GRADING PRACTICES AND MINDSET DEVELOPMENT: THE GROWTH OF BOTH

by

JULIE THIELE

B.S., Kansas State University, 2004
M.A., University of Northern Iowa, 2009

AN ABSTRACT OF A DISSERTATION

submitted in partial fulfillment of the requirements for the degree

DOCTOR OF PHILOSOPHY

Department of Curriculum and Instruction
College of Education

KANSAS STATE UNIVERSITY
Manhattan, Kansas

2016

Abstract

This study examined the impact grading policies have on students' mindsets in urban Midwestern middle schools. The components of this quasi-experimental, causal comparative survey research relied on the grading policies in place at the school level and the students' reporting of their mindset. Data was collected using a questionnaire containing eight Likert-type questions from the Implicit Theories of Intelligence scale (Dweck, 2006), as well as additional questions seeking the students' perceptions of grading practices implemented in their buildings. Descriptive statistics, frequencies, t-tests and ANOVA tests were run measuring the impact that a variety of perceived grading practices had on students' mindset levels.

The findings from the research demonstrated no statistically significant differences between the mindset levels of students from schools with different grading policies. Further analysis revealed inconsistencies between student perceptions of the grading practices and the schools' actual stated grading policies. It appears standards based and traditional grading practices, although specifically stated at the building level, appear to have blended together in the large school district, which may have led to the inconclusive results. Of significance was the finding that students perceived to understand the meaning of their grade, even if it is misaligned with the schools' policy, reported a growth mindset in comparison to students that reported they did not understand their grade. These findings begin to explore the impact grading practices have on students, especially during the transition from traditional to standards based grading.

Further research is needed to fully examine the transition between grading practices and students' perceptions of those policies. When students' perceptions of the standards based grading policy do not align with the actual policy, it is assumed that it will have no impact on students' mindset levels. Future research would seek to understand ways in which educators

making a transition from traditional to standards based grading can seek clarity of policies, seek accuracy of implementation and monitor students' perceptions in alignment with the policies and practices.

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Acknowledgements

I would like to thank all those that have played an influential role in my education and career. If it weren't for each and every one of you, I would not be where I am today.

To my committee chair, and now close friend, Dr. Sherri Martinie, I can't imagine where I would be in life right now if you wouldn't have taken the time to meet with me when Dr. Gail Shroyer and Dr. Todd Goodson walked me to your office. I appreciate all the guidance you have given and am very excited about where the future will lead us. Thank you for all the advice, feedback and help.

To my committee, Dr. David Allen, Dr. Chepina Rumsey, Dr. Craig Spencer and Dr. Rebecca Gould. Thank you for your commitment, guidance and feedback throughout my journey at Kansas State. I have been extremely lucky to work alongside and develop relationships with each of you. I look forward to continuing our work together.

To Kathy Slaman, the other half of my brain. I can't thank you enough for all the years of mentorship you provided, both as a colleague and a friend. You took a chance on me as a first year teacher and we have been inseparable ever since, even with the many miles between us. I love you and miss you every day.

To the many colleagues and class mates I have had throughout this journey, know that each of you have left a lasting impression on me and again, I wouldn't be where I am today without your friendship and guidance.

To my students, past, present and future. Thank you for always reminding me of the importance of learning and growing. I truly hope my love of learning was shown to you by my actions and that you will always continue to grow.

To each of you, I offer a sincere thank you.

Dedication

I dedicate this to my family.

To my husband, Shawn. I know this has been a big commitment for us both and I truly appreciate all of the times you took care of things at home so I could meet this goal. Thank you for your never ending support and love. I love and appreciate you more than you will ever know!

To my girls, Tessa, Taryn and Teagen. I never imagined going back to school when I had young children, but I hope that you see the importance that education plays in my life and yours. I am sorry that I missed some days and nights at home, but I pray that someday you too will have a passion for knowledge and grow up to be life-long learners. I love you and can't wait to see where your educational journeys take you!

To my parents, Bob and Rita Weatherford. You have always set a great example for me of working hard to achieve your goals. I can't say thank you enough for helping us through this crazy time in our lives as we have started a family, moved, started new careers and new educational journeys. Thanks for always listening to me talk about school and work and giving me advice along the way.

To my brother, Justin Weatherford. You were always my inspiration growing up, especially in school. Thanks for always standing up for me and being there for me.

To my in-laws, Lynn and Deb Thiele, Chad and Katrina Wilcott and CJ Thiele. Thanks for always being there for us and for being a sounding board for me. I truly appreciate that I can rely on all of you to support me in this process. I am so proud to call you my family.

To all my family and friends that have supported me, to those that babysat, helped clean my house, helped plan kids' birthday parties and were just here to listen and help, I dedicate this to you.

Chapter 1 - Introduction

An 8th grade girl, Nadine, is sitting at her desk, trying to finish her assessment. She finally hands it to her teacher and sits down. The teacher marks the assessment and then what? What happens next with that assessment can have a profound impact on Nadine. The grade. What will it look like? What will be included in the grade? Will it be a number, a percent, or a letter? Will she pass/ or fail? Does Nadine really understand all of the aspects that go into this grade? Will it allow her to continue learning and can she learn from this experience?

Receiving a grade is an emotional experience, that is predominately a negative one, filled with disappointment or embarrassment and can be life changing (Guskey, 2015). Think back to Nadine; once the paper leaves her hand, in a traditional classroom, there is little she can do. A day or two later, she gets the assessment back and there it is a letter grade, maybe a percent, maybe just some marks, but it is permanent, and already included in her final grade for the course. This type of grading practice dates back nearly 300 years; yet little research has been conducted to validate the effectiveness of the traditional grading practices currently being used in a majority of schools at all levels of education (Durm, 1993).

Let's re-envision Nadine, now in a different classroom. She just got her grade back from the teacher, now what? In a standards based graded classroom, Nadine has many options. The grade is not a letter or number, but a standard or objective and a clear picture of how she is achieving on that specific standard. Her 'grade' shows exactly what she knows and what she needs to keep working on. It is not a permanent mark in the grade book, just on a piece of paper. She presumably knows there is still time to learn and she is still expected to learn, but still at question is if Nadine really understands this grading process.

Receiving a grade can cause students to feel a variety of emotions. As students progress through school, they are often exposed to a myriad of grading practices that influence their lives. Points for participation, homework, tests, or a number of other non-academic factors that are often included in grades impact students' lives in and out of the classroom. Teachers do not consistently give grades that show the true picture of student learning (Marzano, 2000, O'Connor and Wormeli, 2013, and Brookhart, 2011). Parents/guardians, teachers, college administration, basically anyone viewing this grade can, and historically have, made judgments about the student (Durm, 1993). More important than the judgment of others, and the focus of this research, is the judgments students make about themselves based on the grades they receive, their perceptions of what impacts a grade and the various structures of teachers' grading practices. The findings in the literature review confirm the notion that these internal judgments can ultimately impact students' mindset development and actions in and out of the classroom.

Chapter Overview

This introduction provides an overview of traditional and standards based grading practices as well as an overview of the fixed and growth mindset. A brief theoretical framework for this study follows the initial overviews. The remainder of the chapter includes the statement of the problem, purpose of the study, research questions, and the significance of the research. The chapter concludes with the limitations of the study, definition of terms, and an overview of the remaining chapters.

