Therefore, the aim of this inquiry is to: (1) investigate how teachers perceive themselves in relation to a fixed or growth mindset, (2) explore how teachers perceive mindset informing instruction, and (3) examine the nature of teachers' professional development related to mindset.

1.1 STATEMENT OF THE PROBLEM

The nature of ability and aptitude are heavily emphasized in school settings (Resnick & Hall, 1998). Intelligence quotient (IQ) tests are often used in school settings to determine which students have access to rigorous coursework and programming. Moreover, the results are used to

sort students into academic and non-academic tracks, and to predict future achievement. These commonplace features of the American educational landscape are institutionalized expressions of a persistent focus on the importance of inherited aptitude and innate ability (Resnick, 1998). However, inborn abilities are not the only factors that account for learning and success (Hochanadel & Finamore, 2015).

As conversations remain focused on innate ability across the country, an integral facet of developing students' skillsets is being silenced. There is a body of research exploring why schools should place less emphasis on innate ability and more emphasis on effort-based systems (Resnick & Hall, 1998). Educational leaders may benefit from gaining a much deeper understanding of students and learning from a motivational and psychological perspective.

Schools may measure content standards and IQ, but success in school and life depends on much more than a student's innate ability and annual acquisition of content-specific knowledge and skills. Society's dominant belief system contains a tension between aptitude and effort (Resnick & Hall, 2003). On one hand, Americans believe in innate talent and natural abilities that are genetically predetermined. On the other hand, there is a belief that with effort and persistence one can learn even the most difficult content and skills. Easton (2012) stated, "The test score accountability movement has pushed aside many of these so-called 'non-cognitive' or 'soft' skills, and they belong on the front burner" (p. 19).

Lauren Resnick's work lays the foundation for effort-based educational systems and speaks to the idea that effort actually creates ability and that people can become smart by working at the appropriate tasks (Resnick, 1998; Resnick & Hall, 2003). Carol Dweck conducted numerous research studies to support the notion of mindset theory and the importance of an effort-based educational system (Dweck, 2006, 2007, 2008, 2010). Mindset is referred to

as the self-perception or self-theory that people hold about themselves (Dweck, 2006). This work centers on the differences between holding a fixed or growth mindset (Dweck, 2006). Those who hold a fixed mindset believe that intelligence is inborn and those with a growth mindset believe intelligence can be improved over time (Tough, 2013).

Researchers such as Duckworth and Tough have added to the breadth and depth of Dweck's findings by discussing the notion that persistence, determination, resilience, and effort are the strongest indicators of students' success (Duckworth, 2007, 2009; Tough, 2013). Furthermore, the research on effort-based educational strategies discusses the way in which teachers can guide students in changing their attributions of success and failure (Saphier & Gower, 1997). A major focus of the effort-creates-ability movement is that intelligence can be grown over time, that one can improve through focused and sustained effort.

1.2 SIGNIFICANCE OF THE PROBLEM

Traditional approaches to education focus on intellectual aspects of success, such as content knowledge and IQ (Shechtman, DeBarger, Dornsife, Rosier, & Yarnall, 2013). However, if students are expected to achieve their full potential, they should have the opportunities to develop an additional skill set. There is a growing body of research looking to explore these non-cognitive factors that high-achieving individuals draw upon to accomplish success (Shechtman et al., 2013).

While there are research elements in place focusing on an effort-based education, there is still much to explore about the mindset teachers hold and the degree to which their perceptions of a fixed and growth mindset influence instruction. Moreover, schools and districts have very little

information regarding the ways to investigate mindset theories and determine what teachers believe about students and their ability to learn. If teachers are emphasizing effort-based educational philosophies in their classrooms, little is known about the strategies teachers are using to do so. Additionally, limited information is available to determine how professional development informs mindset instruction in the classroom.

In order to better understand this problem of practice, it is important to gain insight regarding how teachers perceive themselves in relationship to a fixed or a growth mindset. This information will provide a greater understanding about what teachers believe about students and their ability to learn. Moreover, it will be important to explore how teachers perceive mindset informing instruction. Furthermore, information will need to be collected to explore how professional development informs mindset instruction in the classroom. Therefore, the aim of this problem of practice is to (1) investigate how teachers perceive themselves in relation to a fixed or growth mindset, (2) explore how teachers perceive mindset informing instruction, and (3) examine the nature of teachers' professional development related to mindset.

1.3 INQUIRY QUESTIONS

To investigate how teachers perceive themselves in relationship to a fixed or a growth mindset, the inquiry questions focus on teachers' mindset, the employment of instructional strategies in classrooms, and the professional development needed to inform mindset instruction in the classroom. Therefore, the following inquiry questions guided the exploration into this problem of practice:

Q1: How do selected elementary teachers perceive themselves in relation to a fixed or growth mindset?

Q2: How do selected teachers perceive mindset informing instruction?

Q3: What has been the nature of teachers' professional development related to mindset?

2.0 REVIEW OF LITERATURE

It is essential to review past and present research to gain an understanding of theories of intelligence, mindset, and their implications for instruction and professional development. This review of literature helps the reader understand how the research supports theories of intelligence, effort and grit, and fixed and growth mindsets. It also investigates the classroom implications for effort based instructional strategies. Moreover, this body of literature explores how professional development informs mindset instruction in the classroom.

2.1 PERCEPTIONS OF INTELLIGENCE

According to the Common Core State Standards Initiative (2015), the Common Core State Standards have been a focus of conversations across the educational landscape and define what students should know and be able to do at each grade level. Moreover, states across the country could potentially spend $8.3 billion dollars to invest in curricular resources, standardized testing, and professional development to support the implementation of these standards (Gewertz, 2012). State accountability tests leave out some subjects completely and only cover a limited sample of content knowledge and skills (David, 2011). Additionally, state tests often rely on easy to score questions that measure basic content instead of higher-order thinking skills (David, 2011). The

challenge for public educators is to ensure that state standards and testing do not narrow the curriculum and deprive students of meaningful learning experiences (David, 2011).

A second focus within educational systems is a heavy emphasis on the nature of ability and aptitude (Resnick, 1999). Throughout history, intelligence has been thought of as a genetically determined mental ability of quality that dictates the capacity a person has for learning (Resnick & Nelson, 1997). IQ tests are often used in school settings to determine which students have access to rigorous coursework and programming. As a result, some students are never afforded the chance to engage in high-thinking curriculum (Resnick, 1999). These features of the education are longstanding expressions of a focus on the importance of inherited aptitude and innate ability (Resnick, 1999). School systems have relied heavily on intelligence tests and other standardized measures to predict achievement; however, inborn abilities are not the only factors that account for a students' achievement (Hochanadel & Finamore, 2015). There is a body of research hoping to break these disappointing phases of educational reform and create a vision supporting effort-based systems that allow all students to reach high standards of achievement (Resnick, 1999).

The test score accountability movement and these traditional approaches to education focus on intellectual aspects of success, such as content knowledge and IQ (Shechtman et al., 2013). These institutionalized approaches have supported the idea that intelligence is fixed by focusing on the fundamental principle that some students are not capable of high levels of learning (Resnick, 1995). However, if students are expected to achieve their full potential, they must have the opportunities to develop an entirely different skillset. There is a growing body of research seeking to understand those non-cognitive skillsets that successful people draw upon (Dweck, 2006; Resnick & Hall, 2003; Shechtman et al., 2013).

As conversations remain focused on content-specific standards across the country, an integral facet of developing students' skillsets may be silenced. Content standards can indeed be rigorous to obtain; however, students can eventually learn the material if they put forth the effort necessary to do so (Resnick & Hall, 2003). Educational leaders may benefit from gaining a much deeper understanding of students and learning from a motivational and psychological perspective. Schools may measure content standards and IQ, but success in school and life depends on much more than a student's innate ability and annual acquisition of content specific knowledge and skills. In the 21st century, this traditional notion of intelligence is being challenged to focus less innate ability and IQ and more on students' ability to grow (Costa & Kallick, 2000). The next section discusses the research supporting the fundamental divide between aptitude and effort.

2.2 APTITUDE AND EFFORT

People hold a fundamental tension between aptitude and effort (Resnick & Hall, 2003). On one hand, many people believe in innate abilities that are genetically predetermined (Resnick & Hall, 2003). In contrast, there are others who believe that with effort and determination, intelligence can be increased (Resnick & Hall, 2003). Figure 1 illustrates the thinking behind this fundamental divide. Moreover, the test score accountability movement has placed less of an emphasis on many of the essential skills that are needed to be successful in school and life (Easton, 2012).

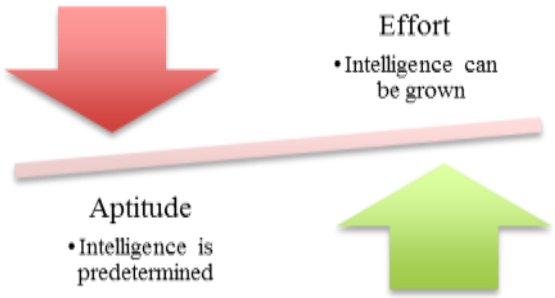


Figure 1. Aptitude vs. Effort
(Dweck, 2006; Resick & Hall, 2003)

A focus on effort-based mindsets and behaviors—non-cognitive character traits—are the key to success in school and life (Dweck, 2006). However, educators may assume that possessing a high IQ, superior intelligence, innate ability, and content specific knowledge is important for future success. School systems may place an emphasis on student success as illustrated by state standards and IQ scores by focusing on the acquisition of academic content knowledge. Educational systems may not recognize those non-cognitive character traits and mindset theories that impact student learning.

Numerous research studies have been conducted to understand mindset theory and the significance of an effort-based educational system (Dweck, 2006, 2007, 2008, 2010). Mindset is referred to as the self-perception or self-theory that people hold about themselves (Dweck, 2006). This work centers on the differences between holding a fixed or growth mindset (Dweck, 2006). Those who hold a fixed mindset believe that intelligence is inborn and those with a growth mindset believe intelligence can be improved (Tough, 2012). Researchers Duckworth and Tough have added to the breadth and depth of Dweck's findings. Both have found that that persistence, fortitude, resilience, and effort are the strongest indicators of students' success (Duckworth et al., 2007; Duckworth & Quinn, 2009; Tough, 2013). Moreover, Lauren Resnick's work lays the foundation for an effort-based education. Her research supports the

notion that effort actually can create ability and that people can become smart by working hard at the appropriate learning tasks (Resnick, 1999; Resnick & Hall, 2003). Furthermore, the research on effort-based educational strategies discusses the ways in which teachers can guide students in changing their attributions of success and failure (Saphier & Gower, 1997). Resnick and Hall (2003) noted, "The underlying claim in our effort-creates-ability argument is that human capability is open ended: that people can become more intelligent through sustained and targeted effort. There is mounting evidence coming from research in cognitive science and social psychology to support this theory, but it is still an open vision" (p. 4). The next section reviews the literature associated with theories of intelligence.

2.3 THEORIES OF INTELLIGENCE

People hold two contrasting beliefs or theories about intelligence. One theory says that intelligence is innate or fixed and cannot be changed over time. Those who believe that intelligence is fixed are entity theorists (Dweck & Leggett, 1998). These people equate success to internal abilities. Students who possess an entity theorist's view of intelligence avoid challenging situations and become helpless in the midst of failure, which leads to a decline of performance over time (Blackwell, Trzesniewski, & Dweck 2007). An entity theorist views a student as having low innate ability and believe the student's capacity to learn at high levels is limited (Dweck, 1999). Entity theorists tend to hold strong stereotypes of students and their ability to learn (Plaks, Stroessner, Dweck, & Sherman, 2001). When educators hold this view of intelligence, some students are provided with a watered-down curriculum aligned to their preconceived abilities and past performance (Resnick, 1995).

The other theory of intelligence is incremental theory (Dweck & Leggett, 1998). People who embrace this theory of intelligence believe that intelligence is malleable and can grow over time (Dweck & Leggett, 1998). They strive to continue to learn and grow and view setbacks as opportunities for learning. Incremental theorists are goal-driven. Their focus is on mastering key concepts and striving to improve their ability through effort (Dweck, 2006). Incremental theorists focus on the student's effort and need to grow. Moreover, they consider the kinds of instruction or remediation needed that would help the student experience success (Dweck, 1999). Like entity theorists, incremental theorists do internalize negative and positive human behaviors; however, they view these fundamental issues as a way to promote growth in students rather than place judgment or criticism on them (Dweck, 1999; Plaks et al., 2001). Figure 2 illustrates the fundamental facets of the entity and incremental theorists' view of goals, response to failure, and intelligence.

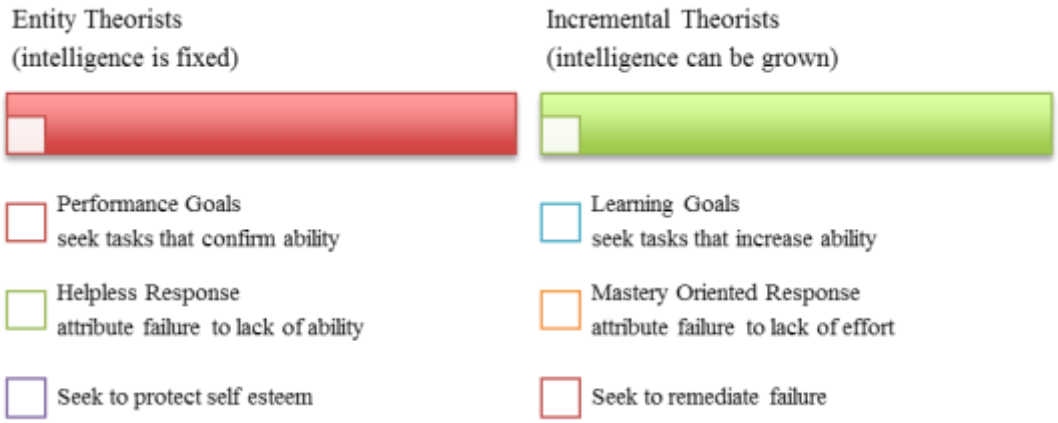


Figure 2. Entity Theorists vs. Incremental Theorists
(Blackwell et al., 2007; Dweck, 2006; Dweck & Leggett, 1998)

Resnick and Hall (1998) discussed the factors that have much to do with people's beliefs about the relationship between effort and ability. In their research, Resnick and Hall identified two broad classes of goals: performance-orientated and learning-orientated. People with

performance-orientated goals strive to obtain positive evaluations of their ability (Resnick & Hall, 1998). This view of innate ability or aptitude has been correlated with the entity theory of intelligence (Resnick & Hall, 1998). In contrast, people with learning-oriented goals generally strive to develop their ability with respect to particular tasks. They believe that aptitude is malleable through effort (Resnick & Hall, 1998). This view of aptitude has been labeled with the incremental theory of intelligence (Resnick & Hall, 1998). Figure 3 illustrates the connection between performance and learning-oriented goals and entity and incremental theories of intelligence. Decades of research involving theories of intelligence have led to the development of the fixed and growth mindset (Dweck, 2006). The next section of literature reviews mindset theory through the lenses of the fixed and growth mindset.

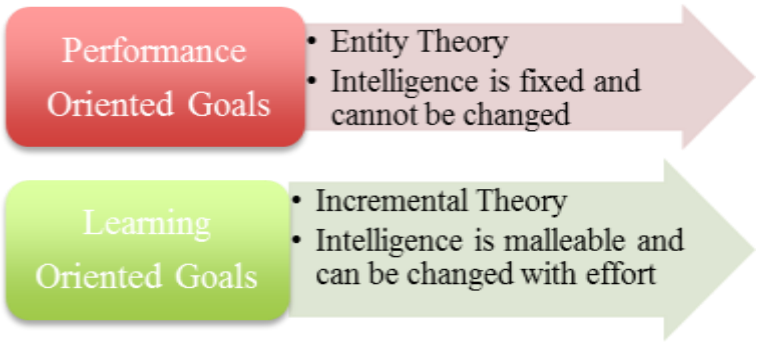


Figure 3. Performance Oriented Goals vs. Learning Oriented Goals (Resnick & Hall, 1998)

2.4 FIXED AND GROWTH MINDSETS

Dweck (2006) defined two distinct ways in which individuals view intelligence and learning. She defined the mindset a person assumes as some degree of "fixed" or "growth". Dweck indicated that people who support a fixed mindset believe that their basic qualities cannot be

developed or changed, so they are less motivated to work hard and learn. Like the entity theorists, people who hold a fixed mindset believe that intelligence is static and have a desire to look smart. Oftentimes, people who hold a fixed mindset avoid challenges, give up easily, and view efforts as fruitless (Dweck, 2006). Furthermore, people who ignore feedback and feel threatened by others' success often resonate with this mindset. People with a fixed mindset believe that some students are smart and others are not (Dweck, 2010). When students embrace a fixed mindset, they are worried about looking smart, view exerting effort as a deficit to their intelligence, and believe setbacks reflect limitations in their ability (Dweck, 2010). Teachers with a fixed mindset believe that learning is solely the students' responsibility (Dweck, 2010). Additionally, they believe in fixed traits and that those traits should be quickly judged (Dweck, 2010). When children believe their intelligence is innate and out of their control, they can become stifled by the idea that they can do nothing to improve their performance (Danielson, 2002).

In contrast, those with a growth mindset believe that if they work hard, intelligence can be grown over time (Dweck, 2006). Like the incremental theorists, people who hold a growth mindset believe that intelligence can be developed and hold a deep desire to learn. They often embrace challenges, persist in the face of setbacks, and view effort as the path to mastery (Dweck, 2006). People who hold a growth mindset learn from feedback and find lessons and inspiration in the success of others. People with a growth mindset believe that intelligence can be developed through effort and instruction (Dweck, 2010). Students who hold a growth mindset focus on learning, believe in effort, and are resilient in the face of setbacks (Dweck, 2010). Teachers with a growth mindset do not put people in categories and expect them to stay there (Dweck, 2010). Additionally, they encourage students to try harder and believe that learning

takes collaboration between teacher and student in which the teacher has great responsibility (Dweck, 2010). Figure 4 illustrates the key differences between holding a fixed and growth mindset.

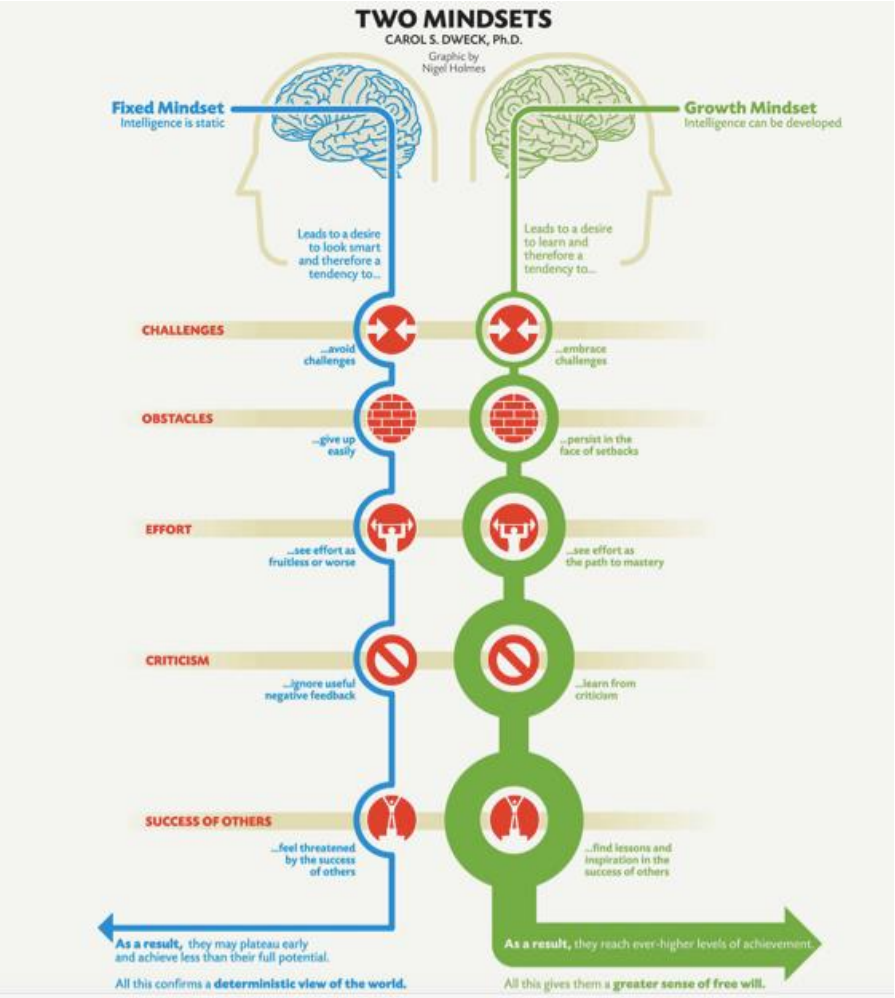


Figure 4. Fixed Mindset vs. Growth Mindset
(Dweck, 2010)

Resnick's research in *Making America Smarter* (1999) laid the foundation for this body of work by supporting the idea that what people believe about the nature of talent and intelligence is closely related to the amount of effort they put forth in various situations. Some people believe that intelligence and other forms of talent are unchangeable (Resnick, 1999). Doing well means that one has innate ability and doing poorly means one does not (Resnick,

1999). According to this belief, talented people do not need to work hard to do well; therefore, appearing smart means one should not be working hard (Resnick, 1999). Other people believe that intelligence is something that grows (Resnick, 1999). These people view intelligence as incremental and expandable through one's efforts (Resnick, 1999).

In the *Perils and Promise of Praise* Dweck (2007) suggested that students with a fixed mindset become excessively concerned with how smart they are, repeatedly reject opportunities to learn, and do not recover well from setbacks. On the other hand, students with a growth mindset believe that intellectual ability is something that can be developed through education and effort ignites intelligence and causes it to grow. Dweck (2007) suggested that research in psychology and neuroscience supports the growth mindset. She affirmed that the brain has more plasticity than we ever imagined, aspects of intelligence can be grown, and dedication and persistence are key ingredients in achievement. In her work, Dweck indicated that studies suggest that students with growth mindsets outperform their classmates with fixed mindsets—even when controlling for equal baseline knowledge and skills.

In *The Secret to Raising Smart Kids* Dweck (2008) shared that students not only explain their failures differently, but they also hold different theories of intelligence. She wrote:

> The helpless students believe that intelligence is a fixed trait. Mistakes crack their self-confidence because they attribute errors to a lack of ability, which they feel powerless to change. The mastery oriented students, on the other hand, think intelligence is malleable and can be developed through education and hard work. (Dweck, 2008, p. 4)

A researcher from Germany, Rheinberg, conducted a study that measured teachers' mindsets at the beginning of the school year (Dweck, 2010). A portion of the teachers believed that intelligence is fixed and that instruction had no influence on students' achievement and their

ability to learn (Dweck, 2010). Other teachers believed that they could enhance students' learning. After a year of monitoring student progress, Rheinberg found that in the fixed mindset classrooms, students who entered as low achievers left as low achievers (Dweck, 2010). In contrast, in the growth mindset classrooms, students who started the year as low achievers ended the year as moderate to high achievers (Dweck, 2010). Dweck (2010) noted, "Teachers with a growth mindset don't just mouth the belief that every student can learn; they are committed to finding a way to make that happen" (p. 28).

Teaching students to have a growth mindset significantly raises their grades and achievement scores (Blackwell et al., 2007; Good, Arson, & Inzlicht, 2003). Adults are sending messages that shape students' mindsets all of the time (Dweck, 2010). When a student does well and adults praise his or her intelligence, they are sending a fixed mindset message (Dweck, 2010). In contrast, when adults praise effort, they send a growth mindset message and support the notion of building abilities through effort (Dweck, 2010).

The next section turns our focus to the relationship between effort and grit.

2.5 EFFORT AND GRIT

A focus on effort- not intelligence or ability- is key to success in school and life (Dweck, 2008). Furthermore, this research supports that grit—the ability to set goals and persist in working toward them—is a better predictor of academic success than IQ (Duckworth et al., 2007). Grit has been defined as perseverance and passion for long-term goals (Easton, 2012). It entails working strenuously toward challenges and maintaining effort and interest over years despite failure, adversity, and plateaus in progress (Easton 2012). People who exemplify grit exhibit

goal-directedness, high levels of motivation, sustained self-control, and a positive mindset (Goodwin & Miller, 2013).

In *Development and Validation of the Short Grit Scale* , authors Duckworth and Quinn (2009) introduced the Short Grit Scale as a tool to measure trait-level perseverance and passion for long-term goals. Using the Short Grit Scale, two cohorts of West Point cadet candidates and National Spelling Bee finalists were studied. Both studies concluded that grittier West Point cadets were less likely to drop out during their first summer of training and National Spelling Bee finalists who exemplified grit were more likely to advance to further rounds than their less gritty competitors (Duckworth & Quinn, 2009). Moreover, Duckworth surveyed managers from a private corporation to determine which ones would be successful and which ones would not (Hochanadel & Finamore, 2015). She also examined data from inner city first year elementary teachers to measure which ones would return the next year and be most successful in supporting students with achieving learning outcomes (Hochanadel & Finamore, 2015). Out of all of the studies conducted across different industries, one character trait emerged as the most significant predictor of success—grit (Hochanadel & Finamore, 2015).

Paul Tough's (2013) thesis, *How Children Succeed*, supported the notion that non-cognitive character traits are more important to success than cognitive abilities. In her book, *Mindset: The New Psychology of Success* , Dweck (2006) stated the following:

> For twenty years, my research has shown that the view you adopt for yourself profoundly affects the way you lead your life. It can determine whether you become the person you want to be and whether you accomplish things you value. (p. 6)

People do differ in intelligence, talent, and innate ability. In *The Secret to Raising Smart Kids*, Dweck (2008) suggested that research is converging on the conclusion that great

accomplishments, and even what we call genius, is typically the result of years of passion and dedication and not something that flows naturally from a gift. Mozart, Edison, Curie, Darwin, and Cezanne were not simply born with talent; they cultivated it through tremendous and sustained effort (Dweck, 2008). Similarly, hard work and discipline contribute more to school achievement than IQ does (Dweck, 2008). If homes and schools work to foster an emphasis on effort and a growth mindset, children will have the tools they will need to prosper as future citizens and employees (Dweck, 2008).

Resnick and Hall (2003) suggested that educational systems could be built around the assumption that effort actually creates ability and more and more research in psychology and neuroscience supports the importance of a growth mindset (Dweck, 2007). A key facet of holding a growth mindset includes self-regulation. A notable example of self-regulation comes in Walter Mischel's marshmallow experiment (Schoda, Mischel, & Peake, 1990). Researchers found that preschoolers who were able to withstand the temptation of eating a marshmallow for fifteen minutes to receive a second one were more successful when they reached high school and also scored 210 points higher on the SAT (Schoda et al., 1990).

With that being said, the brain has more plasticity than ever imagined and crucial aspects of intelligence can be grown through a focus on effort (Doige, 2007; Sternberg, 2005). Moreover, dedication and persistence in the face of obstacles are the key ingredients to withstanding achievement (Ericsson, Charness, Feltovich, & Hoffman, 2006). Experimental studies and practical school reforms have found that, if over an extended period of time students are treated as if they are intelligent, they actually become so (Resnick, 1999). The next section of the review of literature addresses the classroom implications for supporting an effort-based education.

2.6 CLASSROOM IMPLICATIONS

Previous research on motivation shows that the attributions people hold are linked to their academic performance, persistence, motivation, and self-efficacy (Horner & Gaither, 2004). Boaler (2013) suggested that ability and intelligence can be grown with effort and practice. When students believe that ability can be grown, their achievement improves significantly. When teachers believe that ability can grow, they provide all students the opportunity to achieve at high levels (Boaler, 2013). However, some educational systems have classroom strategies in place, such as ability grouping and tracking, that communicate a fixed mindset belief to students (Boaler, 2013).

Moreover, *Even Geniuses Work Hard*, explores the implications for fostering a growth mindset in classrooms and the learning tasks teachers can use to fuel students' long-term success (Dweck, 2010). The findings suggested that to best prepare students to benefit from meaningful work, teachers need to create a growth mindset in their classrooms. In this work, Dweck (2010) discussed cultivating this culture in classrooms by: (1) providing praise for effort and persistence, (2) promoting deep learning as opposed to fast learning, (3) teaching students about the differences between holding a fixed or growth mindset, (4) setting personal goals with students, (5) emphasizing challenges, not just success, and (6) establishing grading systems that support growth.

Attribution retraining is another step educators can take to cultivate a growth mindset in their classrooms. In *The Skillful Teacher*, Saphier and Gower (1997) defined attribution retraining as the ability to get students to change their attributions of success and failure away from factors over which they have little immediate control—luck, task difficulty, and innate

ability—to the factor over which they have the greatest control—effort. Figure 5 illustrates attribution theory and the manner in which people attribute achievement or lack of achievement.

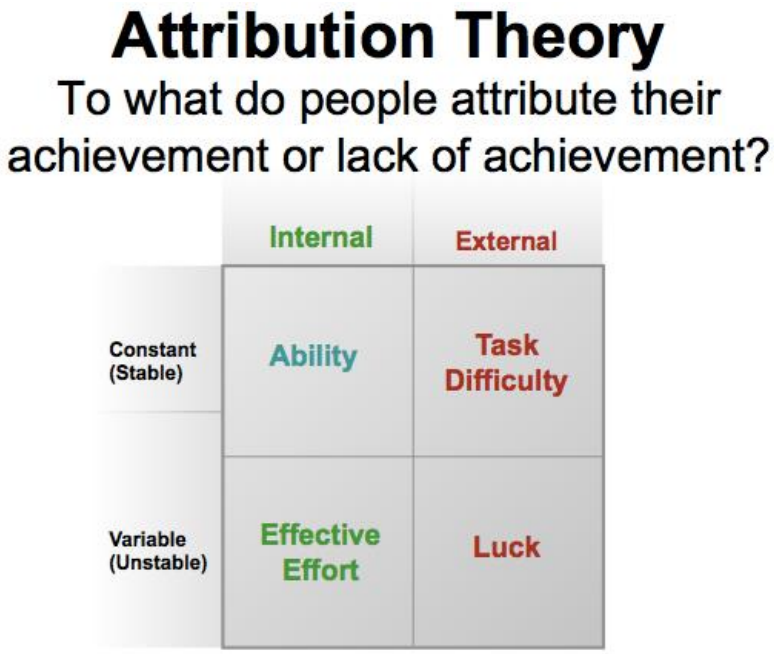


Figure 5. Attribution Theory
(Saphier & Gower, 1997)

Moreover, Horner and Gaither (2004) confirmed that students who attribute success to effort and failure to lack of effort tended to achieve higher than those who attribute success or failure to help from others or luck. Attribution-retraining strategies can be used in classrooms to promote a growth mindset in students. These strategies include: (1) avoiding innate ability belief statements, (2) focusing feedback on effort, (3) sharing personal stories of effort, (4) searching for outside examples, and (5) creating self-assessment instruments for students (Saphier & Gower, 1997).

It is possible to assist students in developing an incremental view of intelligence and learning-oriented goals (Resnick, 1999). One main goal is to have effort-based instructional strategies, academic rigor, and a thinking curriculum permeate through the system for every student (Resnick, 1999). Resnick's (1999) cognitive research suggested the following core

Principles of Learning to support an effort-based educational setting: (1) organizing for effort, (2) setting clear expectations, (3) recognizing accomplishments, (4) conducting fair and credible evaluations, (5) focusing on accountable talk in classrooms, (6) socializing intelligence, and (7) promoting learning as an apprenticeship. By definition, the Principles of Learning highlight the instructional environments that yield the highest levels of achievement for students (Resnick, 2001). In a school where teachers are committed to student achievement and growth, the Principles of Learning would be at the center of every classroom (Resnick & Hall, 2000).

Resnick and Hall (1998) also discussed the importance of teaching socialization as a way to promote effort-based philosophies and a growth mindset in classrooms. Socialization can be defined as the process by which children acquire the standards, values, and knowledge of their society (Resnick & Hall, 1998). The appropriate pedagogical tools for socializing intelligence are the very ones that Resnick and Hall supported for teaching other core content area knowledge and skills. Resnick and Hall stated that children develop cognitive strategies and effort-based beliefs about intelligence—the habits of mind associated with higher-order learning—when they are given opportunities to: (1) raise questions, (2) accept challenges to find solutions that are not immediately apparent, (3) explain concepts, (4) justify their reasoning, and (5) seek new information. When children are not held accountable for this kind of intelligent behavior, they take it as a signal that educators think they are not smart, and they often come to accept this judgment (Resnick & Hall, 1998). However, the notion to consider is that children actually become smart by being treated as if they already are (Resnick & Hall, 1998).

Dweck and Blackwell added to the depth and breadth of this work by developing their own set of best practices for establishing a growth mindset across classrooms. These best practices include: (1) establishing high expectations, (2) creating a risk-tolerant learning zone,

(3) giving feedback focused on process, and (4) introducing students to the concept of a malleable mind (Ferlazzo, 2012).

Goodwin and Miller (2013) also suggested several ways that educators can promote grit and effort-based educational philosophies in their classrooms. These strategies include: (1) designing early childhood programs that develop self-regulation abilities through structured play, (2) teaching students how to set goals and persist in working toward them, (3) explicitly teaching the growth mindset in classrooms, and (4) using high-interest out of school activities to help students learn how to persevere and succeed (Goodwin & Miller, 2013).