Traditional Grading Practices

Teachers have spent nearly 300 making small changes to and recreating grading practices to which, based on research in the past 20 years, there is still great inconsistency and

ineffectiveness (Durm, 1993). Traditionally, teachers make decisions about grading practices in their own classrooms or schools that encompass almost every aspect of grading.

Traditional grading practices are difficult to pinpoint or define as they vary greatly from one teacher to the next, even within the same school. Practices including what is accounted for in the grade and how the grade is calculated and interpreted range from minimalistic emphasis to high priority. Teachers include a number of academic factors in grades, such as classwork, homework, participation, effort, growth, ability, extra credit and assessments, as well as non-academic factors, such as bringing in boxes of tissues or reams of paper (Brookhart, 2011). In the traditional setting, teachers use a variety of weightings assigned to specific items to calculate and curve grades, typically organized by type of item (Wormeli, 2006). Interpretations of a grade vary greatly based on the emphasis placed on grades and the impact it can have on students.

The many diverse factors of traditionally graded classrooms can lead to confusion and frustration on the part of students, parent/guardian, administration, and other stakeholders in education. More details regarding the concerns, purposes, uses and interpretations of traditional grading practices will be explored in the literature review.

Standards Based Grading Practices

Standards based grades report the objectives and exactly what they students know and don't know (Guskey & Bailey, 2010). These reports can be used to make decisions both for the whole class and individual students. Standard based grading takes the focus away from earning a grade to focusing on learning (Shippy, Washer, and Perrin, 2013). Allowing teachers and students to have a clear understanding of what they know allows struggling students to receive additional supports and advanced students to extend their learning opportunities (Tierney, Simon, & Charland, 2011). Standards based grading practices enable teachers, parents, students

and all stakeholders to look at a grade and understand its' meaning and purpose because of the accuracy and consistency that these practices provide. Brookhart (2011) suggests, "Standards-based grading is based on the principle that grades should convey how well students have achieved a standard. In other words, grades are not about what students *earn*, they are about what students *learn*" (p. 11). Standard based grading allows all stakeholders in education to focus on learning and how to best help students learn the expected outcomes.

Mindsets – Growth and Fixed

Many students sit in traditional classrooms and receive grades that are permanently recorded in a grade book that claim to show what the student knows. These types of traditional grading policies are common in educational settings, but may have a negative effect on students' mindsets and willingness to learn new information. Researchers in the field of evaluation and reporting have found that many students place learning and gaining an understanding of the content second to performance on examinations (Becker et al., 1968, Miller and Parlett, 1974, and Snyder, 1971 cited by Crooks, 1988). A permanent letter grade makes a statement about a student's ability level in a class and compared to peers. Simpson (1981) states,

> Grades are singular symbols taking on unidimensional comparative meaning from the abstract numerical system which defines them. Frequent grading is capable of reducing even relatively complex performances to a single dimension, because grades reduce information to numbers, because these numbers can be averaged, and because teachers and student peers can use these numbers to place students on a single global stratification scale. (p. 124)

This type of grading practice matches a fixed mindset. As Dweck (2006) states, "in the fixed mindset, it's so crucial to be perfect right now. It's because one test – or one evaluation – can

measure you forever" (p. 26). Traditional grading practices send this fixed mindset signal loud and clear. Students complete the work, they get a score, and it goes directly into their final grade for the course. Every single answer must be correct, right now, because that is a final grade, fixed both in their minds and the grade book.

In a standards based graded classroom, growth mindset should be a key part of the policy. Dweck (2006) describes growth mindset "as the belief that your basic qualities are things you can cultivate through your efforts…everyone can change and grow through application and experience" (p. 7). This belief is intertwined in standards based grading policies and illustrated when an assignment or assessment is not considered final and is not included in the grade. Instead practices allow for retakes and highlight the importance of the learning process. These reform grading practices show exactly what students know, what they don't know, and what they need to keep working on, indicating they are still capable of learning the material, long after the initial assignment is turned in or test is checked.

Theoretical Framework

Mindset development revolves around the idea that knowledge is formed and can continuously be developed based on students' experiences (Dweck, 2006); therefore, constructivism is the theoretical framework through which this study is situated. The constructivist believes "that different people may construct meaning in different ways, even in relation to the same phenomenon" (Crotty, 1998, p. 9). This research will be more narrowly focused on the theory of social constructivism. Flick (2009) states that the social constructivist researcher believes that "knowledge is constructed in processes of social interchange" (p. 71).

Historically, the roots of social constructivism have been derived from many modes of thought. Social constructivism can be traced back to the "seminal work of Vygotsky. Social

constructivism regards individual learners and the realm of the social as indissolubly interconnected. Human beings are formed through their interactions with each other as well as by their individual processes" (Sriraman & English, 2010, p. 43). Berger and Luckman (1967) state "it is from Marx that the sociology of knowledge derived its root proposition - that man's consciousness is determined by his social being" (p. 17). According to Crotty (1998), Dilthey negates that there is a clear distinction between the social reality and the natural reality in which we live, whereby he believes that different means of research are needed to study the two realities. Windelbrand and Rickert take this notion of two realities one step further to imply that there are differences to state "there is a logical distinction, one posited by the mind" (Crotty, 1998, p. 67). With varying significance of differences, all rely on the same foundation that knowledge is gained through a person's understanding of the world and that this understanding is impacted by the experiences people have lived.

The ideology that makes up the social constructivist theory "is concerned with the individual's construal of a world, it is asserted that all knowledge is personally construed by the learner on the basis of his or her own lived experiences" (Proulx, 2006). This idea of constructing knowledge can be linked back in history to Piaget's biological theories of how humans develop and learn and to Einstein's ideas about the creation of the mind (Proulx, 2006). These constructivist theories have been used as a backbone for many constructivist researchers, including those mentioned above.

The growth mindset relies on many factors that control a person's knowledge level, not just their given talents, but their efforts, experiences, and interactions. Brookhart (1994) suggests that the social makeup and expectations of the classroom setting have a great impact on students' knowledge development. Merriam, Caffarella, and Baumgartner (2007) describe the importance

of a person's thought process on their motivation and action. They emphasize the importance of social interactions and observations as keys to developing a person's thought process. The goal of the social constructivist epistemology is to understand how people view the world; knowing full well that different factors influence one's knowledge and impact their understanding even in the same circumstances. Creswell (2013) states "the goal of research, then is to rely as much as possible on the participants' views of the situation" (p. 25).

Sriraman and English (2010) state, "social constructivism places emphasis on: the importance of all aspects of the social context and of interpersonal relations, especially teacher-learner and learner-learner interactions in learning situations including negotiation, collaboration, and discussion" (p. 46). To fully examine the mindset students must have to be successful in this type of setting, and their experiences during the transition phase, the researcher must take into account the relationships students have with one another and their teacher. Schifter (1996) describes constructivism as

> a perspective that informs the principles guiding the current movement for mathematics education reform: that individuals necessarily approach novel situations by interpreting them in the light of their own established structures of understanding; that the construction of new concepts is provoked when those settled understandings do not satisfactorily accommodate a novel circumstance; and that this constructive activity is not simply an individual achievement but one embedded in and enabled by contexts of social interaction. (p. 496)

Grounding this study in social constructivism as described by Schifter (1996), it is necessary for the researcher to explore the understandings that students have about their own mindsets and

their perceptions of grading practices and policies, as they play an active role in the classroom environment.

Statement of the Problem

Grading and evaluation practices impact students, specifically their self-perceptions, self-efficacy, and motivation (Crooks, 1988). The initial overview of traditional and standards based grading practices set the stage for the confusion and disorganization that is currently seen in the traditional grading practices of teachers. The inaccuracy and inconsistency of grading practices send a mixed message to students regarding the purpose for and interpretation of grades. The current call for reform education relies on students having a growth mindset, being able to take content to a deeper level of understanding based on experiences in and out of the classroom and continually strive to learn and grow. Lying in the constructivist approach, learning is formed in many ways and is not a permanent quality of a person; standards based grading practices allow students to see their learning and to work with those around them to continue learning. Traditional grading practices primarily align with the fixed mindset, by representing each attempt at learning as a final, fixed, mark in the grade book.

Theoretically, it would seem this study is setting itself up as a comparison of two grading practices and the mindsets that develop based on these policies. However, as is noted in the introduction, little research has been conducted on the practical applications of grading policies, specifically, how various policies can impact students. It is one thing to have a theoretical stance that aligns with the grading policy and what should happen in the classroom, but another to research the implications of those actions. This study hopes to examine the implications that various grading practices have on students in a real-world setting, knowing full well that students' perceptions of grading practices may confound the findings.

Research Purpose

The purpose of this quasi-experimental, causal-comparative survey research study was to examine the impact that grading policies have on students' mindsets in four urban Midwestern middle schools. The components of this research relied on the grading policies in place at the school level and the students own reporting of their mindset.

Research Questions

The specific research questions for this study are:

1. Do statistically significant differences exist between the mindset level of students enrolled in a traditionally graded school and the mindset level of students enrolled in a standards based graded school?

2. Do statistically significant differences exist between the students' perceptions of the items included in the grade book (classwork, homework, assessments, extra credit, standards) and the students' mindset level?

3. How do students' perceived understandings of grading practices impact student mindset levels?

Significance of the Study

Effective grading practices rely on the alignment of assessments and standards. Educators are experiencing a unique situation at this time, as the Common Core State Standards are being implemented in school districts throughout the United States. Now is the time to examine these experiences and dig deeper to get a better understanding of the impact this will have on the education system in our country (NCTM Research Committee, 2013). Guskey (2015) states, "In the modern educational reform initiatives that move us in this direction, grading and reporting remain the one element still pitifully misaligned" (p. 4). Standards based grading practices align

closely with the ideals of the Common Core State Standards, to ensure consistently high levels of learning for all students, grades kindergarten through twelfth, across the country (Spencer, 2012). There is no better time to implement standards based grading practices than now, as educators are making adjustments to curriculum, teaching strategies, assessments, and other factors related to education. While this research doesn't completely fill the gap in research on grading practices, it does address part of the gap related to the impacts that grades have on students.

This study focuses specifically on the impact that grading practices may have on students' mindset levels based on the *Implicit Theories of Intelligence Scale* developed by Dweck (2006). The inconsistency of implemented grading practices and the message being sent to students through grades provided this research with a starting point. It is evident when students receive grades, they have a reaction. However, what is not observable is the long term implications that those reactions to grades have on students' mindset towards learning.

There is a large gap in the research on grading practices, following up what was referenced by Guskey (2015) earlier in this chapter. O'Connor (2009a) clearly states, "many journal articles and reports have been written on grading, but most of them…are summaries of previous work and the opinion(s) of the authors" (p. 21). Guskey (2015) states, "We've learned a great deal about the effects on students of different grading policies, particularly those that diminish motivation and confound the meaning of grades," but there is much more to be done on the effects of reform grading practices (p. 110). This lack of research and data provides an opportunity for this research to enhance the grading practices that are currently in place. In an extensive look into the research on grades and grading practices, Brookhart (1994) found the focus of research in this field to be aimed at determining if teachers are following the recommended policies within their schools or to generally describe the status of grading

practices. As educators make strides in implementing new practices, research needs to be conducted that shows how these changes are impacting students and, in the case of this study, their mindset to be life-long learners.

Whether or not grades impact students is not the question to be answered, but how and what type of impact do grades and student's perceived understandings of grading practices have on a students' mindset levels regarding the learning process. As there is limited research in this field of study, the findings of this study can help educators make decisions about the implementation process of grading practices that can promote life-long learning for all students.

Limitations of the Study

The limitations of this study are primarily related to participant selection. As the study was designed as a quasi-experiment, non-randomization strategies were used to select participants (Creswell, 2014). Participants were selected based on their enrollment at a specific school, employing either traditional or standards based grading practices. However, once the school selection had been made, all enrolled students had an equal opportunity of being a participant in the study. The schools chosen to participate in this research were selected based on meeting the criteria of implementing traditional and standards based grading practices within the same district. This allowed the researcher to collect demographic data and select comparable schools to invite to participate in the study. It also allowed the research to control for some of the issues of transient students, as a majority of the students have attended similar elementary schools prior to their enrollment at the middle level. As in any real-world, educational research, the researcher also relied on the schools' written grading policies to determine which schools were asked to participate, knowing that policy does not always equate to practice. This notion will be further examined in the literature review.

This causal-comparative study was also limited by the biases that the researcher may have based on prior experiences in traditional and standards based graded classrooms. However, based on the nature of the study, being a quantitative comparison of students own reporting of their mindset development, these biases were not reflected in the findings of the study, as the objective nature of the results overpowered the subjectivities of the researcher.

The total response rate of the study was 14% which limited the generalizability of the findings. Given the unique transitioning that the district was involved in the study lacked overall generalizability to the entire middle school population as many districts may not follow the same pattern of transition from traditional to standards based grading practices. Measures outlined in the Dillman Tailored Design Method (Dillman, Smyth, & Christian, 2009) were implemented to decrease the nonresponse rate including providing multiple types of interactions including, email, phone and personal letter. All interactions took place within an appropriate amount of time utilizing positive regards throughout.

Operationalization of Terms

1. Fixed Mindset – Dweck (2006) defines a fixed mindset being one in which people "believe their qualities are carved in stone" (p. 6)

2. Growth Mindset – Dweck (2006) states a "growth mindset is based on the belief that your basic qualities are things you can cultivate through your efforts" (p. 7).

3. Middle level students – students in grades six through eight between the ages of 11-14.

4. Mindset – Dweck (2006) defines mindset as the belief a person holds about themselves, both their intelligence and ability, that can impact every part of life.

5. Standards/Objectives – The National Governors Association (2010) in the Common Core State Standards initiative defines standards as statements that "clearly demonstrate what students are expected to learn at each grade level, so that every parent and teacher can understand and support their learning" (p. 1).

6. Standards based grading practices – Guskey & Jung (2009) define standards based grading practices as using report cards that "includes grades or marks based on carefully articulated learning standards in each subject area" (p. 1).