Educators who embrace classroom practices in which students are responsible and accountable for their own learning are more effective (Dweck, 2006; Dweck & Leggett, 1988; Rattan, Good, & Dweck, 2012; Resnick, 1999). Thus, a student who performs poorly on an end of unit assessment would be retaught and afforded the opportunity to retest. The goal in this classroom is not to sort students by their grade but to ensure student mastery of the learning. Educators who promote a growth mindset would also promote a culture in the classroom that permits students to have multiple opportunities to learn and receive additional support (Mangels, Butterfield, Lamb, Good, & Dweck, 2006). They choose remediation when a child is struggling as well as attributing the deficit in skill to a lack of effort and not innate ability (Blackwell et al., 2007; Dweck, 2006; Mangels et al., 2006).

Classroom praise and feedback would focus on effort rather than ability. Thus, when a student does well, the teacher would provide feedback like, "Your hard work paid off" or "Thanks to your efforts, you were able to succeed." This type of feedback leads the learner to connect his or her success directly to the effort he or she put forth (Dweck, 2006; Kamins & Dweck, 1999; Mueller & Dweck, 1998, Resnick, 1995). This culture rewards students for

completing rigorous tasks, and the feedback provided by the teacher reflects the effort the student put forth. Through their thoughts, words, and actions, these teachers convey time and time again that intelligence is malleable and can be grown overtime.

Educators with a growth mindset create classroom environments that promote a focus on effort creating ability. They display visual representations of effort in the classroom and establish opportunities for student goal setting and reflection. These educators create learning-goal environments that challenge learners to understand that effort is more essential than ability (Hong, Chiu, Dweck, Lin, & Wan, 1999; Mueller & Dweck, 1998; Resnick, 1995). These classroom environments are ones in which the learner is afforded the opportunity to improve his or her learning with each task presented (Resnick, 1995). In classrooms like these, the walls are littered with examples of student success due to effort. Children are often encouraged to set grit goals and chart their progress in working towards them. Moreover, pre- and post-assessment results are displayed to illustrate examples of student growth overtime. The final section of literature discusses the body of research supporting the teacher professional development needed in order to promote effort based educational strategies in classrooms.

2.7 TEACHER PROFESSIONAL DEVELOPMENT

Now that the literature has been reviewed regarding the ways in which teachers can promote effort-based educational strategies in classrooms, it is important to explore the most effective professional development practices to support them in doing so. Guskey and Sparks' (2002) research illustrated three critical professional development categories that are believed to have the most immediate and direct influence on improvements to student learning. These include: (1) content

characteristics, (2) process variables, and (3) context characteristics. Content characteristics refer to the "what" of professional development including the new knowledge, skills, and understandings to be gained (Guskey & Sparks, 2002). Process variables refer to the "how" of professional development. They include the type of professional development designed and the ways those experiences are planned, organized, carried-out, and followed-up within school settings (Guskey & Sparks, 2002). Context characteristics refer to the "who, when, where, and why" of professional development. This facet takes into consideration the key features of the culture and structure in which the professional development will be taking place (Guskey & Sparks, 2002).

Sparks and Hirsch (2000) added to this body of work by recommending a set of best practices for educator professional development. They noted that effective staff development must be: (1) results-driven and job-embedded, (2) focused on helping teachers become deeply immersed in subject matter and teaching methods, (3) curriculum-centered and standards-based, (4) sustained, rigorous and cumulative, and (5) directly linked to what teachers do in their classrooms (Sparks & Hirsch, 2000).

In addition, the National Staff Development Council (NSDC), a non-profit professional development association, suggested a set of standards and guidelines for effective professional development. These include: (1) setting clear and high standards for the learning of all students, (2) holding superintendents and principals, as well as teachers accountable for student achievement, (3) investing in teacher learning, (4) reviewing school improvement plans, (5) involving all teachers in continuous, intellectually rigorous study, (6) embedding opportunities for professional learning and collaboration in teachers' daily schedules, (7) providing teachers

with classroom assessment and other action research skills, and (8) recognizing the importance of skillful leaders (Sparks & Hirsch, 2000).

Similarly, in *Designing Powerful Professional Development for Teachers and Principals*, Sparks (2002) suggested that the highest quality of professional development: (1) focuses on deepening teachers' content knowledge and pedagogical skills, (2) includes opportunities for practice, research, and reflection, (3) is embedded in educators' work and takes place during the school day, (3) is sustained overtime, and (4) is founded with a sense of collegiality and collaboration.

In *Learning Organizations for Sustainable Education Reform*, Resnick and Hall (1998) stated that if there is any chance of the successful integration of effort-based educational systems in schools, a massive new effort in professional development will be needed. Not many educators or school leaders have been prepared to function in an effort-oriented system; therefore, they too should have the opportunity to engage in high-quality instruction (Resnick & Hall, 1998). Resnick and Hall (2003) noted, "This instruction should take the form of on-going professional development driven by the same set of learning and aptitude theories, as well as the same effort orientation, proposed as the new core for students in our schools" (p. 108). Moreover, educators will need to know how to create classroom environments that motivate effort, socialize intelligent habits of mind, and foster talk that is accountable to established knowledge and accepted standards of reasoning (Resnick & Hall, 1998).

In order to organize for this kind of professional development, it will be important to create learning organizations capable of improving performance and developing the new characteristics needed for success at work (Resnick & Hall, 1998). These learning organizations should be structured in a way that inspires educators; however, when necessary, the

organizations should simultaneously require continuous learning from every member of the organization (Resnick & Hall, 1998). Resnick and Hall (1998) suggested school districts create professional development systems in agreement with nested learning communities. In nested learning communities, all education professionals, not just students, are expected to be life-long learners (Resnick & Hall, 1998). In this context, schools become places where learning is the work of both students and professionals and continuous learning in pursuit of educational improvement is the standard (Resnick & Hall, 1998).

Nested learning communities are centered on the fundamental principle that ability can be achieved through effort and that an active, self-regulated methodology towards professional development produces high levels of achievement over time (Resnick & Hall, 1998). In short, nested learning communities are a reflection, at the professional level, of effort-based education within the pedagogical core (Resnick & Hall, 1998). Professional development within nested learning communities includes: (1) interactive classroom coaching, (2) common planning meetings held during the school day, (3) opportunities to visit other classrooms, (4) collegial conversations about instruction and the improvement of student work, (5) standard study groups, (6) professional book clubs, and (7) participation in course work (Resnick & Hall, 1998). Resnick and Hall (1998) stated,

> When a professional is defined as someone who is continually learning, and learning is seen as a function of effort more than aptitude, it is the willingness, initiative, persistence, and individual responsibility a person demonstrates toward the rigorous process of instructional improvement that defines his or her professional value." (p. 110)

Figure 6 illustrates the integral components of supporting nested learning communities in schools.

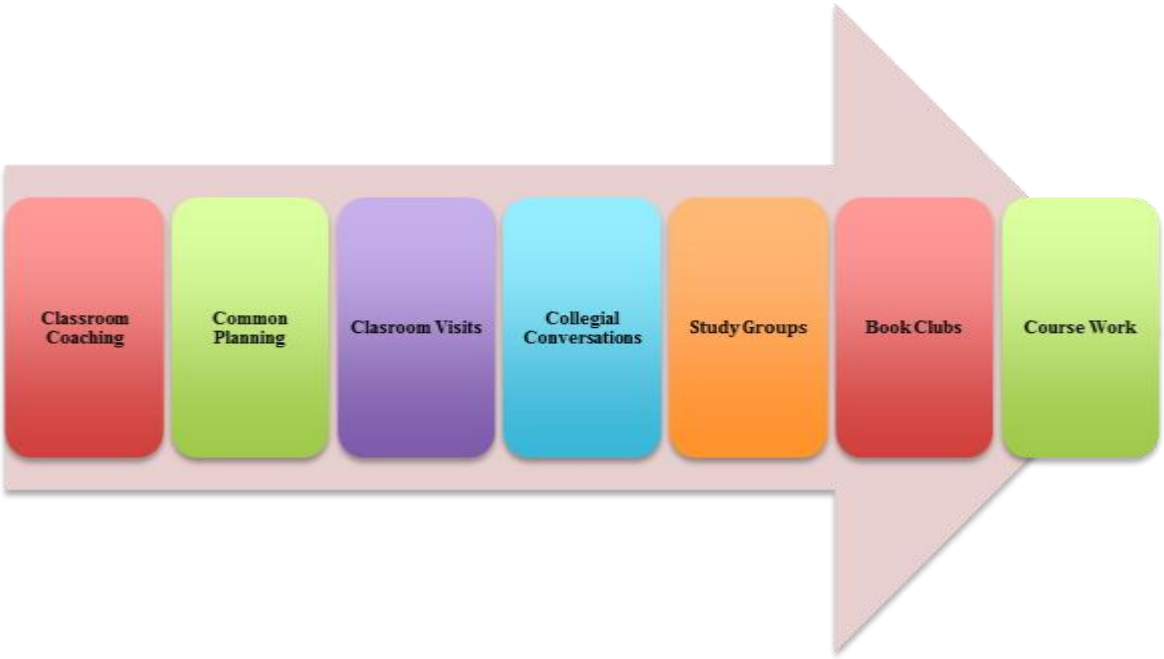


Figure 6. Nested Learning Communities
(Resnick & Hall, 1998)

2.8 CONCLUSION

With these research elements in place, there is still much to explore about the mindsets teachers' and students' hold and the degree to which one can teach non-cognitive character traits in classrooms. Moreover, schools and districts have very little information regarding ways to measure mindset theories and determine what teachers believe about students and their ability to learn.

If teachers are emphasizing effort-based educational philosophies in their classrooms, little is known about the strategies teachers are using to do so. Moreover, limited information is available to educational leaders for integrating effort-based educational strategies across classrooms through high-quality professional development experiences. Therefore, the aim of this inquiry is to explore the following questions:

Q1: How do selected elementary teachers perceive themselves in relation to a fixed or growth mindset?

Q2: How do selected teachers perceive mindset informing instruction?

Q3: What has been the nature of teachers' professional development related to mindset?

3.0 APPLIED INQUIRY PLAN

Chapter Three describes the inquiry setting of the study, participants, approach, instrumentation, and methodology. Since there is still much to be learned about the mindsets teachers hold, a survey was used to understand how selected elementary teachers perceive themselves in relation to having a fixed or growth mindset. If teachers are emphasizing effort-based educational philosophies in their classrooms, little is known about the strategies they are using to do so. Therefore, a portion of the study sought to gather information regarding how teachers perceive the mindset that informs their instruction. Thus, the final component of this study sought to examine the nature of teachers' professional development related to mindset.

3.1 INQUIRY SETTING

The research site for this inquiry was Kerr Elementary School. Kerr Elementary School is one of four elementary schools within the Fox Chapel Area School District. Fox Chapel Area School District is located in the suburbs of Pittsburgh, Pennsylvania. Kerr Elementary School educates approximately 400 students in grades Kindergarten through five. The school includes 44 professional staff members (Pennsylvania School Performance Profile, 2016). All professional staff members are rated as "highly qualified" and have an average of 15 years of professional experience (Pennsylvania School Performance Profile, 2016).

While Fox Chapel Area School District has four elementary schools, Kerr Elementary School is the only school within the district that serves a very diverse student population. Some students come from very affluent backgrounds, while 32% of the student population is served through the district's free and reduced lunch program (Pennsylvania School Performance Profile, 2016). Students from different races are also represented at the school. The racial composition is 75% white, 9% African American, 5% Asian, 6% multi-racial, and 5% Hispanic (Pennsylvania School Performance Profile, 2016). The student population is comprised of 3% gifted and 13% special education (Pennsylvania School Performance Profile, 2016).

Kerr Elementary School functioned as a meaningful context to investigate the problem of practice, because it serves the most diverse student population within the Fox Chapel Are School District. It was important to explore how teachers' mindset theory impacts students from different socioeconomic statuses and races. Moreover, it was meaningful to uncover the degree to which the gifted and special education populations were exposed to effort based educational strategies across classrooms. This was important to explore because the growth of students within different subgroups may vary depending on the mindset theory being employed by the teachers in their classrooms.

3.2 RESEARCH PARTICIPANTS

The research participants were the teachers at Kerr Elementary School located in Pittsburgh, Pennsylvania. The 44 professional staff members in this school setting educate approximately 400 students in grades Kindergarten through five. Teachers were asked to complete a survey that sought to explore questions associated with perceptions of mindset, classroom instruction

implications, and professional development needs. It was important to explore how this population of teachers perceive a fixed or growth mindset informing instruction. Moreover, it was essential to explore from the teachers' perspective how professional development could best support these efforts.

Another stakeholder group involved in this problem of practice is the school board and administration within the Fox Chapel Area School District. One focus area considered was the professional development needed to promote effort-based educational strategies across classrooms. If mindset theory shows to have an influence on student growth, administrators may need to consider the professional development experiences needed to support the implementation of effort-based educational strategies across classrooms. Moreover, the board of education should consider approving policy that supports professional development time devoted to these efforts.

3.3 INQUIRY APPROACH

The approach taken was exploratory in nature and focused on how teachers perceive fixed and growth mindset informing instruction. Through exploration of the inquiry questions posed, a study was conducted to explore how professional development informs mindset instruction in the classroom.

Qualtrics was used to employ an online survey and collect data. The survey employed had eighteen multiple-choice and two open-ended questions. Therefore, both quantitative and qualitative data were collected. Survey results were analyzed by describing the data collected. The results were also analyzed by using a cumulative frequency percent. Moreover, open-ended

questions were coded using an inductive approach. Codes emerged based upon teachers' responses to open-ended questions and themes in the literature.

3.4 INSTRUMENTATION

From the review of the literature, one relevant survey measure was discovered. The Education Week Research Center designed a survey titled, Mindset in the Classroom: A National Study of K-12 Teachers (Education Week Research Center, 2016). This survey was administered to a national sample of more than 600 teachers (Education Week Research Center, 2016). The survey was designed to examine teachers' perspectives of mindset, classroom practices, and professional development. Since the inquiry questions in this study center on teachers' perception of mindset, classroom instruction, and professional development, the survey being used is Mindset in the Classroom (Education Week Research Center, 2016).

Permission to use this survey by the Education Week Research Center was given to the researcher and can be found in Appendix A. A final text copy of the survey can be found in Appendix B. The Qualtrics view of the survey can be found in Appendix C. The research ties and connection to the inquiry questions can be found in Appendix D. Permission to employ the survey at Kerr Elementary School can be found in Appendix E.

3.5 RESEARCH METHODS AND DESIGN

The chart below illustrates the alignment of inquiry questions, research design, evidence, and analysis framing this problem of practice:

Table 1. Inquiry Questions, Research Design, Evidence, and Analysis

Inquiry Questions	**Design and/or Method**	**Evidence**	**Analysis and Interpretation**
Q1: How do selected elementary teachers perceive themselves in relation to having a fixed or growth mindset?	Mindset in the Classroom Survey (Education Week Research Center, 2016) Questions 4, 5, 6, 7, 8, and 9 Launched through the Qualtrics survey system.	Survey results showed how teachers perceive themselves in relation to having a fixed or growth mindset.	Survey results were analyzed by describing the data collected.
Q2: How do selected teachers perceive mindset informing their instruction?	Mindset in the Classroom Survey (Education Week Research Center, 2016) Questions 10, 11, 12, 13, 14, and 15 Launched through the Qualtrics survey system.	Survey results showed how teachers perceive mindset informing instruction.	Data collected was coded using an inductive approach. Codes emerged based upon teachers' responses to open ended questions and themes in the literature.
Q3: What is the nature of teachers' professional development related to mindset?	Mindset in the Classroom Survey (Education Week Research Center, 2016) Questions 16, 17, and 18, 19, and 20 Launched through the Qualtrics survey system.	Survey results showed how teachers perceive professional development informing mindset instruction.	Survey results were analyzed by escribing the data collected.

4.0 DATA, ANALYSIS, AND FINDINGS

4.1 INTRODUCTION

The first section of this chapter discusses the demographic characteristics of the study participants. Survey questions 1-3 illustrate teacher demographics. The second section illustrates teachers' perceptions of mindset. Survey questions 4-9 explore this concept. The third section describes how teachers perceive mindset informing instruction. Survey items 10-15 explore this area of the study. The fourth section discusses the nature of teachers' professional development related to mindset. Survey items 16-20 explore this facet of the study. The tables are organized by response. The greatest cumulative frequency percent in each table is shaded in green and the lowest cumulative frequency percent for each table is in blue.