7. Traditional grading practices – Hooper & Cowell (2014) defined traditional grading practices "as students earning points on various types of assignments and assessments throughout a grading period and a teacher averaging those points on a 100-point scale to determine a student's overall grade" (p. 59).

Chapter Summary

This introduction provided a brief overview of traditional and standards based grading practices and mindset development. There are theoretical ties between grading practices and mindsets, but this study examined the practical implications of this relationship. The growth mindset focuses on the long-term beliefs of students to continue gaining new abilities and increasing intelligence filters through standards based grading practices. Traditional grading practices primarily send the message that grades are the end, the final statement of learning, thus can be associated with the fixed mindset.

This study examined the mindsets of students in traditional and standards based graded classrooms to uncover underlying beliefs that are ingrained in the grading policy set forth by teachers. The findings of this study provided evidence for teachers to suggest the need for focused efforts to be placed on grading policies and practices. No matter the specific outcomes

of the survey research, ideas about the practical implications of grading practices on students were explored, which sets the stage for future research in the realm of reform grading practices and mindset development.

The remaining chapters include a review of literature in chapter 2, organized by examining the concerns, purposes, and interpretations of grades, as well as the impact grades have on students, specifically the development of their mindset. Chapter 3 details the methodology of the study, including the research design, participants, and data collection and analysis. The results of this study are discussed in chapter 4, followed by further conclusions and discussions in chapter 5.

Chapter 2 - Literature Review

This literature review begins with an in-depth look into the history of grading practices in the United States. The remainder of the review is structured by looking at the concerns, purposes, and interpretations of grades, both traditional and standards based. This leads to a review of the literature regarding the impact grades have on students and how students' mindsets develop. Standards based grading practices provide a more internal aspect to grading, which is where the literature on students' mindsets will be explored (Wormeli, 2006, Marzano, 2000 & 2006, & Guskey, 2015).

A number of articles have been published sharing opinions or suggested best practices, but not necessarily research-based practices. Guskey (2015), Marzano (2000), and O'Connor (2009a) specifically mention the lack of research that has been conducted on grading practices and the impact they have on students. Primarily, the studies on grading practices have focused on the ineffectiveness of traditional grading practices, teachers' understandings and meanings of grades, and teachers' adherence to district policies and practices. As these findings are not the direct focus of this study, a few are referenced to provide an understanding of the concerns and purposes of grades, but few research studies have been conducted on the impact grades have on students or the connection to their mindset development.

History of Grading Practices

This examination of the history and evolution of grading practices focuses on the progression of grading practices from the roots of grading or markings used by professors in the early 1700s to the current state of traditional grading practices. One specific area of interest that is a focus throughout this progression is the intended purpose of grading. As grading practices shift throughout eras, it is important to note why they may have shifted and what impact this may

have had on all stakeholders involved. These key areas are examined throughout the course of this section on the history of grading, which will be situated in a timeline progression.

Little research has been conducted to validate the effectiveness of the traditional grading practices currently being used in a majority of schools (Marzano, 2000). Guskey (2015) states throughout history, "grades have remained the primary indicator of how well students performed in school and the basis for making important decisions about students" (p. 3). With such an emphasis on the importance of grades and grading practices, a look back to the roots of grading is essential to understand the current state of traditional grading practices and the current call for reform grading practices. Grades, or 'marks' as they were then referred to, date back to the early 1700's. These grades were primarily used to rank or make note of the students' socio-economic status (Durm, 1993). In the latter 1700s, rankings were not as common, but feedback was provided. Marzano (2000) states, "prior to the late 1700s, students were not given grades per se. Rather, teachers gave students feedback on their performance through narrative comments" (p. 11). This shift from marks used to rank students based on social positions to feedback was one of the first steps in the progression of grades. Grades slowly progressed throughout the century to be more descriptive, use scales, and provide feedback, like a combination of standards based and traditional grading (Marzano, 2000).

In the late 1700s and early 1800's, 'marks' that were given earlier in the century progressed to number 'grades'. Smallwood (1935), as quoted by Durm (1993), stated, "that marking, or grading, to differentiate students was first used at Yale. The scale was made up of descriptive adjectives" (p. 295). Marzano (2000) reiterates this idea, stating, "in 1780, Yale University began using a system that was probably the most identifiable precursor to the current system…providing students feedback using a four-point scale" (p. 11). The purpose of these

scales was primarily to provide feedback to students on their achievements, but ranking also became prevalent at this time. Durm (1993) stated,

> After 1813 the records show a variety of attempts to evaluate and grade students…the following classification of students was used: No. 1. The first in their respective classes; No. 2. Orderly, correct, and attentive; No. 3. They have made very little improvement; No. 4. They have learnt little or nothing. (p. 295)

Various scales, similar to the one mentioned above, were used at institutions, primarily at the collegiate level well into the 1800s.

In examining the history of grading, one must note the type of institutions that were most prevalent at this time. Collegiate institutions were on the cutting edge of grading, using scales with descriptive indicators throughout the 1800s. Durm (1993) states, "Before 1850 descriptive adjectives and various numerical systems of evaluation had been tried. Throughout the next fifty years, several new scales of merit and demerit were devised" (p. 295). One evolutionary step in the history of grading as noted by Marzano (2000); "in 1877, Harvard began classifying students into 'Divisions'" (p. 11). These divisions were broken down into segments of percentages with the following ranges: 90-100, 75-90, 60-74, 50-59, 40-49, and below 40. These 'divisions' show a clear progression step from earlier systems to the traditional grading system currently used in most schools (Marzano, 2000). These divisions were later translated into the letter grades that we currently use. Durm (1993) notes in 1883 "at Harvard there is a reference to a student making a B. This apparently was the first use of a letter for a grade that can be found" (p. 296). From the 1890s to our current time, letter grades, with a variety of scales, became prevalent at most levels of education. Most of the information shared thus far has taken place at the collegiate level. As enrollment increased, teachers began to heavily rely on the use of the scale breakdown of

percentages, that we commonly use today; as the need to efficiently report student progress and understanding arose (Guskey, 2015).

On the other end of the spectrum from the collegiate level where the one-room school houses that were popular at this time. Guskey (2015) states, "throughout much of the 19th century, most schools grouped students of all ages in one-room schoolhouses…the teacher reported students' learning progress orally to parents" (p. 24). As times changed and the need for formal education became more attractive, teachers at lower levels of education began evaluating students through 'grades'. Guskey (2015) states, "as the number of students increased in the late 1800s…new ideas about curriculum and teaching were tried…one of these ideas was the use of formal progress evaluations of students' achievement in school" (p. 24). Throughout the 1800s, these evaluations were similar in nature to that of standards based grades, as the teacher would write down the skills or objectives the students had mastered and the skills they were still working on and report this to parents, mainly for the benefit of the student. At this time, students were not permitted to move on to the following level until they had mastered all skills at their current level (Guskey, 2015). The one-room school houses that were prevalent throughout the 1800s began to lose popularity to more sophisticated groupings of students.

Between 1870 and 1910, school attendance laws changed the format of schooling and subject area classes became prevalent at the secondary level. While elementary teachers still used similar written notes about students achievement based on a set of skills, secondary teachers were more likely to provide a percentage grade to students. Guskey (2015) noted Kirschenbaum, Simon and Napier (1971) stating, "this was the beginning of the grading and reporting systems that exist today" (p. 24). Throughout the remainder of the 1800s and into the 1900s, grading

systems, similar to the percentage and letter grade scales that we see today gained popularity due to the increase in student enrollment and the changes in curriculum.