4.2 PARTICIPANT CHARACTERISTICS

Teachers at Kerr Elementary School in Pittsburgh, Pennsylvania were selected as the participants for this study. An overview of the study and the survey was presented during a morning faculty meeting. The survey was open to participants for a two-week window and an email was sent to remind teachers of survey completion. Of the 48 teachers who received the survey, 90% (n=43) completed it. Of the respondents, 85% (n=35) were female and 14% (n=6) were male. The

distribution of teachers taking the survey indicated that 46% (n=19) were grade specific classroom teachers and 54% (n=22) were K-5 support or special area teachers. It was found that 20% (n=8) of respondents have 0-10 years of experience, 39% (n=16) have 11-20 years of experience, 36% (n=15) have 21-30 years of experience, and 5% (n=2) have 30 or more years of experience. Table 2 indicates the distribution of years of experience among survey respondents.

Table 2. Respondent Years of Experience

Answer	%	Count
Less than 3 years	0.0%	0
3-5 years	0.0%	0
6-10 years	19.5%	8
11-15 years	21.9%	9
16-20 years	17.0%	7
21-25 years	29.2%	12
26-30 years	7.3%	3
More than 30 years	4.8%	2
Total	100%	41

4.3 TEACHERS' PERCEPTIONS OF MINDSET

The first analysis conducted reported findings related to inquiry question one. This question explored how elementary teachers perceive themselves in relation to a fixed or growth mindset. The survey items associated with this inquiry question are items 4-9.

Item 4 asked teachers to consider how familiar various stakeholders are with growth mindset. Participants could respond using a Likert scale with qualifiers ranging from Very Familiar (5) to Not At All Familiar (1). Most participants (n=34) reported at the top of the scale of familiarity (with a rating of 4 or 5 on the scale) for personal knowledge of growth mindset, while no teachers shared that they were not at all familiar. Participants shared that 95% (n=38)

of administrators are at the top of the scale of familiarity (with a rating of 4 or 5 on the scale) for knowledge of growth mindset, while none were not at all familiar. They also indicated that 82.5% (n=33) of teachers in the school were at the top of the scale of familiarity (with a rating of 4 or 5 on the scale) for knowledge of growth mindset, while no teachers were not at all familiar. Table 3 illustrates the overall findings for item 4.

Table 3. Teachers' Perceptions of Familiarity with Growth Mindset

Question	Cumulative Frequency % by Familiarity (4 and 5)	Very Familiar 5	4	3	2	Not At All Familiar 1
You personally	85.0%	35.0%	50.0%	12.5%	2.5%	0.0%
Administrators in your district	95.0%	47.5%	47.5%	5.0%	0.0%	0.0%
Teachers in your school	82.5%	22.5%	60.0%	17.5%	0.0%	0.0%

Item 5 asked teachers to consider several factors and how important they were to student achievement. Participants could respond using a Likert scale with qualifiers ranging from Very Important (5) to Not At All Important (1). All (n=40) of the participants reported at the top of the scale of importance (with a rating of 4 or 5) that the following factors had the most significant impact on student achievement: student engagement and motivation, teaching quality, school climate, and social emotional learning. According to 67.5% (n=27) teachers, the least significant factor associated with student achievement was family background. Table 4 below illustrates the complete findings for this item.

Table 4. Teachers' Perceptions of Factors Associated with Student Achievement

Question	Cumulative Frequency % by Importance (4 and 5)	Very Important 5	4	3	2	Not At All Important 1
Student engagement and motivation	100.0%	95.0%	5.0%	0.0%	0.0%	0.0%
Teaching quality	100.0%	82.5%	17.5%	0.0%	0.0%	0.0%

Table 4. (continued)

School climate	100.0%	80.0%	20.0%	0.0%	0.0%	0.0%
Social and emotional learning	100.0%	77.5%	22.5%	0.0%	0.0%	0.0%
Parental support and engagement	97.5%	70.0%	27.5%	2.5%	0.0%	0.0%
Use of growth mindset with students	97.5%	70.0%	27.5%	2.5%	0.0%	0.0%
School safety	95.0%	60.0%	35.0%	2.5%	2.5%	0.0%
School discipline policies	95.0%	50.0%	45.0%	5.0%	0.0%	0.0%
Family background	67.5%	37.5%	30.0%	25.0%	7.5%	0.0%

Item 6 sought to explore the teachers' perceptions of student attitudes and beliefs that are most important for school success. Participants could respond using a Likert scale with qualifiers ranging from Strongly Agree (5) to Strongly Disagree (1). All (n=40) of the participants reported at the top of the scale of importance (with a rating of 4 or 5) that the following student attitudes and beliefs had the most significant impact on school success: administrators and teachers know students personally, students can find help at school when they have difficulties, and students have the ability to learn challenging material. According to 77.5% (n=31) of teachers, the least significant student attitude and belief contributing to school success was having autonomy and choice over the topics they study. Table 5 below illustrates the complete findings for this item.

Table 5. Teachers' Perceptions of Student Attitudes and Beliefs Important to School Success

Question	Cumulative Frequency % by Agreement (4 and 5)	Strongly Agree	Agree	Disagree	Strongly Disagree
Administrators and teachers know students personally	100.0%	52.5%	47.5%	0.0%	0.0%
They can find help at school when they have difficulties	100.0%	67.5%	32.5%	0.0%	0.0%
They have the ability to learn challenging material	100.0%	62.5%	37.5%	0.0%	0.0%

Table 5. (continued)

They can be successful in school	97.5%	62.5%	35.0%	2.5%	0.0%
They belong in the school community	97.5%	65.0%	32.5%	2.5%	0.0%
Administrators and teachers treat all students equally and fairly	95.0%	70.0%	25.0%	5.0%	0.0%
They can learn from failure and are willing to try new things in school	95.0%	55.0%	40.0%	5.0%	0.0%
Their academic abilities will increase through effort	95.0%	62.5%	32.5%	5.0%	0.0%
Their work in school has value for them	95.0%	52.5%	42.5%	5.0%	0.0%
Doing well in school will lead to a good career	92.5%	30.0%	62.5%	7.5%	0.0%
They have some autonomy and choice in the topics they study	77.5%	12.5%	65.0%	17.5%	5.0%

Item 7 had participants consider various student characteristics and rate the degree to which it was easy or difficult to teach students who hold each characteristic. Participants could respond from Very Easy (5) to Very Difficult (1). Of the respondents, 95% (n=38) indicated at the top of the scale of ease (with a rating of 4 or 5) that it is easiest to teach students who have grit and perseverance. In contrast, only 7.5% (n=3) of participants reported that it was very easy or easy to teach students who believe that intelligence is fixed. Table 6 illustrates the overall findings for item 7.

Table 6. Teachers' Perceptions of Student Characteristics and Ease of Teaching

Question	Cumulative Frequency %	Very Easy 5	Easy 4	Neither Easy Nor Difficult 3	Difficult 2	Very Difficult 1
Students who have grit and perseverance	95.0%	52.5%	42.5%	5.0%	0.0%	0.0%
Students who believe intelligence is malleable	87.5%	37.5%	50.0%	12.5%	0.0%	0.0%
Students who have innate ability in the subject you teach	82.5%	25.0%	57.5%	17.5%	0.0%	0.0%
Students who believe intelligence is fixed	7.5%	0.0%	7.5%	25.0%	57.5%	10.0%

Item 8 listed various student attributes and asked teachers to rate their association with holding a growth mindset. Participants could respond using a Likert scale with qualifiers ranging from Strongly Agree (5) to Strongly Disagree (1). According to the survey results, 100% (n=40) of participants agreed or strongly agreed that high levels of effort and persistence in schoolwork are associated with a student's growth mindset. In contrast, only 47.5% (n=19) reported that achieving high standardized tests scores is associated with a student's growth mindset. Table 7 illustrates the comprehensive findings for item 8.

Table 7. Teachers' Perceptions of Student Attributes Associated with Growth Mindset

Question	Cumulative Frequency % by Agreement (4 and 5)	Strongly Agree	Agree	Disagree	Strongly Disagree
High levels of effort in schoolwork	100.0%	67.5%	32.5%	0.0%	0.0%
Persistence in schoolwork	100.0%	82.5%	17.5%	0.0%	0.0%
Good attendance	97.5%	47.5%	50.0%	2.5%	0.0%
Frequent participation in class discussions	97.5%	55.0%	42.5%	2.5%	0.0%
Excitement about learning	97.5%	77.5%	20.0%	2.5%	0.0%
Consistent completion of homework assignments	95.0%	37.5%	57.5%	5.0%	0.0%
Frequent participation in extracurricular activities	82.5%	27.5%	55.0%	17.5%	0.0%
Good course grades	80.0%	12.5%	67.5%	17.5%	2.5%
High standardized test scores	47.5%	2.5%	45.0%	45.0%	7.5%

Item 9 sought to explore teachers' perceptions regarding fostering a growth mindset in their classrooms. Participants could respond using a Likert scale with qualifiers ranging from Strongly Agree (5) to Strongly Disagree (1). All (n=40) teachers reported that they strongly agree or agree that all students should have a growth mindset and that fostering a growth mindset is part of their job duties and responsibilities. Yet, only 82.5% (n=33) teachers reported that they

have adequate strategies and solutions to use when students do not have a growth mindset. Table 8 illustrates teachers' perceptions associated with fostering a growth mindset in their classrooms.

Table 8. Teachers' Perceptions Regarding Fostering a Growth Mindset

Question	Cumulative Frequency % by Agreement (4 and 5)	Strongly Agree	Agree	Disagree	Strongly Disagree
I think that fostering a growth mindset in students is part of my job duties and responsibilities	100.0%	65.0%	35.0%	0.0%	0.0%
I believe all students can and should have a growth mindset	100.0%	62.5%	37.5%	0.0%	0.0%
I am good at fostering a growth mindset in my students	97.5%	30.0%	67.5%	2.5%	0.0%
I think administrators in my district are good at fostering a growth mindset in students	94.8%	28.2%	66.6%	5.1%	0.0%
I think other teachers at my school are good at fostering a growth mindset in students	90.0%	30.0%	60.0%	10.0%	0.0%
I have adequate solutions and strategies to use when students do not have a growth mindset	82.5%	10.0%	72.5%	17.5%	0.0%

4.4 TEACHERS' PERCEPTIONS OF MINDSET INFORMING INSTRUCTION

The second analysis conducted reported findings related to inquiry question two. This question explored how elementary teachers perceive mindset informing instruction. The survey items associated with this inquiry question are items 10-15. Survey items 10-13 asked participants to respond using a Likert scale. Items 14 and 15 were open-ended in nature. The questions posed intended to investigate how teachers perceive mindset informing instruction.

Item 10 sought to explore how often teachers engaged in growth mindset practices in their classrooms. Participants could respond using a Likert scale with qualifiers ranging from

Every Day (5) to Never (1). All (n=40) of the participants indicated that every day or a few times a week they praise students for their effort, encourage students to try new strategies when they are struggling to learn a new concept, and encourage students who are already doing well to keep trying to improve. In contrast, only 37.5% (n=15) of teachers reported daily or a few times a week that they encourage students by telling them a new topic will be easy. Table 9 illustrates more comprehensively how often teachers engaged in specific mindset practices in their classrooms.

Table 9. Teachers' Perceptions of Employment of Mindset Practices in Classrooms

Question	Cumulative Frequency %	Every Day	A Few Times A Week	A Few Times A Month	A Few Times a Year	Never
Praising students for their effort	100.0%	97.5%	2.5%	0.0%	0.0%	0.0%
Encouraging students to try new strategies when they are struggling to learn a concept	100.0%	85.0%	15.0%	0.0%	0.0%	0.0%
Encouraging students who are already doing well to keep trying to improve	100.0%	60.0%	40.0%	0.0%	0.0%	0.0%
Telling students that it's alright to struggle	92.5%	70.0%	22.5%	5.0%	0.0%	2.5%
Praising students for their learning strategies	85%	52.5%	32.5%	10.0%	2.5%	2.5%
Suggesting that students seek help from other students on schoolwork	72.5%	15.0%	57.5%	22.5%	0.0%	5.0%
Praising students for their intelligence	53.8%	25.6%	28.2%	7.6%	12.8%	25.6%
Praising students for earning good scores or grades	50.0%	25.0%	25.0%	27.5%	10.0%	12.5%
Encouraging students by telling them a new topic will be easy to learn	37.5%	12.5%	25.0%	17.5%	20.0%	25.0%

Item 11 listed various statements teachers make and asked participants to rate how effective these statements are at encouraging students to adopt a growth mindset. Participants could respond using a Likert scale with qualifiers ranging from Very Effective (5) to Not At All Effective (1). According to the survey results, 100% (n=40) of the teachers surveyed indicated

that the statement, *"I really like the way you tried all kinds of strategies on that problem until you finally got it,"* was at the top of the scale of effectiveness. In contrast, only 15% (n=6) reported that the statement, *"This is easy; you will get this in no time,"* was at the top of the scale of effectiveness for encouraging students to learn a growth mindset. Table 10 illustrates more comprehensively how effective various statements are at encouraging students to learn a growth mindset.

Table 10. Teachers' Perceptions of Growth Mindset Statements

Question	Cumulative Frequency % by Effectiveness (4 and 5)	Very Effective 5	4	3	2	Not At All Effective 1
"I really like the way you tried all kinds of strategies on that problem until you finally got it."	100.0%	85.0%	15.0%	0.0%	0.0%	0.0%
"You really studied for your test and your improvement shows it."	97.5%	67.5%	30.0%	2.5%	0.0%	0.0%
"Great job. You must have worked really hard on this."	92.5%	70.0%	22.5%	5.0%	2.5%	0.0%
"I love how you stayed at your desk and kept your concentration in order to keep working on that problem."	90.0%	65.0%	25.0%	7.5%	2.5%	0.0%
"See you are good at this subject. You got an A on your last test."	30.0%	7.5%	22.5%	20.0%	32.5%	17.5%
"Look how smart you are."	27.5%	10.0%	17.5%	12.5%	22.5%	37.5%
"You are one of the top students in the class."	20.0%	10.0%	10.0%	17.5%	27.5%	35.0%
"This is easy; you will get this in no time."	15.0%	0.0%	15.0%	20.0%	22.5%	42.5%

Item 12 asked teachers to report the degree to which they have integrated the concept of student growth mindset into their teaching expectations and practices. Participants could respond using a Likert scale with qualifiers ranging from Deeply Integrated (5) to Not At All Integrated (1). According to the survey results, 75% (n=30) of the teachers reported on the high

end of the scale (with a rating of 4 or 5) of integration. None of the teachers (n=0) reported that they have not yet integrated student growth mindset into their teaching expectations and practices. Table 11 shows a more comprehensive look at the degree to which teachers have integrated the concept of student growth mindset into their teaching expectations and practices.

Table 11. Teachers' Perceptions of the Integration of Growth Mindset in Teaching Expectations and Practices

Answer	%	Count
Deeply Integrated 5	20.0%	8
4	55.0%	22
3	25.0%	10
2	0.0%	0
Not At All Integrated 1	0.0%	0
Total	100%	40

Item 13 asked teachers to consider the results that integrating the student growth mindset into their teaching expectations and practices will yield for students. Teachers could respond using a Likert scale with qualifiers ranging from Strongly Agree (5) to Strongly Disagree (1).

According to the survey results, 100% (n=40) of teachers strongly agree or agree that integrating the concept of student growth mindset into their teaching expectations in practices will improve student learning. Of the participants, 97.5% (n=39) strongly agree or agree that it will improve their own instruction and classroom practice. Moreover, 90% (n=36) strongly agree or agree that integrating a growth mindset will significantly change their classroom instruction. Table 12 illustrates the results that integrating the student growth mindset into their teaching expectations and practices will yield for students.

Table 12. Results of Teachers' Perceptions of Growth Mindset Integration for Students

Question	Cumulative Frequency % by Agreement (4 and 5)	Strongly Agree	Agree	Disagree	Strongly Disagree
Improve student learning	100.0%	80.0%	20.0%	0.0%	0.0%
Improve my own instruction and classroom practice	97.5%	70.0%	27.5%	2.5%	0.0%
Significantly change my classroom instruction	90.0%	35.0%	55.0%	10.0%	0.0%

Item 14 was an open-ended question that asked participants to describe a specific instance when they have integrated a student growth mindset into their teaching expectations and practices. Responses to this question were coded using an inductive approach. Codes emerged based upon teachers' responses to open ended questions. Themes in the literature supported teachers' responses. The themes in the literature suggested they ways in which teachers could integrate a growth mindset in their teaching expectations and practices. These themes included: (1) providing praise and feedback, (2) teaching students explicitly about fixed and growth mindset and introducing students to the importance of effort and the malleable mind, (3) creating a risk tolerant learning zone that emphasizes embracing challenges and provides multiple pathways to a goal, (4) using self-assessment and setting personal goals, (5) sharing personal stories of effort or finding outside examples, (6) providing students with multiple opportunities to learn through remediation, re-teaching, and re-testing, and (7) attributing failure to lack of effort and not innate ability. Table 13 illustrates these seven themes, the literature ties to each theme, and examples of participant responses.