The percentage grades and letter grade scales that were gaining popularity at the end of the 1800s continued to grow in the 1900s. Reedy (quoted in O'Connor, 2009a) stated, "since the introduction of percentage grades in public schools in the early 1900s, grading and grade reporting have recycled rather than evolved" (p. 21). Moll noted a similar trend; "From 1911 to 1960, school systems experimented with various letter and number reporting conventions. Percentage grading was the most popular system during the latter half of the 19th century and the early part of the 20th century." Although there was little research to defend the popularity of percentage and scale grading systems, this trend continued to gain acceptance in the latter years of the 1900s as technology enhancements gave teachers the opportunity to use computer or internet based grading systems that thrived on the calculation of grades based on percentage points (Guskey, 2015). Teachers could include hundreds or thousands of points to be combined into a single grade with ease due to these technological advances, however, this led to even greater variations in grades.

Throughout the 1900s, a few teachers and researchers became concerned with the validity of percentage or letter grades. Guskey (2015) shares the work of Starch and Elliot (1913) on the reliability of percentage grading. In their research, they gave geometry papers to 128 teachers and found that identical papers where given percentages with a difference of sixty-seven points. This led to a slight reduction of the use of percentage points to scales conversions, like those seen today, based on ten point ranges for each letter grade (Guskey, 2015). However, this pattern did not continue across the entire education system and today, as these ten point scales make up a majority of grading policies. The ten-point range for letter grades A – F has continued to grow in

popularity since this study in 1913. O'Connor (2009a) shares that a "survey of high schools by the College Entrance Examination Board (1998) reveals that 91 percent of schools were using A-F letter grades or numeric grades and that 93 percent of schools were not considering changing the grading system in the following three years" (p. 24). With such a high percentage of schools using the A – F letter grades or other form of percentage grade, it is obvious to ask, why would anyone want to change this long-standing tradition.

Marzano (2000) goes on to share his thoughts by saying, "today's system of classroom grading is at least 100 years old and has little to no research to support its continuation" (p. 13). There is still little consistency among the various aspects of grades. Iamarino (2014) suggests that "grading practices are rife with complexity and contradiction. They are remnants of archaic conventions, and hybrids of newer methodologies not yet tried by time and application" (p. 9). This brief history into the grading practices of teachers throughout the last 300 years provides the need for research on reform grading practices, such as standards based grading, and their impact on students.

Concerns with Grades

As noted throughout the reflection on the history of grading practices, these concerns are built off of the premise that most teachers do not set forth with a true purpose when selecting a grading practice. Marzano (2000) explains,

> Virtually all of the criticisms [of grading systems] focus on one or more of three problem areas: (1) teachers consider many factors other than academic achievement when they assign grades, (2) teachers weight assessments differently, and (3) teachers misinterpret single scores on classroom assessments. (p. 3)

Cross & Frary (1999) express that grading practices have been a topic of high controversy since the beginning of the 20th century. Marzano (2000) echoes these by stating, "grades are so imprecise that they are almost meaningless" (p. 1). The concerns in this section revolve around the key topics of controversy, including: the contents included in grades, the importance placed on a single letter grade, the lack of teacher preparedness to implement effective grading practices, and the lack of purpose given to grades.

In a traditional setting, Cross & Frary (1999) found that teachers' practices were not aligned with their ideals and that students seemed to be confused by the various grading practices of their teachers, such as including ability, effort, participation, and conduct and raising the grades of low-achieving students. Randall & Engelhard (2010) found similar results in their study, with slightly more consistency amongst what was included in a grade, but in borderline cases, near the letter grade cut-off, they found that teachers were more likely to assign a higher letter grade based on non-academic factors. Guskey (2009) synthesized from his research the following list of items traditionally included in grades:

> major exams or compositions, homework completion, class quizzes, homework quality, reports or projects, class participation, exhibits of students' work, effort, laboratory projects, attendance, students' notebooks or journals, punctuality of assignments, classroom observations, class behavior or attitude, oral presentation, and progress made. (p. 17)

Based on the comparison of two studies, one conducted by Robinson & Carver (1988) and the other by Mazano & Kendall (1996) regarding the percentage of districts and the percentage of teacher's reporting the use of effort, behavior, and attendance in grades, Marzano & Kendall (1996) state that educators have developed a situation in grading in which one teacher's grade

might mean something completely different from another teachers or even the same teacher at a later time.

Hooper & Cowell (2014) suggest two overarching shortcomings to be the inability of traditional grades to clearly communicate student learning because they are organized by type of activity instead of by standards or objectives and the culmination of all of these scores on items in a grade book resulting in one letter grade per content area. Wormelli (2006) shares that because of the inaccuracy and inconsistency of grading practices, grades are more subjective, likely to be distorted, and not good indicators of student mastery. Wormelli (2006) reiterates this by stating, "we've aggregated so much into one little symbol, it's no longer useful" (p. 90). Although these statements are made about traditional grades, the emphasis placed on grades as an important, or the sole, indicator of student success in school is still prevalent. O'Connor (2009b) goes a step further, stating that grades should be organized by essential learning expectations and not the traditional homework, tests, organization that is typically used; even if the grade is still shown by a single letter, the list of expectations will provide more reliable information to parents, teachers, and the student. This is important to note, specifically in the transition times from traditional to standards based, it is not unheard of to assign a single letter grade, but eventually the need for and reliance on that grade will be lessened (O'Connor 2009b). One of the challenging issues to initiate is the lack of teachers' willingness or desire to make changes in their grading practices.

Teachers are naïve in their lack of understanding, ability to implement, and willingness to challenge or change their grading practices (Guskey, 2015). Due to the lack of teacher knowledge of research based grading practices and the lack of research in the field of grading, the purposes of grading are many and diverse. Tierney, Simon & Charland (2011) found that

only 40% of teachers were aware of or understood their schools grading policy. This lack of awareness and understanding is another important factor in the ineffectiveness of grading policies. Guskey (2015) reconfirms this stance, and adds another dimension noting the impact that teacher's unawareness of the lack of reform grading practices continues to add to the inconsistent and ineffective grading practices used in schools. These unclear purposes pose as one of the greatest concern expressed by leading grading experts (Marzano, 2000). Another study discussed by O'Connor (2009b) conducted by Howard, Clymer, and Wiliam (2006/07) found that if teachers had appropriate grading design and purpose they were more likely to identify and provide more appropriate learning opportunities to students that needed help.

Tierney, Simon, and Charland (2011) developed a set of principles that help teachers align their practices with those associated with standards based grades:

1. When the purpose of grading is to report on student achievement, grades should be referenced to the curriculum objectives or learning expectations (criterion referenced).

2. A grade should be an accurate representation of achievement, so non-achievement factors should be reported separately to permit valid interpretation by stakeholders.

3. Results from multiple assessments should be combined carefully, with weighting that reflects the learning expectations, to ensure that the grade accurately summarizes achievement.

4. Information about grading should be clearly communicated so that grades are justified and their meaning is understood by students, parents, and other teachers.

    (p. 212)

These principles should be followed to help shift traditional grading practices into more meaningful, consistent, and useful grade reports. The vast majority of the concerns about grading practices lie in the traditional grading setting because it is common practice that teachers or schools select their grading practices, not based on research, but on the ideas or experiences of others (Guskey, 2015, Marzano, 2000 & 2006).

Purposes of Grades

No matter the format of grading, most educators agree that the purpose of grading must be the focus when making decisions about grading practices (Guskey, 2015). Having a purpose seems like a valid place to start, but educators have yet to agree on a purpose of grading that is consistent across grade levels or content areas. Hooper & Cowell (2014) state that the lack of definition of purpose is an inherent challenge of grading. Airasian (1994) provides five purposes to include, administration purposes of retention, student placement, and college entrance, student feedback, future course or career guidance, teacher instructional planning, and motivation. Wormelli (2006) found six reasons that teacher share as the purpose of grading including: documenting student and teacher progress, providing feedback, making instructional decisions, and motivating, punishing, and sorting students. Gronlund & Linn (1990) similarly state that there are four uses for grading: instructional, communicative, administrative and guidance. Brookhart (1993) echoes these concerns in the findings of her survey research study with 84 teachers. She found that teachers had diverse purposes and meanings of grades, but all could fall under one of the four categories listed by Gronlund & Linn (1990). There seems to be a consensus amongst researchers and grading experts that the purpose of grading is multifaceted and requires careful attention, however, this is not always the case in practice.

To more deeply understand the uses of grading practices, this literature review includes research that examined what meaning teachers gave to grades and how they assigned grades. Tierney, Simon & Charland (2011) found that teachers using standards based grading practices in their study agreed, with approximately 80% consensus, on the elements that should or should not be included in the grade, however, effort and the use of zeros were not agreed upon. Polloway, Epstein, Bursuck, Roderique, McConeghy & Jayanthi (1994) conducted a study including 225 districts and found that 65% had a written grading policy and the most common type of grade used was letter grades (83%). However, in the interest of reform grading practices, 24% of the respondents chose that checklists were included in their grading policy and 37% noted the use of criterion-referenced grades. The numerous items included or not, and the multiple formats of traditional grading practices continue to build upon the inconsistency and ineffectiveness of these strategies.

O'Connor and Wormeli (2013) state, "grades should be accurate, consistent, meaningful, and supportive of learning" (p. 40). To further add to the discussion of what grades should look like, Guskey (2015), Marzano (2000), O'Connor and Wormeli (2013), and Brookhart (2011), all pinpoint the highest priority of grading to be that of providing feedback about student achievement, however, Guskey (2015) notes that grades have historically served the purpose of sorting students and accentuating the differences among students. These two priorities are still not aligned in our current education system. Guskey (2015) emphasizes that coming to a consensus on the purpose of grading is the first place to start the reform grading practices initiative. Austin & McCann (1992) conducted a content analysis study by examining policy documents of 144 school districts. They found the top three purposes listed for grading to include, "providing information about student progress, providing information for instructional

planning, and providing information about a student's current level of achievement and/or performance" (p. 4). As educators try to align with all of the purposes it can be the cause of ineffective grade reporting, because in turn the report card does not fully meet any of the purposes, thus becoming unreliable (Guskey & Bailey, 2010).

So the question remains, what is the purpose of a grade? This lack of purpose or focus is due in part to the fact that grades are reflected through factors including homework, class participation, extra credit, and numerous other non-academic factors. The purpose of standards based grades is to show a report of the objectives and exactly what they students know and don't know; instead of or accompanied by the averaged letter grade (Wormeli, 2006). These reports can be used to make decisions related to instruction, both for the whole class and individual students, placements in specific classes, career guidance and communicate a clear message about the students' understanding of the content. Wormeli (2006) states, "…grades are used to guide instructional decisions and chart progress" (p. 162). Standards based grades take the focus away from earning a grade to focusing on learning. Shippy, Washer, and Perrin (2013) suggest, "when instructors are clear regarding which standards are mastered and which need more work, they can adjust instruction to help students. This can be helpful to students on both ends of the spectrum" (p. 14). Allowing teachers and students to have a clear understanding of what they know allows struggling students to receive additional supports and advanced students to extend their learning opportunities.

Traditionally, teachers have decided what to include in a grade, how to weight the grade, basically what makes up a letter grade. Based on those outlined above, the many purposes of grading rely on students' grades being a true reflection of their learning and understanding, but that is not always the case (Guskey, 2015). To make appropriate decisions regarding the four

purposes of grades outlined above, grades must be a reliable, accurate, and consistent measure of student learning (Marzano, 2006). Reform based grading practices, that outline students' progress towards the standards, provide a more consistent and accurate picture of what students know and are able to do (Wormelli, 2006). The picture portrayed by standards based grading allows future teachers, administrators, counselors, parents and students themselves to interpret their grade in a meaningful manner.

Interpretation of Grades

Many students can make it through school earning good grades, but have little understanding of concepts. Others can have tremendous gains in their knowledge, but this may not be reflected in their grade. Kohn (1999) offers the plot that "grades are spurious precision – a subjective rating masquerading as objective evaluation" (p. 60). This is due in part to the fact that grades are reflected through a combination of academic and numerous non-academic factors. Brookhart (1993) conducted a study in which teachers were provided grading scenarios and were asked to give each student scenario a grade. In this study, Brookhart (1993) found that teachers varied significantly on the letter and number grade that they assigned to each scenario, due to the fact that various aspects were or were not included in the grading process for different teachers. Brookhart (1993) also concluded the study with the finding that most teachers believed that "a grade was a form of payment to the students" (p. 131) instead of a picture of their learning as leading experts in grading would suggest. Marzano (2000), O'Connor and Wormeli (2013), and Brookhart (2011), agree that the inconsistency, weighting of items, and inclusion or lack of inclusion of particular graded components all contribute to the weaknesses and ineffectiveness of traditional grading practices.

School districts continually write and update grading policies, but more time and energy must be devoted to explaining these policies and checking for accurate implementation and interpretations. It cannot be left up to the individual teacher to designate and create grading practices in the classroom, especially when students see multiple teachers for various content areas. These differing policies lead to further student and parent confusion about grades and their purpose (Cross & Frary, 1999). As Quinn (2013) states, "if we want to produce lifelong learners and not simply grade earners…then we must make sure that students are not focused on grades at the expense of developing intrinsic motivation to learn" (p. 108). To better meet the needs of students by providing clear evidence of what they are or are not learning, teachers can shift the focus from completing assignments and cramming for the big test to learning and understanding. Standards based grading allows teachers and students to focus on the learning the content, instead of counting points, to compile a "grade" for students. Sanders & Anderson (2010) depict grades as, "prototypical measures of academic success, but often they do not adequately depict student learning or classroom success" (p. 54). Allowing teachers and students to have a clear interpretation of a grade, based on the standards they know or don't know, allows struggling students to receive additional supports and advanced students to extend their learning opportunities.