Table 13. Themes Emerging from the Literature Related to Integrating a Growth Mindset Into Teaching Expectations and Practices

Emerging Code	Pre-Existing Theme in Literature	References	Participant Response Examples
Praise and feedback	Providing praise and feedback for effort and persistence	Dweck (2006); Dweck (2010); Dweck & Blackwell (2012); Horner & Gaither (2004); Kamins & Dweck (1999); Mueller & Dweck (1998); Resnick (1995)	"I no longer praise based on right or wrong. Instead I praise based on effort and grit." "I praise effort and persistence, and the strides toward goals."
Explicitly teaching mindset	Teaching students explicitly about fixed and growth mindset and introducing students to the importance of effort and the malleable mind	Dweck (2010); Dweck & Blackwell (2012); Goodwin & Miller (2013); Hong, Chiu, Dweck, Lin, & Wan (1999); Mueller & Dweck (1998); Resnick (1995); Resnick (1999)	"I have shared literature around a growth mindset. I have shown the video, Famous Failures. I have made several bulletin boards with quotes reflecting a growth mindset."
Embrace learning challenges	Create a risk tolerant learning zone that emphasizes embracing challenges and provides multiple pathways to a goal	Dweck (2010); Dweck & Blackwell (2012); Resnick & Hall (1998)	"Showing the kids that everyday everyone can learn. Teaching many different math strategies to solve a problem which assists in success as we all have different learning styles. Showing them there is not ONE WAY to solve a problem."
Self-assessment and personal goal setting	Using self-assessment and setting personal goals	Dweck (2010); Goodwin & Miller (2013); Horner & Gaither (2004)	"I have students take surveys and develop personal goals that were revisited."
Stories and examples	Sharing personal stories of effort or finding outside examples	Dweck & Blackwell (2012); Horner & Gaither (2004); Saphier & Gower (1997);	"I tell stories to motivate kids to give their best effort and learn from failure. I find motivational stories are easily remembered and very impactful."
Reteach and retest	Provide students with multiple opportunities to learn through remediation, re-teaching, and re-testing	Mangels, Butterfield, Lamb, Good, & Dweck (2006); Resnick (1999)	"Math Sprints help students to realize their growth. Students take short assessments, practice the skill, discuss other strategies with peers, then assess again. The teacher focuses on growth between the two assessments."

Table 13. (continued)

Attribution theory	Attributing failure to lack of effort and not innate ability	Mangels, Butterfield, Lamb, Good, & Dweck (2006); Saphier & Gower (1997)	"I only reward based on growth when it comes to increasing math fact fluency. Students who improve the number of items correct are praised NOT the highest score."

Item 15 was an open-ended question that asked participants to describe the most significant challenges they have faced when trying to foster a growth mindset in their students. Responses to this question were coded using an inductive approach. Codes emerged based on teachers' responses to open-ended questions. The themes associate with challenges included: (1) lack of parental support at home, (2) students' internal beliefs and motivation, and (3) supporting this mindset with struggling and high achieving learners. Table 14 illustrates these three themes and examples of participant responses.

Table 14. Teachers' Perceptions of the Challenges Associated with Integrating a Growth Mindset Into Teaching Expectations and Practices

Theme	**Participant Response Examples**
Lack of parental support at home	"Probably the most significant challenge is the lack of growth mindset in the home. Students get a mixed message from their parents." "The most significant challenge is trying to teach a growth mindset to students when parents have ingrained a fixed mindset at home."
Students' internal beliefs and motivation	"The most significant challenge that I face as I try to embed growth mindset principles into my instruction and classroom setting, is a belief within the students themselves that a growth mindset is real and plausible." "Some students do not show the motivation to have a growth mindset."
Supporting growth mindset with struggling and high achieving learners	"Sometimes it is difficult when working with lower achieving students who are not growing. It is hard to praise effort when the learning does not increase." "It's a challenge helping students who have often had learning come very easily to them learn to cope and persevere and find/employ strategies when facing struggles or challenges on complex topics."

4.5 TEACHERS' PROFESSIONAL DEVELOPMENT RELATED TO MINDSET

The third analysis conducted reported findings related to inquiry question two. This question explored the nature of teachers' professional development related to mindset. The survey items associated with this inquiry question are items 16-20. The questions posed investigated the nature of teachers' professional development related to mindset.

Item 16 asked teachers to describe their experience with professional development and training related to the concept of student growth mindset. According to the survey results, 76.9% (n=30) of participants reported that they have had some training and want more. No participants reported that they have had no training and do not want any. Table 15 fully illustrates participant responses.

Table 15. Teachers' Professional Development and Training Related to Growth Mindset

Answer	%	Count
I have had some training and want more	76.9%	30
I have had some training and do not want more	17.9%	7
I have had no training and want some	5.1%	2
I have had no training and do not want any	0.0%	0
Total	100%	39

Item 17 asked participants to report specific topics addressed in their training and professional development on the concept of student growth mindset. According to the survey results, encouraging students to try new strategies (n=34) and helping students see error or failure as an opportunity to learn and improve (n=31) were the two topics most often addressed in teachers' training and professional development. The topic addressed the least (n=6) was

using growth mindset with specific groups. Table 16 more thoroughly illustrates participants' responses.

Table 16. Topics Addressed During Training and Professional Development

Answer	%	Count
Encouraging students to try new strategies when they are struggling to learn a concept	87.18%	34
Helping students see error or failure as an opportunity to learn and improve	79.49%	31
Helping students understand that the brain is like a muscle and physically changes with training	58.97%	23
Curriculum materials and resources to teach using growth mindset	43.59%	17
Collaborating with colleagues to teach using a growth mindset	43.59%	17
Using growth mindset to teach state standards in Mathematics	30.77%	12
Using growth mindset to teach state standards in English Language Arts and literacy	25.64%	10

Table16. (continued)

Using growth mindset to teach state standards in other academic subjects	23.08%	9
Developing your own classroom-based assessments to measure growth mindset	23.08%	9
Using growth mindset with specific groups (e.g., students with disabilities or English-language learners)	15.38%	6
Other (please specify):	5.13%	2
Total	100%	39

Item 18 posed two statements about whether or not teachers' pre-service education and professional development prepared them to address student growth mindset in their instruction. Participants responded using a Likert scale with qualifiers ranging from Strongly Agree (5) to Strongly Disagree (1). According to the survey results, only 20.4% (n=30) of teachers reported that they strongly agree or agree that their pre-service education and training prepared them to address student growth mindset in their instruction. In contrast, 84.3% (n=33) of teachers said

that their in-service training and professional development prepared them to address student growth mindset in their instruction. Table 17 illustrates these results.

Table 17. Education and Training to Support Mindset Instruction

Question	Cumulative Frequency %	Strongly Agree	Agree	Somewhat disagree	Disagree	Strongly disagree
My pre-service education and training have prepared me to address student growth mindset in my instruction	20.4%	2.5%	17.9%	25.6%	30.7%	23.0%
My in-service training and professional development have prepared me to address student growth mindset in my instruction	84.3%	10.2%	74.3%	10.2%	5.1%	0.0%

Item 19 listed various sources and asked teachers to report the degree to which each source taught them about growth mindset. Participants could respond using a Likert scale with qualifiers ranging from A Lot (5) to Not At All (1). According to the participant responses, most teachers learned about growth mindset through administrators in their district (n=21), courses, training, or professional development (n=20), teachers at their school (n=19), and resources found on the Internet (n=18). Teachers reported using national education research or advocacy organization (n=2), state department website, publication, or communication (n=1), and for-profit companies (n=0) the least. Table 18 illustrates these results.

Table 18. Sources Used to Learn About Growth Mindset

Question	Cumulative Frequency % by Use (4 and 5)	A Lot 5	4	3	2	Not At All 1
Administrators in your district	76.9%	35.9%	41.0%	15.3%	7.6%	0.0%
Courses, training, or professional development	69.2%	28.2%	41.0%	23.0%	5.1%	2.5%
Teachers at your school	55.5%	2.6%	52.6%	21.0%	13.1%	10.5%
Resources you found on the internet	46.1%	12.8%	33.3%	23.0%	20.5%	10.2%

Table 18. (continued)

Resources you found in books	33.2%	10.2%	23.0%	30.7%	20.5%	15.3%
Other (please specify):	20.0%	20.0%	0.0%	20.0%	0.0%	60.0%
Conferences or seminars	18.9%	0.0%	18.9%	27.0%	13.5%	40.5%
District website, publication, or communication	17.8%	2.5%	15.3%	25.6%	25.6%	30.7%
News media (print or online)	15.2%	7.6%	7.6%	15.3%	15.3%	53.8%
Professional association	12.7%	2.5%	10.2%	23.0%	28.2%	35.9%
Social media	12.7%	2.5%	10.2%	20.5%	17.9%	48.7%
National education research or advocacy organization	5.1%	0.0%	5.1%	28.2%	20.5%	46.1%
State department website, publication, or communication	2.5%	0.0%	2.5%	25.6%	17.9%	53.8%
For-profit company	0.0%	0.0%	0.0%	10.2%	23.0%	66.6%

Item 20 lists several supports and asks teachers to consider if any of them would help better prepare them to foster a growth mindset in their students. The survey results showed that curricular resources aligned to growth mindset (n=26), more collaboration time with colleagues (n=26), assessment aligned to growth mindset (n=25), and more time for training and professional development (n=24) would best prepare teachers to foster a growth mindset in students. Table 19 illustrates more comprehensively how teachers responded to this survey item.

Table 19. Supports to Assist Teachers with Fostering a Growth Mindset in Students

Answer	%	Count
Curricular resources aligned to growth mindset	66.6%	26
More collaboration time with colleagues	66.6%	26
Assessment aligned to growth mindset	64.1%	25
More time for training and professional development	61.5%	24
More information about how growth mindset changes expectations for my instructional practice	56.4%	22
More information about how growth mindset changes expectations for students	56.4%	22

Table 13. (continued)			
	More individual planning time	51.2%	20
	Other (please specify):	2.5%	1
	Total	100%	39

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 INTRODUCTION

The conclusions and recommendations offered within this section are provided for each research question posed. For each research question, this section provides a brief summary of the findings of the study and analyzes these results in relationship to the findings in Mindset in the Classroom: A National Study of K-12 Teachers (Education Week Research Center, 2016). Moreover, this chapter also includes findings from Learning Mindsets in the Secondary Classroom: Implications for Instruction and Professional Development (Hadley, 2017). This chapter synthesizes all three studies and discusses the connections to the body of literature. Conclusions were drawn based on findings from this study at the elementary level, the secondary study, the national study, and the literature consulted on mindset theory.

5.2 RESEARCH QUESTION ONE: TEACHERS' PERCEPTIONS OF MINDSET

Q1: How do selected elementary teachers perceive themselves in relation to a fixed or growth mindset?

5.2.1 Conclusion One: Teachers perceive a strong link between growth mindset and a range of positive student outcomes.

More than three decades of research shows that a focus on effort, not intelligence or ability, is key to success in school and life (Dweck, 2008). Furthermore, this research supports that grit and the ability to set goals and persist in working toward them is a better predictor of academic success than IQ (Duckworth et al., 2007). Lauren Resnick's work discussed the importance of effort-based educational systems and speaks to the idea that effort actually creates ability and that people can become smart by working at the appropriate tasks (Resnick, 1998; Resnick & Hall, 2003). Teachers' perceptions in all three surveys support this notion.

Respondents in both the elementary and secondary surveys perceive the importance of cultivating a growth mindset with students. According to the survey results in both studies, 100% of the participants perceived that holding a growth mindset will lead to high levels of effort and persistence in schoolwork. The *Education Week* survey yielded similar findings. More than 90% of the teachers surveyed perceived that growth mindset is associated with excitement about learning, persistence, high levels of effort, and participation in class.

5.2.2 Conclusion Two: Teachers did not perceive a growth mindset being associated with earning good course grades and high standardized test scores.

The body of literature explored discusses the notion that hard work and discipline contribute more to school achievement than IQ does (Dweck, 2008). The research suggested that students with growth mindsets outperform their classmates with fixed mindsets—even when controlling for equal baseline knowledge and skills (Dweck, 2007). Moreover, the literature

suggested that teaching students to have a growth mindset significantly raises their grades and achievement scores (Blackwell et al., 2007; Good, Arson, & Inzlicht, 2003). Yet, in contrast, the participants in all three surveys did not perceive a growth mindset leading to good course grades or higher standardized test scores.

In the *Education Week* survey, fewer than 10% of teachers surveyed "strongly agree" that there is a link between growth mindset and earning good course grade. Only 4% saw such a connection with standardized test scores. The findings were similar in this study. Only 13% of teachers surveyed "strongly agree" that there is a link between growth mindset and earning good course grades and only 3% saw a connection to high standardized test scores. The secondary study yielded similar results. Only 29% of teachers surveyed "strongly agree" that there is a link between growth mindset and earning good course grades and only 11% saw a connection to high standardized test scores (Hadley, 2017).

5.2.3 Conclusion Three: Educators perceive growth mindset has great potential for teaching and learning.

The literature suggested that educational institutions have relied too heavily on intelligence tests and other standardized measures to predict achievement; however, inborn abilities are not the only factors that account for learning and success (Hochanadel & Finamore, 2015). Moreover, many schools measure content standards and IQ, but success in school and life depends on much more than a student's innate ability and annual acquisition of content specific knowledge and skills. In the 21st century, this traditional notion of intelligence is being challenged to focus less innate ability and IQ and more on students' ability to grow (Costa & Kallick, 2000). The survey findings supported this notion.

Nearly all participants in the three surveys reported that all students can and should have a growth mindset. Almost 100% of teachers in the three surveys also perceive that fostering a growth mindset is part of their job duties and responsibilities. Despite the fact that educators perceive that growth mindset has great potential for teaching and learning, significantly less teachers reported that they have adequate solutions and strategies to use when students do not have a growth mindset.

5.3 RESEARCH QUESTION TWO: TEACHERS' PERCEPTIONS OF MINDSET INFORMING INSTRUCTION

Q2: How do selected teachers perceive mindset informing instruction?

5.3.1 Conclusion Four: Practices thought to foster a growth mindset are consistently used in the classroom.

As teachers become more aware of growth mindset, they may look for ways to include it in their instruction (Education Week Research Center, 2016). The literature explores the implications for fostering a growth mindset in classrooms and the learning tasks teachers can use to fuel students' long-term success (Dweck, 2010). These educators create learning-goal environments that challenge learners to understand that effort is more essential than ability (Hong et al., 1999; Mueller & Dweck, 1998; Resnick, 1995).

The findings from all three studies support this notion by suggesting that to best prepare students to benefit from meaningful work, teachers need to create a growth mindset in their

classrooms. Of the respondents on the national survey, 68% reported on the high end of the scale for integrating the concept of students' growth mindset into their teaching expectations and practices (Education Week Research Center, 2016). In contrast, just 3% of study participants said they had not integrated growth mindset into their teaching expectations at all (Education Week Research Center, 2016). The results of the survey for this study yielded similar results. Of the participants, 75% reported on the high end of integrating growth mindset into teaching practices and expectations, while no teachers said that they had not. The secondary study yielded similar results. Of the participants, 63% reported on the high end of integrating growth mindset into teaching practices and expectations, while one teacher said that he or she had not (Hadley, 2017).

Responses to the surveys also shed light on approaches teachers are using to encourage their students, some of which may be more likely to foster a growth mindset in students than others (Education Week Research Center, 2016). According to all three surveys, the majority of teachers' report praising students for their effort on a daily basis. Moreover, the majority also indicated that a few times a week or more they encourage students who are already doing well to keep trying to improve and support students with trying new strategies when they are struggling. The use of practices that did not foster a growth mindset were used much less. For example, teachers in all three surveys were least likely to report that they encourage students by telling them a new topic will be easy to learn.

5.3.2 Conclusion Five: Teachers have identified common practices for integrating student growth mindset into their teaching expectations and practices.

Themes in the literature suggest the ways in which teachers can integrate a growth mindset into their teaching expectations and practices. These themes include (1) providing praise and feedback, (2) teaching students explicitly about fixed and growth mindset and introducing students to the importance of effort and the malleable mind, (3) creating a risk tolerant learning zone that emphasizes embracing challenges and provides multiple pathways to a goal, (4) using self-assessment and setting personal goals, (5) sharing personal stories of effort or finding outside examples, (6) providing students with multiple opportunities to learn through remediation, re-teaching, and re-testing, and (7) attributing failure to lack of effort and not innate ability (Dweck, 2006; Dweck, 2010; Dweck & Blackwell, 2012; Goodwin & Miller, 2013; Hong et al., 1999; Horner & Gaither, 2004; Kamins & Dweck, 1999; Mangels, Butterfield, Lam, Good, & Dweck, 2006; Mueller & Dweck, 1998; Resnick, 1995; Resnick, 1998; Resnick & Hall, 1998; Saphier & Gower, 1997).