Using more effective measures and means of grading allows teachers to provide students with a more realistic picture of their knowledge. Iamarino (2014) states that students become highly confused and their learning can be hindered when inconsistent evaluation criteria are used to grade or assess students. Sanders & Anderson (2010) conducted interviews with student asking about their perceptions of grades. They found that students did not believe that grades appropriately communicated their level of success or understanding in a course and that students

were outwardly upset when they received unsatisfactory grades, which were anything less than an A. Farr (2000) states that it is also difficult for parents to interpret grades when they are not associated with some form of standards and are ever changing from year to year and teacher to teacher. The inaccurate interpretations of grades and grading practices stems from the lack of awareness, inconsistency and variety of purposes of grades that are included in these policies. Dweck (2006) states, "Mindsets frame the running account that's taking place in people's heads. They guide the whole interpretation process" (p. 215), which in the school setting would include evaluation processes, grading and reporting. Aldman, Gates and Deterra Sims (2001) report the potential of standards based grading practices to have a profound impact on student learning and as grading practices improve, communication and instruction will follow.

Impact on Students

The focus of this study was not to solely analyze the different grading practices, but to explore the impact these practices have on students, thus a firm understanding of the concerns and purposes of traditional and standards based grading practices was needed, as well as a look into the interpretation of grades by students. Kohn (1999) states, "grade orientation' and a 'learning orientation' are inversely related" (p. 64), thus stating that when the focus is on grading, as is traditionally the case, students become less interested in learning. Iamarino (2014) suggests that standards based grading, as opposed to traditional grading practices, break free from the point gathering and allow the focus to be on learning. The standards based learning environment highly emphasizes the importance of natural inquiry and learning for the sake of learning. Brookhart (1993) states that students' feelings or opinions about learning can have a profound impact of the learning process and the development of their cognitive abilities.

This idea of impacting students with practices was the basis for this study. Masters (2014) concludes that the reporting method we use and the message we send to students via those reports sends a strong message to students, both about their academic abilities and the way they approach learning in general. Masters (2014) goes on to state, "assessment and reporting processes shape student, parent, and community beliefs about learning – sometimes in unintended ways" (p. 4). Traditional grading practices often leave students feeling frustrated and stuck, whereas standards based grading practices focus on learning and understanding. Traditional grading practices are often seen as gatekeepers and as Ricci (2014) puts it, "due to the school and/or educator's fixed mindset and gatekeeping practices, a child who was ready to embrace a challenge and be successful now believes that she cannot do so" (p.28.) This idea that teachers' beliefs, which influence their actions, in turn impacts students in a very critical way.

In the classroom, teachers note the changes that take place when focusing on learning, as standards based grading practices suggest. Aldman, Gates & Deterra Sims (2001) interviewed teachers and found that when they implemented standards based grading practices they had to look more deeply into each students' understandings, lessening the chance for students' successes and failures to go unnoticed. In alignment with the current reform movements, standards based grading practices allow teachers to ensure learning for all students, because the focus is no longer on the class averages or letter grades, but on each students' level of understanding of the content. Munoz & Guskey (2015) summarize the impact that grading practices have on students prophetically, by stating, "ultimately, grading and reporting are other important tools for what matters most: improving student learning" (p. 68). Improving student learning truly conceptualizes from the students' beliefs about how they can improve their intelligence and ability (Dweck, 2006).

Mindset Development

Much of the concerns, purposes, interpretations and impacts of traditional and standards based grading practices can be filtered into one of two mindset categories. Dweck (2006) states,

Every word and action can send a message. It tells children…how to think about themselves. It can be a fixed-mindset message that says: You have permanent traits and I'm judging them. Or it can be a growth-mindset message that says: You are a developing person and I am interested in your development. (p. 173)

Traditional grading practices uphold much more rigid and permanent features as seen in the fixed mindset. Dweck (2006) refers to students in the fixed mindset as seeing failures and struggles as permanent setbacks and not fulfilling potential. When traditional grades are presented as stagnant and unchangeable, praise or consequence is based on the person, implying that their level of ability came from within and is fixed (Gunderson, et al, 2013). On the other side of this is the growth mindset, in which students feel that initial failures or challenges are a starting point for learning; these are the students who chose the difficult task because it promotes learning over the easy to complete problems. The following graphic, created by Nigel Holmes, and found in Dweck (2006) outlines the basic characteristics of the fixed and growth mindset (p. 245).

Figure 1: The Two Mindsets by Nigel Holmes

TWO MINDSETS
CAROL S. DWECK, Ph.D.

Fixed Mindset
Intelligence is static

Leads to a desire to look smart and therefore a tendency to...

Growth Mindset
Intelligence can be developed

Leads to a desire to learn and therefore a tendency to...

CHALLENGES
...avoid challenges
...embrace challenges

OBSTACLES
...give up easily
...persist in the face of setbacks

EFFORT
...see effort as fruitless or worse
...see effort as the path to mastery

CRITICISM
...ignore useful negative feedback
...learn from criticism

SUCCESS OF OTHERS
...feel threatened by the success of others
...find lessons and inspiration in the success of others

As a result, they may plateau early and achieve less than their full potential.

As a result, they reach ever-higher levels of achievement.

All this confirms a deterministic view of the world.

All this gives them a greater sense of free will.

Graphic by Nigel Holmes

As students' mindsets develop, based on the measures of challenges, obstacles, effort, criticism, and successes of others, the impact that teachers' decisions and actions have on students can be

profound (Dweck, 2006). This was taken a step further by Ricci (2013) in her book, "Mindsets in the Classroom," where she emphasized the importance of shifting students' mindsets. She states, "breaking down the belief that intelligence is static can be a challenge, but with the proper groundwork and education, little by little a mindset can shift" (p. 4). Brainology, as set of modules, designed by Mindset Works (2011), outlines specifically how educators can help guide students towards a growth mindset, aligning with the current research on brain development.

Researchers in the field of educational neuroscience have devoted decades of research to show the impact that specific brain training can have on students' mindset and academic performance. Dweck (2006) describes work of Dr. Aaron Beck, a psychiatrist in the 1960s, in which he used the idea of cognitive therapy to reshape the beliefs that people held about themselves, their intelligence and their abilities. She states that mindset training goes further into "changing the internal monologue from a judging one to a growth-oriented one" (p. 216). More recent works that have demonstrated the brains ability to adapt and grow through adulthood (Doidge, 2007) and that aspects of intelligence can be impacted through learning (Nisbett et al., 2012, Sternberg, 2005) follow the same perspectives that the brain and brain development can be impacted by specific actions. Ericcson, Charness, Feltovich & Hoffman (2006) went a step closer to the mindset training, stating that how people react to difficult situations or processes are key to their achievement. Ricci (2014) states, "recent brain research negates the notion that intelligence is 'fixed' from birth" (p. 5). These studies exemplify the impact that mindsets and mindset development have on individuals' abilities to learn new information and react to successes and obstacles. Although not all of these studies took place in the classroom setting, Ricci (2014) and Dweck (2006) confirm that these same findings can be seen in the school environment as they are highly transferrable to students' beliefs.