Teachers have identified common practices for integrating student growth mindset into their teaching expectations and practices. The respondents in all three surveys reported that they integrate student growth mindset into their teaching practices by: (1) providing praise for persistence, (2) emphasizing and teaching about growth mindset in the classroom, (3) using self-assessments, (4) providing multiple strategies for learning, (5) giving feedback, and (6) setting process goals.

In contrast, a few practices emerged specific to each survey that were not cited by all three sets of respondents. These practices include: (1) supporting peer-to-peer learning, (2) sharing personal examples and stories of effort, and (3) teaching attribution theory to students.

5.3.3 Conclusion Six: Putting growth mindset into practice poses significant challenges.

Despite the fact that educators perceive growth mindset as having great potential for teaching and learning, they still report many challenges associated with putting it in practice. According to the national *Education Week* survey, 97% of participants agree that fostering a growth mindset is part of their job duties and responsibilities. Yet, only 5% strongly agree that they have adequate solutions and strategies to do so. Similarly, 100% of teachers participating in the survey for this study agree that fostering a growth mindset is part of their job duties and responsibilities. Yet, only 10% strongly agree that they have the solutions and strategies to effectively do so. The secondary survey yielded similar results. Of the participants, almost 100% agree that fostering a growth mindset is part of their job duties and responsibilities (Hadley, 2017). Yet, only 16% strongly agree that they have the solutions and strategies to effectively do so (Hadley, 2017).

Teachers in all three surveys identified a few common challenges they have faced while trying to foster a growth mindset in students. These common challenges include supporting growth mindset with different student populations and encouraging parents to reinforce a growth mindset at home. The *Education Week* national sample of teachers reported other challenges that the teachers in the other two surveys did not. Some of these challenges included: (1) teaching with limited class time, training, and resources, (2) grappling with standardized assessments, and (3) convincing colleagues and administrators to support a growth mindset.

5.4 RESEARCH QUESTION THREE: PROFESSIONAL DEVELOPMENT RELATED TO MINDSET

Q3: What has been the nature of teachers' professional development related to mindset?

5.4.1 Conclusion Seven: There is desire for more effective training.

Training and professional development may increase awareness about learning mindsets and educators' capacity to address them in the classroom. Resnick and Hall (1998) stated that if there is any chance of the successful integration of effort-based educational systems in schools, a massive new effort in professional development will be needed. Not many educators or school leaders have been prepared to function in an effort-oriented system; therefore, they too should have the opportunity to engage in the high-quality professional development necessary to do so (Resnick & Hall, 1998).

According to the national *Education Week* survey, only 7% of participants strongly agree that their pre-service training prepared them to address student growth mindset, and merely 9% indicated that their in-service training and professional development were helpful. Similarly, only 3% of teachers participating in the survey for this study strongly agreed that their pre-service training prepared them to address student growth mindset, and only 10% indicated that their in-service training and professional development were helpful. The secondary survey yielded similar results. Of the respondents, only 14% of participants strongly agree that their pre-service training prepared them to address student growth mindset and merely 9% indicated that their in-service training and professional development were helpful (Hadley, 2017).

A significant number of respondents from all three surveys indicated that they want more professional development, despite the fact teachers reported having prior training on the topic. Topics addressed in participants' prior professional development included: (1) encouraging students to try new strategies, (2) helping students to see error as an opportunity to improve, and (3) helping students understand that the brain is like a muscle. However, as the research and survey results illustrate, there clearly needs to be more professional development to successfully support teachers with implementing growth mindset into their teaching expectations and practices.

6.0 CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS

The aim of this inquiry was to: (1) investigate if teachers perceive themselves as having a fixed or growth mindset, (2) explore how teachers perceive mindset informing instruction, and (3) examine how teachers perceive professional development informing mindset instruction in the classroom. Although the data from this study cannot be generalized to other contexts, the findings may spark practical suggestions to practitioners towards identifying and understanding how growth mindset can affect a school setting. The implications, recommendations, and conclusions reported in this section are based on the literature and findings gathered through the inquiry methods within this study.

6.1 RECOMMENDATION ONE: SUPPORT TEACHERS WITH UNDERSTANDING THE IMPORTANCE OF CULTIVATING A GROWTH MINDSET WITH STUDENTS.

The results of this study and the processes which were involved to complete it strongly indicate that teachers perceive a strong link between growth mindset and a range of student outcomes. More than 90% of the teachers surveyed in all three studies perceived that a growth mindset is associated with excitement about learning, persistence, high levels of effort, and participation in class. A major implication entails supporting teachers with understanding the importance of cultivating a growth mindset with students. It is recommended that school leaders engage

teachers in understanding the importance of effort-based educational systems and make the provisions necessary to put these beliefs in practice.

6.2 RECOMMENDATION TWO: CONDUCT FUTURE STUDIES THAT EXPLORE THE NOTION OF STUDENT GROWTH MINDSET AND THE RELATIONSHIP WITH STUDENT ACHIEVEMENT.

Despite the fact that the literature suggests that teaching students to have a growth mindset significantly raises their grades and achievement scores, teachers from all three studies indicated otherwise. The teachers' perceptions gathered through the three studies implied that they do not perceive growth mindset as being associated with earning good grades and higher standardized test scores. Recommendations for professional practice should include further studies that explore the notion of student growth mindset and the relationship with student achievement. More information should be collected to gauge the degree to which holding a growth mindset has an impact on certain student populations.

6.3 RECOMMENDATION THREE: PROVIDE TEACHERS WITH RESOURCES AND STRATEGIES TO SUPPORT GROWTH MINDSET INSTRUCTION.

The body of literature and results of the study indicated that teachers perceive growth mindset as having great potential for teaching and learning within the classroom setting. Almost 100% of teachers in all three surveys perceived that fostering a growth mindset was part of their job duties

and responsibilities. However, significantly less teachers reported that they have the adequate solutions and strategies to use when students do not have a growth mindset. Studies have even found that teachers with self-reported growth mindsets often teach in ways more indicative of a fixed mindset (Varlas, 2016). A major implication from this study entails providing teachers with more training and support with growth mindset instruction. It is recommended that school leaders invest the time necessary to adequately support teachers to instill a growth mindset in students.

6.4 RECOMMENDATION FOUR: DEEPLY INVESTIGATE THE DEGREE TO WHICH TEACHERS ARE ACTUALLY UTILIZING GROWTH MINDSET STRATEGIES IN PRACTICE.

The teachers' perceptions gathered through this study imply that there are consistently used practices thought to foster a growth mindset in the classroom. Responses to all three surveys shed light on approaches teachers are using to encourage their students, some of which may be more than likely to foster a growth mindset in students than others. Teachers also reported that the use of practices that did not foster a growth mindset were used much less. However, it is important to know that teachers who report having a growth mindset still often teach in ways more indicative of a fixed. Some examples include tracking, placing a heavy emphasis on IQ, and using innate ability statements with children. A major recommendation from this study includes deeply investigating the degree to which teachers are actually utilizing growth mindset strategies in practice.

6.5 RECOMMENDATION FIVE: WORK TO IDENTIFY KEY MISCONCEPTIONS AND PROVIDE CLARITY REGARDING THE GROWTH MINDSET INSTRUCTION THAT WILL HAVE THE MOST IMPACT ON STUDENTS.

Most teachers reported on the high end of the scale for integrating the concept of growth mindset into their teaching expectations and practices. In contrast, very few said that they have not integrated growth mindset into their teaching practices at all. This study identified common practices that teachers use for integrating student growth mindset into their teaching expectations in practices. While common practices were identified, questions have still been raised about whether teachers might have key misconceptions regarding growth mindset that could undermine its effectiveness when put into practice for students. A recommendation for professional practice should include identify these misconceptions and work to provide clarity regarding growth mindset instruction that will have the most significant impact on students.

6.6 RECOMMENDATION SIX: ASSIST TEACHER WITH SURFACING THE CHALLENGES ASSOCIATED WITH MINDSET INSTRUCTION AND WORK TO OVERCOME THEM.

The results of this study indicate that putting growth mindset into practice poses significant challenges. These common challenges include supporting growth mindset with different student populations and encouraging parents to reinforce a growth mindset at home. All teachers participating in the survey for this study agree that fostering a growth mindset is part of their job duties and responsibilities. Yet, only 10% strongly agree that they have the solutions and

strategies to effectively do so. A major implication from this study is to understand that teachers can inform school leaders about the trials they encounter when putting growth mindset into practice. It is recommended that school leaders assist teachers with surfacing the challenges associated with growth mindset instruction and brainstorm ways to overcome them.

6.7 RECOMMENDATION SEVEN: DESIGN AND IMPLEMENT ON-GOING PROFESSIONAL DEVELOPMENT THAT WILL SUPPORT HIGH-QUALITY MINDSET INSTRUCTION.

The results of this study indicate that there is a need for more high-quality professional development for teachers associated with cultivating growth mindset in classrooms. Very few teachers reported that their pre-service and current in-service trainings have supported them to successfully integrate growth mindset into their teaching expectations and practices. Moreover, a significant number of respondents indicated that they want more professional development on the topic.

Professional development will increase awareness about learning mindsets and educators' capacity to successfully address them in the classroom (Education Week Research Center, 2016). It is recommended that school leaders design and implement professional development workshops that: (1) cultivate a deeper understanding of the science behind a growth mindset, (2) share practical techniques that can be used to build a growth mindset in classrooms, and (3) provide classroom strategies that cultivate an effort-based educational environment.

7.0 REFLECTIONS AND PERSONAL IMPLICATIONS

It is not struggle alone that leads to reward; it is the way the struggle has changed the perception one has of the world. Throughout this process I have struggles, strived, and learned. Now the world is understandable through scholarship, perseverance through challenges and, collaboration with other scholars.

7.1 DEVELOPING AS A SCHOLARLY PRACTITIONER

I see educational problems through the lens of a scholar. I understand educational challenges through the body of literature and how this literature has transpired over time. Past answers are found there and future problems are solved through scholarly exploration and analysis. I know am a scholar and I see the professional world this way.

7.2 BUILDING ACADEMIC PERSEVERANCE

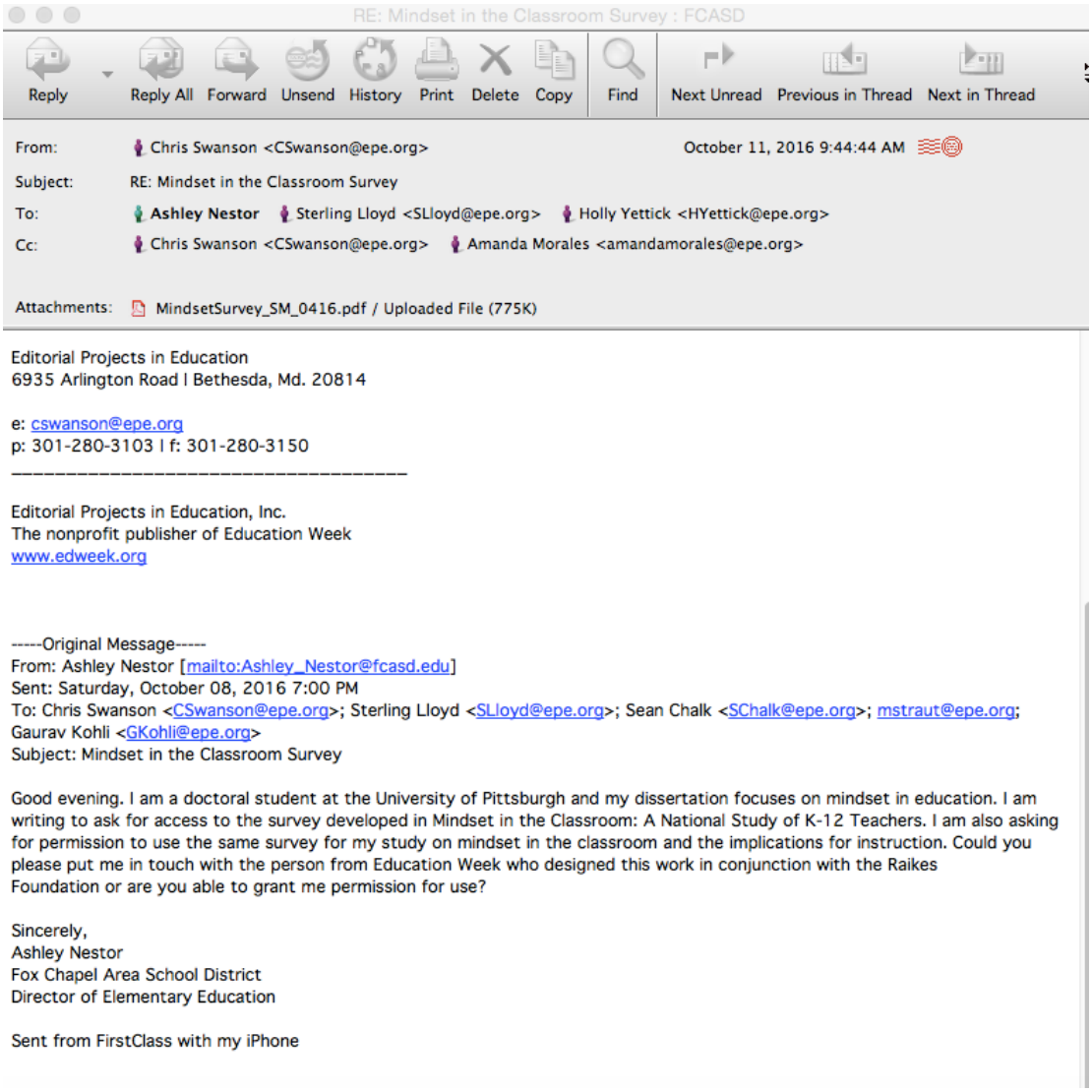
I developed academic perseverance throughout this process and have built the stamina necessary to accomplish organizational goals. I have learned that the state of being following initial failure is short-lived after a scholarly practitioner takes the time to focus, reflect, apply, and refine.

7.3 CREATING THE SPIRIT OF COLLABORATION

Exposure to others' thinking allowed me to be reflective of my own growth and development as a scholar and practitioner. There is an energy that develops when a group of people are working together towards the same goal. I found, that through my interactions with professors and peers, my work has been strengthened and made me a more thoughtful leader.

APPENDIX A

PERMISSION TO USE MINDSET IN THE CLASSROOM SURVEY



RE: Mindset in the Classroom Survey : FCASD

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From: Chris Swanson <CSwanson@epe.org> October 11, 2016 9:44:44 AM

Subject: RE: Mindset in the Classroom Survey

To: **Ashley Nestor** Sterling Lloyd <SLloyd@epe.org> Holly Yettick <HYettick@epe.org>

Cc: Chris Swanson <CSwanson@epe.org> Amanda Morales <amandamorales@epe.org>

Attachments: MindsetSurvey_SM_0416.pdf / Uploaded File (775K)

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p: 301-280-3103 | f: 301-280-3150
_____

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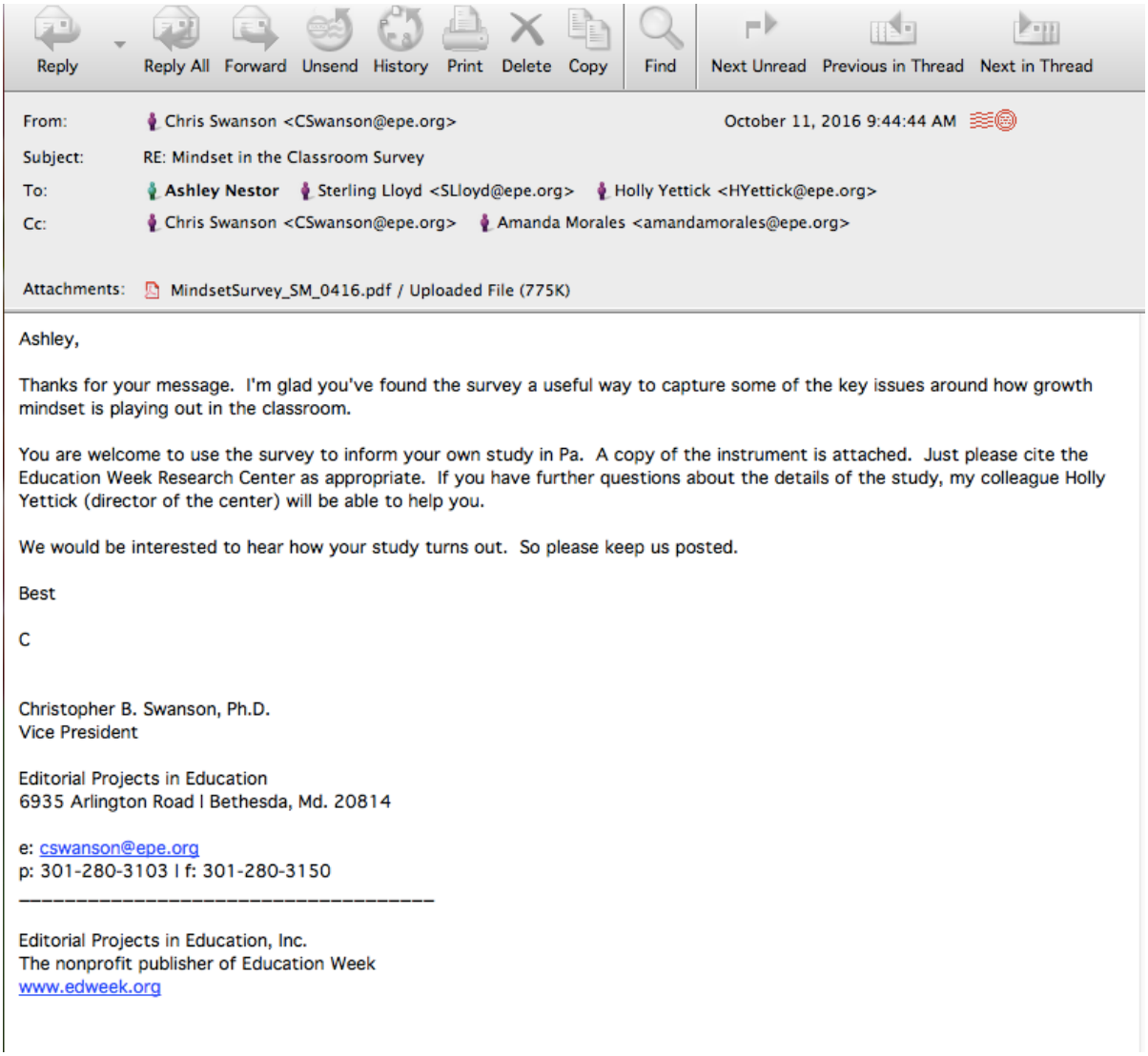
-----Original Message-----
From: Ashley Nestor [mailto:Ashley_Nestor@fcasd.edu]
Sent: Saturday, October 08, 2016 7:00 PM
To: Chris Swanson <CSwanson@epe.org>; Sterling Lloyd <SLloyd@epe.org>; Sean Chalk <SChalk@epe.org>; mstraut@epe.org; Gaurav Kohli <GKohli@epe.org>
Subject: Mindset in the Classroom Survey

Good evening. I am a doctoral student at the University of Pittsburgh and my dissertation focuses on mindset in education. I am writing to ask for access to the survey developed in Mindset in the Classroom: A National Study of K-12 Teachers. I am also asking for permission to use the same survey for my study on mindset in the classroom and the implications for instruction. Could you please put me in touch with the person from Education Week who designed this work in conjunction with the Raikes Foundation or are you able to grant me permission for use?

Sincerely,
Ashley Nestor
Fox Chapel Area School District
Director of Elementary Education

Sent from FirstClass with my iPhone



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Cc: Chris Swanson <CSwanson@epe.org> Amanda Morales <amandamorales@epe.org>

Attachments: MindsetSurvey_SM_0416.pdf / Uploaded File (775K)

Ashley,

Thanks for your message. I'm glad you've found the survey a useful way to capture some of the key issues around how growth mindset is playing out in the classroom.

You are welcome to use the survey to inform your own study in Pa. A copy of the instrument is attached. Just please cite the Education Week Research Center as appropriate. If you have further questions about the details of the study, my colleague Holly Yettick (director of the center) will be able to help you.

We would be interested to hear how your study turns out. So please keep us posted.

Best

C

Christopher B. Swanson, Ph.D.
Vice President

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Figure 7. Permission to Use Mindset in the Classroom Survey

APPENDIX B

MINDSET IN THE CLASSROOM TEXT SURVEY

Instrument modified, with permission from the survey used in the study, Mindset in the Classroom: A National Study of K-12 Teachers (Education Week Research Center, 2016).

Thank you for taking the time to participate in this survey.

This research study will explore mindset theories and the implications for classroom instruction and professional development. Some of the survey questions will ask about your perception of mindset, classroom practices and, professional development history.

The survey should take you approximately 10 to 15 minutes to complete. There are no right or wrong answers. Your participation in this survey is completely anonymous and voluntary. Your responses are in no way linked to your email address, name, school name, and school district.

Your responses are critical to the success of this study. I thank you for taking the time to complete this survey.

Respondent Background

Question #1: Years of service in education.

- Less than 3 years
- 3-5 years
- 6-10 years
- 11-15 years
- 16-20 years
- 21-25 years
- 26-30 years
- More than 30 years

Question #2: What grade or content area do you currently teach? _____

Question #3: Please indicate your gender.

a. Female
b. Male

Perspectives on Mindset

Question #4: How familiar are the following people with growth mindset?

- You personally
- Administrators in your school
- Teachers in your school

Not all familiar 1 2 3 4 5 Very familiar

Question #5: How important are the following factors to student achievement?

- Student engagement and motivation
- Teaching quality
- School climate
- School safety
- Social and emotional learning
- Parental support and engagement
- Use of growth mindset with students
- School discipline policies
- Family background

Not at all important 1 2 3 4 5 Very Important

Question # 6: To what extent do you agree that the following student beliefs are important to school success?

Students believe that…

- They can learn from failure and are willing to try new things in school
- They can find help at school when they have difficulties
- Their work in school has value for them
- They can be successful in school
- They belong in the school community
- Administrators and teachers know students personally
- Their academic abilities will increase through effort
- They have the ability to learn challenging material
- Administrators and teachers treat all students equally and fairly
- They have some autonomy and choice in the topics they study
- Doing well in school will lead to a good career

Strongly Disagree, Disagree, Agree, Strongly Agree

Question #7: How easy or difficult do you believe it is to teach students with the following characteristics?

Students who…

- Have grit and perseverance
- Believe that intelligence is malleable
- Have innate ability in the subject you teach
- Believe that intelligence is fixed or static

Very Difficult, Difficult, Neither Easy nor Difficult, Easy, Very Easy

Question #8: To what extent do you agree that the following are associated with a student's growth mindset?

- Excitement about learning
- Persistence in schoolwork
- High levels of effort on schoolwork
- Frequent participation in class discussions
- Good attendance
- Consistent completion of homework assignments
- Frequent participation in extracurricular activities
- Good course grades
- High standardized test scores

Strongly Disagree, Disagree, Agree, Strongly Agree

Question #9: To what extent do you agree with the following statements?

- All students and should have a growth mindset
- Fostering a growth mindset in students is part of my job duties and responsibilities
- I am good at fostering a growth mindset in my students
- Administrators at my school are good at fostering a growth mindset in students
- Other teachers at my school are good at fostering a growth mindset in students
- I have adequate solutions and strategies to use when students do not have a growth mindset

Strongly Disagree, Disagree, Agree, Strongly Agree

Classroom Instruction

Question #10: How often have you engaged in the following practices in your typical classroom?

Fosters growth mindset

- Praising students for their effort
- Encouraging students who are already doing well to keep trying to improve
- Encouraging students to try new strategies when they are struggling
- Praising students for their learning strategies
- Suggesting that students seek help from other students on schoolwork

Does not foster growth mindset

- Telling students that it is alright to struggle, not everyone is good at a given subject
- Praising students for their intelligence
- Praising students for earning good scores or grades
- Encouraging students by telling them a new topic will be easy to learn

Never, A few times a year, A few times a month, A few times a week, Every day

Question #11: How effective are these statements in encouraging students to learn with a growth mindset?

Fosters growth mindset

- I really like the way you tried all kinds of strategies on that problem until you finally got it.
- You really studied for your test and your improvement shows it.
- I love how you stayed at your desk and kept your concentration in order to keep working on that problem.
- Great job. You must have worked really hard on this.

Does not foster growth mindset

- See, you are good at this subject. You got an A on your last test.
- Look at how smart you are.
- You are one of the top students in the class.
- This is easy. You will get this in no time.

Not At All Effective 1 2 3 4 5 Very Effective

Question #12: To what extent have you integrated growth mindset into your teaching expectations and practice?

Not At All Integrated 1 2 3 4 5 Deeply Integrated

Question #13: To what extent do you agree that integrating growth mindset into your teaching will produce the following results?

- Improve student learning
- Improve my own instruction and classroom practice
- Significantly change my classroom instruction

Strongly Disagree, Disagree, Agree, Strongly Agree

Question #14: How have you integrated student growth mindset into your teaching expectations and practice? (Open Ended Question)

Question #15: If you have tried to foster a growth mindset in your students, what are the most significant challenges you have faced in doing so? Please describe in the space below. (Open Ended Question)

Professional Development

Question #16: Which of the following best describes your experience with professional development and training related to growth mindset?

- I have had some training and want more
- I have had some training and do not want more
- I have had no training and want some
- I have had no training and do not want any

Question #17: Which of the following topics have been addressed in your training and professional development on growth mindset? Select all that apply.

- Encouraging students to try new strategies when they are struggling to learn a concept
- Helping students see error or failure as an opportunity to learn and improve
- Helping students understand that the brain is like a muscle and physically changes with training
- Using growth mindset with specific student groups (e.g., students with disabilities)
- Collaborating with colleagues to teach using growth mindset
- Developing your own classroom-based assessments to capture growth mindset
- Curriculum materials and resources to teach using growth mindset
- Using growth mindset to teach standards and other academic subjects
- Using growth mindset to teach state standards in English Language Arts and literacy
- Using growth mindset to teach state standards in mathematics

- Other
- Not applicable

Question #18: My training has prepared me to address student growth mindset.

- Pre-service teaching
- In-service training and professional development

Strongly Disagree, Disagree, Agree, Strongly Agree

Question #19: How much have you learned about growth mindset from the following sources?

- Homemade or DIY resources you found on the internet
- Homemade or DIY resources you found in books
- Teachers at your school
- Administrators at your school
- District personnel
- District website, publication, or communication
- State department website, publication, or communication
- Professional association
- National education research or advocacy organization
- For-profit company
- News media (print or online)
- Social media
- Conferences or seminars
- Courses, trainings, or professional development
- Other (please specify)

Not Very Much 1 2 3 4 5 A Lot

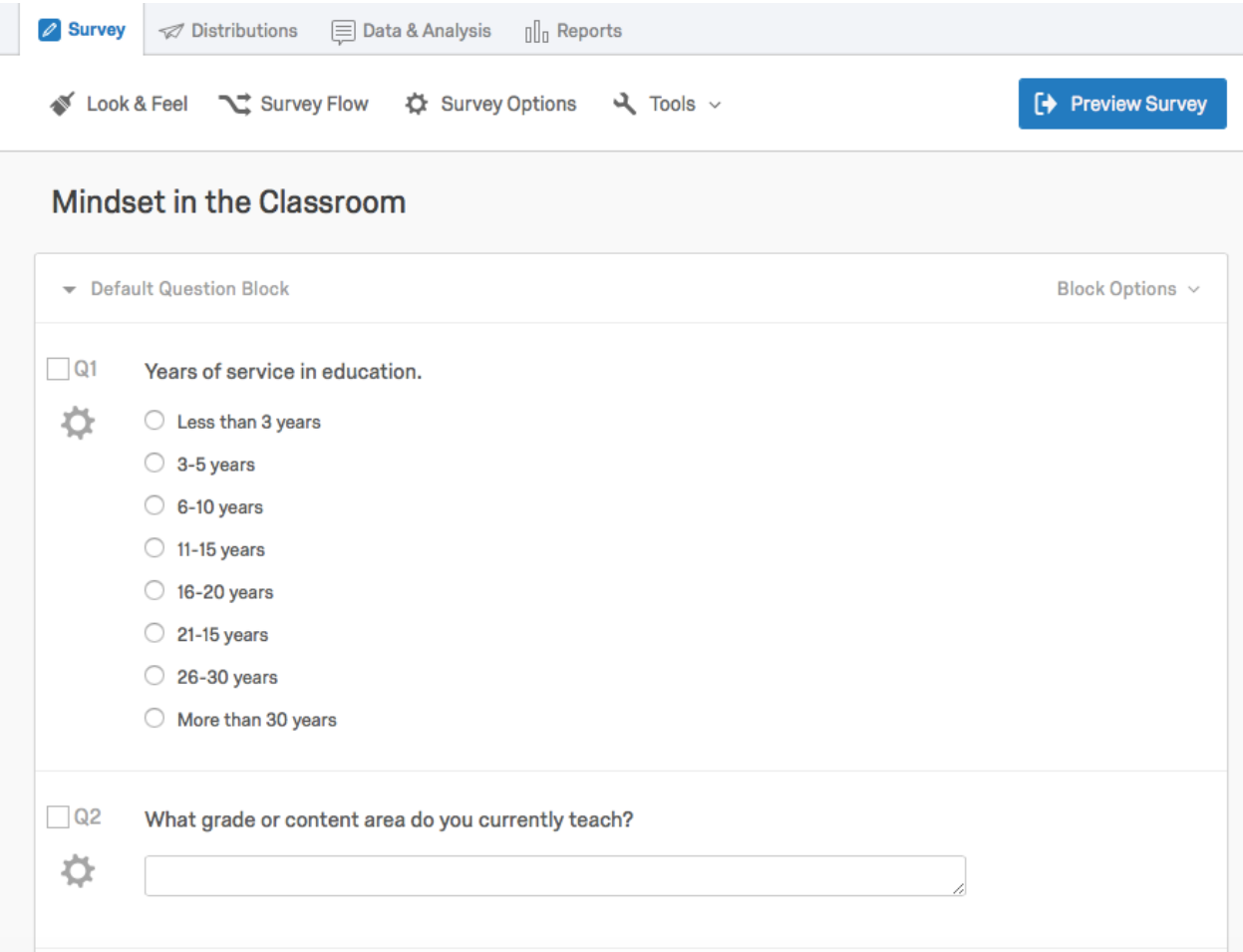
Question #20: Which of the following would help you fee better prepared to foster a growth mindset in your students? Select all that apply.

- More information about how growth mindset changes expectations for my instructional practice
- More information about how growth mindset changes expectations for students
- Curricular resources aligned to growth mindset
- Assessments aligned to growth mindset
- More planning time
- More collaboration time with colleagues
- More time for training and professional development
- Other (please specify)

APPENDIX C

MINDSET IN THE CLASSROOM QUALTRICS SURVEY VIEW

MINDSET IN THE CLASSROM QUALTRICS SURVEY VIEW



Q3 Please indicate your gender.

- Female
- Male

Q4 How familiar are the following people with growth mindset? Please rate your response on 5-point scale, where 5 is "very familiar" and 1 is "not at all familiar."

	Very Familiar 5	4	3	2	Not At All Familiar 1
You personally					
Administrators in your school					
Teachers in your school					

Q5 How important are the following factors to student achievement? Please rate your response on 5-point scale, where 5 is "very important" and 1 is "not at all important."

	Very Important 5	4	3	2	Not At All Important 1
Student engagement and motivation					
Teaching quality					
School climate					
School safety					
Social and emotional learning					
Parental support and engagement					
Use of growth mindset with students					
School discipline policies					
Family background					

Q6

To what extent do you agree or disagree that the following student attitudes and beliefs are important to school success? Student believe that....

	Strongly Agree	Agree	Disagree	Strongly Disagree
Administrators and teachers know students personally	○	○	○	○
Administrators and teachers treat all students equally and fairly	○	○	○	○
Doing well in school will lead to a good career	○	○	○	○
They can be successful in school	○	○	○	○
They can find help at school when they have difficulties	○	○	○	○
They have some autonomy and choice in the topics they study	○	○	○	○
The can learn from failure and are willing to try new things in school	○	○	○	○
They have the ability to learn challenging material	○	○	○	○
They belong in the school community	○	○	○	○
Their academic abilities will increase through effort	○	○	○	○
Their work in school has value for them	○	○	○	○

Q7

How easy or difficult do you believe it is to teach students with the following characteristics? Please rate your responses on a five-point scale, where 5 is "very easy" and 1 is "very difficult."

	Very Easy 5	Easy 4	Neither Easy Nor Difficult 3	Difficult 2	Very Difficult 1
Students who believe intelligence is malleable	○	○	○	○	○
Students who believe intelligence is fixed	○	○	○	○	○
Students who have innate ability in the subject you teach	○	○	○	○	○
Students who have grit and perseverance	○	○	○	○	○

Q8

To what extent do you agree or disagree that the following are associated with a student growth mindset?

	Strongly Agree	Agree	Disagree	Strongly Disagree
Good attendance	○	○	○	○
Consistent completion of homework assignments	○	○	○	○
Frequent participation in class discussions	○	○	○	○
Frequent participation in extracurricular activities	○	○	○	○
High standardized test scores	○	○	○	○
High levels of effort in schoolwork	○	○	○	○
Good course grades	○	○	○	○
Persistence in schoolwork	○	○	○	○
Excitement about learning	○	○	○	○

Q9

To what extent do you agree or disagree with the following statements?

	Strongly Agree	Agree	Disagree	Strongly Disagree
I am good at fostering a growth mindset in my students	○	○	○	○
I have adequate solutions and strategies to use when students do not have a growth mindset	○	○	○	○
I think that fostering a growth mindset in students is part of my job duties and responsibilities	○	○	○	○
I believe all students can and should have a growth mindset	○	○	○	○
I think administrators at my school are good at fostering a growth mindset in students	○	○	○	○
I think other teachers at my school are good at fostering a growth mindset in students	○	○	○	○

Q10

This school year, how OFTEN have you engaged in the following practices in your typical classroom?

	Every Day	A Few Times A Week	A Few Times A Month	A Few Times a Year	Never
Praising students for their effort	○	○	○	○	○
Encouraging students to try new strategies when the are struggling to learn a concept	○	○	○	○	○
Telling students that it's alright to struggle because not everyone is good at a given subject	○	○	○	○	○
Encouraging students who are already doing well to keep trying to improve	○	○	○	○	○
Praising students for their intelligence	○	○	○	○	○
Suggesting that students seek help from other students on schoolwork	○	○	○	○	○
Encouraging students by telling them a new topic will be easy to learn	○	○	○	○	○
Praising students for earning good scores or grades	○	○	○	○	○
Praising students for their learning strategies	○	○	○	○	○

Q11

The following list contains statements teachers sometimes make to students. How effective are these statements at encouraging students to learn a growth mindset? Please rate your responses on a five-point scale, where 5 is "very effective" and is 1 is "not at all effective."

	Very Effective 5	4	3	2	Not At All Effective 1
"This is easy you will get this in no time."	○	○	○	○	○
"Great job. You must have worked really hard on this."	○	○	○	○	○
"See you are good at this subject. You got and A on your last test."	○	○	○	○	○
"You really studied for your test and your improvement shows it."	○	○	○	○	○
"Look how smart you are."	○	○	○	○	○
"You are one of the top students in the class."	○	○	○	○	○
"I really like the way you tried all kinds of strategies on that problem until you finally got it."	○	○	○	○	○
"I love how you stayed at your desk and kept your concentration in order to keep working on that problem."	○	○	○	○	○

Q12

To what extent have you integrated the concept of student growth mindset into your teaching expectations and practice? Please rate your response on a five-point scale, where 5 is "deeply integrated" and 1 is "not at all integrated."

	Deeply Integrated 5	4	3	2	Not At All Integrated 1
Please rate your response:	○	○	○	○	○
Click to write Statement 2	○	○	○	○	○
Click to write Statement 3	○	○	○	○	○

Q13

To what extent doe agree or disagree that integrating the concept of student growth mindset into your teaching expectations and practice will produce the following results?

	Strongly Agree	Agree	Disagree	Strongly Disagree
Improve my own instruction and classroom practice	○	○	○	○
Improve student learning	○	○	○	○
Significantly change my classroom instruction	○	○	○	○

Q14

If you have integrated the concept of student growth mindset into your teaching expectations and practices, how have you done so? In a paragraph, please describe a specific instance using the space below.

Q15

If you have tried to foster a growth mindset in your students, what are the most significant challenges you have faced in doing so? Please list these challenges in detail using the space below.

Q16

Which of the following best describes your experience with professional development and training related to the concept of student growth mindset?

- I have had some training and want more
- I have had some training and do not want more
- I have had no training and want som
- I have had no training and do not want any

Q17

Which of the following topics have been addressed in your training and professional development on the concept of student growth mindset? Select all that apply.

- [ ] Using growth mindset to teach state standards in English Language Arts and literacy
- [ ] Using growth mindset to teach state standards in mathematics
- [ ] Using growth mindset to teach state standards in other academic subjects
- [ ] Curriculum materials and resources to teach using growth mindset
- [ ] Helping students see error or failure as an opportunity to learn and improve
- [ ] Helping students understand that the brain is like a muscle and physically changes with training
- [ ] Using growth mindset with specific groups (e.g., students with disabilities or English-language learners)
- [ ] Collaborating with colleagues to teach using growth mindset
- [ ] Developing your own classroom-based assessments to capture growth mindset
- [ ] Encouraging students to try new strategies when they are struggling to learn a concept
- [ ] Other (please specify):

Q18

To what extent do you agree or disagree with the following statements?

	Strongly Agree	Agree	Somewhat disagree	Disagree	Strongly disagree
My preservice education and training have prepared me to address student growth mindset in my instruction	○	○	○	○	○
My in-service training and professional development have prepared me to address student growth mindset in my instruction	○	○	○	○	○

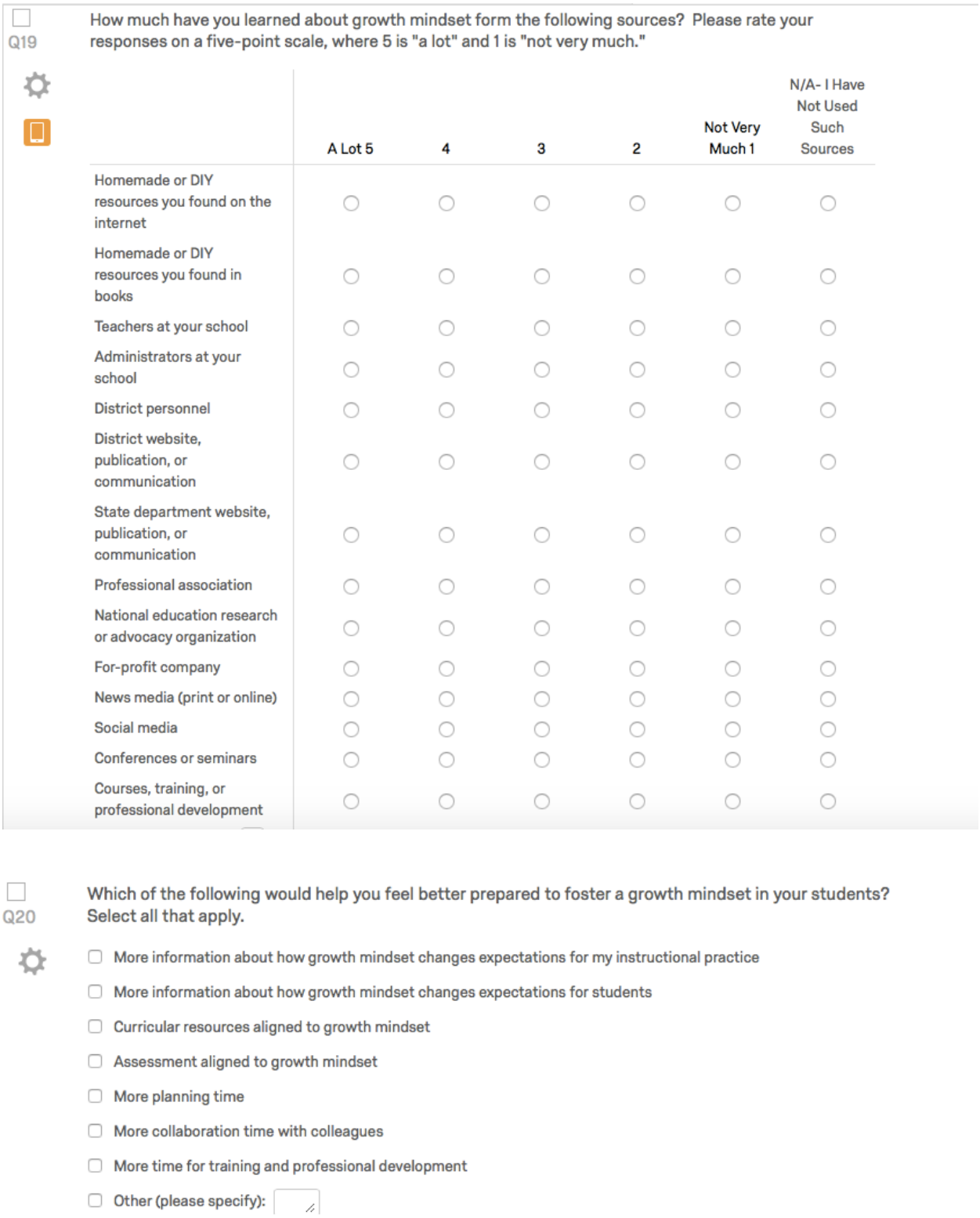


Figure 8. Mindset in the Classroom Qualtrics Survey View

APPENDIX D

MINDSET IN THE CLASSROOM SURVEY RESEARCH TIES AND CONNECTIONS TO INQUIRY QUESTIONS

Table 20. Mindset in the Classroom Survey Research Ties and Connections to Inquiry Questions

Perspectives on Mindset Survey Questions	Research Ties	Inquiry Question Connection
Question #4: How familiar are the following people with growth mindset?	Dweck, 1999; Dweck, 2006; Dweck, 2007; Dweck, 2008; Dweck, 2010	Q1: How do selected elementary teachers perceive themselves in relation to having a fixed or growth mindset?
Question #5: How important are the following factors to student achievement?	Dweck, 1999; Dweck, 2006; Dweck, 2007; Dweck, 2008; Dweck, 2010	Q1: How do selected elementary teachers perceive themselves in relation to having a fixed or growth mindset?
Question # 6: To what extent do you agree that the following student beliefs are important to school success?	Dweck, 1999; Dweck, 2006; Dweck, 2007; Dweck, 2008; Dweck, 2010	Q1: How do selected elementary teachers perceive themselves in relation to having a fixed or growth mindset?
Question #7: How easy or difficult do you believe it is to teach students with the following characteristics?	Dweck, 1999; Dweck, 2006; Dweck, 2007; Dweck, 2008; Dweck, 2010	Q1: How do selected elementary teachers perceive themselves in relation to having a fixed or growth mindset?

Table 20 continued

Question #8: To what extent do you agree that the following are associated with a student's growth mindset?	Dweck, 1999; Dweck, 2006; Dweck, 2007; Dweck, 2008; Dweck, 2010	Q1: How do selected elementary teachers perceive themselves in relation to having a fixed or growth mindset?
Question #9: To what extent do you agree with the following statements?	Dweck, 1999; Dweck, 2006; Dweck, 2007; Dweck, 2008; Dweck, 2010	Q1: How do selected elementary teachers perceive themselves in relation to having a fixed or growth mindset?
Classroom Practices Survey Questions	**Research Ties**	**Inquiry Question Connection**
Question #10: How often have you engaged in the following practices in your typical classroom?	Blackwell et. al., 2007; Boaler, 2013; Dweck, 2006; Dweck & Legget, 1988; Felazzo, 2012; Goodwin & Miller, 2013; Hong et. al., 1999; Horner & Gaither, 2004; Kamins & Dweck, 1999; Mangels et. al., 2006; Mueller & Dweck, 1998; Rattan et al., 2012; Resnick, 1995; Resnick, 1999; Resnick, 2001; Resnick & Hall, 1997; Saphier & Gower, 1997	Q2: How do selected teachers perceive mindset informing their instruction?
Question #11: How effective are these statements in encouraging students to learn with a growth mindset?	Blackwell et. al., 2007; Boaler, 2013; Dweck, 2006; Dweck & Legget, 1988; Felazzo, 2012; Goodwin & Miller, 2013; Hong et. al., 1999; Horner & Gaither, 2004; Kamins & Dweck, 1999; Mangels et. al., 2006; Mueller & Dweck, 1998; Rattan et al., 2012; Resnick, 1995; Resnick, 1999; Resnick, 2001; Resnick & Hall, 1997; Saphier & Gower, 1997	Q2: How do selected teachers perceive mindset informing their instruction?
Question #12: To what extent have you integrated growth mindset into your teaching expectations and practice?	Blackwell et. al., 2007; Boaler, 2013; Dweck, 2006; Dweck & Legget, 1988; Felazzo, 2012; Goodwin & Miller, 2013; Hong et. al., 1999; Horner & Gaither, 2004; Kamins & Dweck, 1999; Mangels et. al., 2006; Mueller & Dweck, 1998; Rattan et al., 2012; Resnick,	Q2: How do selected teachers perceive mindset informing their instruction?

Table 20 continued

	1995; Resnick, 1999; Resnick, 2001; Resnick & Hall, 1997; Saphier & Gower, 1997	
Question #13: To what extent do you agree that integrating growth mindset into your teaching will produce the following results?	Blackwell et. al., 2007; Boaler, 2013; Dweck, 2006; Dweck & Legget, 1988; Felazzo, 2012; Goodwin & Miller, 2013; Hong et. al., 1999; Horner & Gaither, 2004; Kamins & Dweck, 1999; Mangels et. al., 2006; Mueller & Dweck, 1998; Rattan et al., 2012; Resnick, 1995; Resnick, 1999; Resnick, 2001; Resnick & Hall, 1997; Saphier & Gower, 1997	Q2: How do selected teachers perceive mindset informing their instruction?
Question #14: How have you integrated student growth mindset into your teaching expectations and practice? In a paragraph, please provide a specific instance using the space below. (Open Ended Question)	Blackwell et. al., 2007; Boaler, 2013; Dweck, 2006; Dweck & Legget, 1988; Felazzo, 2012; Goodwin & Miller, 2013; Hong et. al., 1999; Horner & Gaither, 2004; Kamins & Dweck, 1999; Mangels et. al., 2006; Mueller & Dweck, 1998; Rattan et al., 2012; Resnick, 1995; Resnick, 1999; Resnick, 2001; Resnick & Hall, 1997; Saphier & Gower, 1997	Q2: How do selected teachers perceive mindset informing their instruction?
Question #15: What are the most significant challenges you have faced in trying to foster a growth mindset in students? Please list these challenges in detail using the space below. (Open Ended Question)	Blackwell et. al., 2007; Boaler, 2013; Dweck, 2006; Dweck & Legget, 1988; Felazzo, 2012; Goodwin & Miller, 2013; Hong et. al., 1999; Horner & Gaither, 2004; Kamins & Dweck, 1999; Mangels et. al., 2006; Mueller & Dweck, 1998; Rattan et al., 2012; Resnick, 1995; Resnick, 1999; Resnick, 2001; Resnick & Hall, 1997; Saphier & Gower, 1997	Q2: How do selected teachers perceive mindset informing their instruction?
Professional Development Survey Questions	**Research Ties**	**Inquiry Question Connection**
Question #16: Which of the following best describes your experience with professional development and training	Guskey & Sparks, 2002; Hirsch & Sparks, 2000; Resnick & Hall, 1998; Resnick & Hall, 2003	Q3: What is the nature of teachers' professional development related to mindset?

Table 20 continued

related to growth mindset?		
Question #17: Which of the following topics have been addressed in your training and professional development on growth mindset? Select all that apply.	Guskey & Sparks, 2002; Hirsch & Sparks, 2000; Resnick & Hall, 1998; Resnick & Hall, 2003	Q3: What is the nature of teachers' professional development related to mindset?
Question #18: My training has prepared me to address student growth mindset.	Guskey & Sparks, 2002; Hirsch & Sparks, 2000; Resnick & Hall, 1998; Resnick & Hall, 2003	Q3: What is the nature of teachers' professional development related to mindset?
Question #19: How much have you learned about growth mindset from the following sources?	Guskey & Sparks, 2002; Hirsch & Sparks, 2000; Resnick & Hall, 1998; Resnick & Hall, 2003	Q3: What is the nature of teachers' professional development related to mindset?
Question #20: Which of the following would help you fee better prepared to foster a growth mindset in your students?	Guskey & Sparks, 2002; Hirsch & Sparks, 2000; Resnick & Hall, 1998; Resnick & Hall, 2003	Q3: What is the nature of teachers' professional development related to mindset?

APPENDIX E

PERMISSION LETTER TO EMPLOY STUDY

October 31, 2016

Dr. David McCommons
Assistant Superintendent
Fox Chapel Area School District
611 Field Club Road
Pittsburgh, PA 15238

Dear Dr. McCommons,

I would like to request permission to conduct a study at Kerr Elementary School titled, *Investigating Mindset Theories: The Implications for Classroom Instruction and Professional Development*. This study is being conducted to fulfill the requirements for my dissertation research with the University of Pittsburgh.

The aim of the study is to (1) investigate how teachers perceive themselves in relation to a fixed or growth mindset, (2) explore how teachers perceive mindset informing instruction, and (3) examine how teachers perceive professional development informing mindset instruction in the classroom.

The study will collect data via an online survey to the Kerr Elementary School staff. It will be employed using Qualtrics and should take no more than 15 minutes to complete. The survey is completely confidential and voluntary and will be sanctioned by the University of Pittsburgh Institutional Review Board before being conducted.

The survey is attached to your letter for your review. After the study, I would be happy to share the results with you or any members of the district. If you have any questions regarding the study, please let me know. If you agree to allow me to employ the study, please sign in the space provided below.

I appreciate your support in this endeavor.

Sincerely,
Ashley Nestor

I grant my permission for Ashley Lynn Nestor to conduct the study *Investigating Mindset Theories: The Implications for Classroom Instruction and Professional Development*.

_____ _____
Signed Date

Figure 9. Permission Letter to Employ Study

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