Yeager & Dweck (2012) describe two theories of intelligence that students are often exposed to during their education. The entity theory resembles the initiatives of traditional grading practices in that everything is measured, they state, "it is a world of threats and defenses" (p. 304). Dweck (2007) associates three common student actions with the fixed mindset; 1) students don't want or value making mistakes, 2) students don't want to work hard, 3) when students make mistakes they do not try to correct or revise their work. Traditional grading practices that incorporate students every attempt at learning in the final grade send these messages to students. Whenever an item is put into a traditional grade, the statement is clear that mistakes were made, students can't correct them, and there is no use in looking at this content because it is in the books.

Standards based grading practices align with the second, the incremental theory in which the focus is on growth and learning, including challenges and setbacks along the way. Yeager & Dweck (2012) state, "it is a world of opportunities to improve" (p. 304). Dweck (2007) then challenges these notions by sharing the three characteristics of students with a growth mindset, including the desire to take on challenges, work hard, and value mistakes and try to correct them. Gunderson, et al (2013) states that "praising the process implies that the child's ability or goodness is malleable and depends on the effort he or she puts forth" (p. 3). Standards based grading practices of retaking/redoing and only reporting achievement levels, instead of a compiled list of points, in theory, echoes these ideals. Boaler (2016) shares, "if we believe that we can learn, and that mistakes are valuable, our brains grow to a greater extent when we make a mistake" (p. 13). Typical letter or number grades are not associated with the activities that take place while struggling with new content or learning, primarily allowing for mistakes to be a learning opportunity. The growth towards specific goals displayed within a standards based

policy, with the notion that making mistakes is the expectation, exhibits the importance of growing while learning.

This belief that growing and learning are inherent process that all individuals partake in, even the successful and smart, echoes throughout the practices associated with standards based grading. Dweck (2006) states, "for them (students with a growth mindset) it's not about immediate perfection. It's about learning something over time: confronting a challenge and making progress" (p. 24). Going back to the definition of standards based grading as a report of progress or growth towards well-articulated standards, it seems that these practices would encourage and emphasize the process of learning and growing. To exhibit the importance of this notion, Moser, Schroder, Heeter, Moran & Lee (2011) conducted a study that found when individuals make mistakes, those with a growth mindset showed more brain activity when monitored, noting that what we believe about our ability to change truly impacts our brain. This idea that we can change our brains, we can learn, if we truly believe we can learn, by having a growth mindset, enables students to see the value of making mistakes, growing, and learning, which all all key components of standards based grading practices.

Chapter Summary

Due to the distinct similarities brought out through this literature review between standards based grading practices and the growth mindset and conversely traditional grading practices and the fixed mindset, the purpose of this study was to examine the impact that grading practices have on students' mindset in the classroom. Much of the documentation provided is based on opinion or experiences of classroom teachers, but this study goes one step further and provided research based evidence that shows the relationship between various grading practices and students' mindset levels.

Chapter 3 - Methodology

This chapter explains the methodological framework and research design that were used to examine the relationships between grading practices and middle level students' mindsets. The chapter begins with a review of the purpose of the study and research questions, followed by the details of the research design and data analysis.

Research Questions and Hypotheses

The purpose of this quantitative research study was to compare the mindset levels of students enrolled in traditionally graded and standards based graded classrooms. The independent variables were the type of grading practice used in the school and the students' perceptions of those practices. The dependent variable was the students' reporting of their mindset.

1. Do statistically significant differences exist between the mindset level of students enrolled in a traditionally graded school and the mindset level of students enrolled in a standards based graded school?

   Null Hypothesis, H_o1: There are no statistically significant differences between the mindset levels of students in a traditionally graded classroom and the mindset levels of students in a standards based graded classroom.

2. Do statistically significant differences exist between the students' perceptions of the items included in the grade book (classwork, homework, assessments, extra credit, standards) and the students' mindset level?

   Null Hypothesis, $H_o2.1$: There are no statistically significant differences between classwork included in the grade book and a students' mindset level.

Null Hypothesis, $H_o2.2$: There are no statistically significant differences

between homework included in the grade book and a students' mindset level.

Null Hpythesis, $H_o2.3$: There are no statistically significant differences

between assessments included in the grade book and a students' mindset level.

Null Hpythesis, $H_o2.4$: There are no statistically significant differences

between extra credit included in the grade book and a students' mindset level.

Null Hpythesis, $H_o2.5$: There are no statistically significant differences

between standards included in the grade book and a students' mindset level.

3.   How do students' perceived understandings of grading practices impact

student mindset levels?

Null Hypothesis, H_o3: Students' perceived understanding of grading practices

has no impact on student mindset levels.

Research Design

The design for this study was selected based on the culmination of many events. The first

being the researchers own background in education, in which standards based grading practices

were being piloted at the building level. This introduction to reform grading practices led the the

educator into the field of research, exploring the experiences of students and teachers as they

transition from traditional to standards based grading practices through the means of an

ethnographic case study (IRB #7367). The researcher observed in a classroom that was

transitioning from traditional to standards based grading practices and interviewed students and

the classroom teacher. The interviews with students and the classroom teacher followed semi-

structured and document elicited formats. The interviews and observation notes were transcribed

and coded, using NVivo coding methods. The main themes that were identified were teacher's

beliefs and student's unawareness, the basis of divergent perspectives and best intentions and challenges in implementation of standards based grading. The first theme led the researcher to identify different perspectives and understandings that the classroom teacher and students held about the implemented grading practices. This finding compelled the researcher to find more answers, which led to the formulation of this study. The design of this survey research study allowed the researcher the ability to check for alignment of students' perceptions of the grading practices with the grading policies at the same time exploring if these perceptions impacted the students' mindset levels.

A quasi-experimental research design was used for this study as the researcher did not manipulate or control the independent variables, but relied on the students' prior enrollment at schools employing either traditional or standards based grading practices (Creswell, 2014). Vogt, Garnder & Haeffele (2012) defend the use of quasi-experimental research studies in the case of real-world contexts when the researcher is unable to assign participants to specific groups, but relies on pre-assigned groupings that receive different treatments, in this case schools' implementation of specific grading practices. More information regarding the pre-assigned groupings based on school enrollment is presented in the sampling techniques section.

Survey research in the form of a questionnaire, with closed-ended questions was given directly to students. Vogt, Garnder & Haeffele (2012) describe the circumstances that call for the use of survey research to be when data is, best collected from the participants individually, obtained through brief responses and honest answers are anticipated. Creswell (2014) states, "a survey design provides a quantitative or numerical description of trends, attitudes, or opinions of a population by studying a sample of that population" (p. 155). Aligning with the purpose of this study to examine the impact that grading practices have on students' mindset levels, the Implicit

Theories of Intelligence scale, the mindset survey, created by Dweck (2006) provided the researcher with the ability to use the responses from the survey to study the sample population.

The researcher compared students' mindset levels enrolled in a traditionally graded classroom with the mindset levels of students enrolled in a standards based classroom, the various items student's perceive are included in the grade book and their perceptions of various components of grading practices using the causal-comparative structure as described by Gall, Gall, & Borg (2007). The aim of this study was to provide evidence to suggest that grading policies and practices have impacts on students. The independent variables in this study were the grading practice, either traditional or standards based, students' perceptions of what is included in the grade book, and students' perceived understandings of the grading practices that are implemented in the school setting. The dependent variable was the students reporting of their mindset. Figure 2 represents the overall research design used in this study.

Figure 2: Research Design
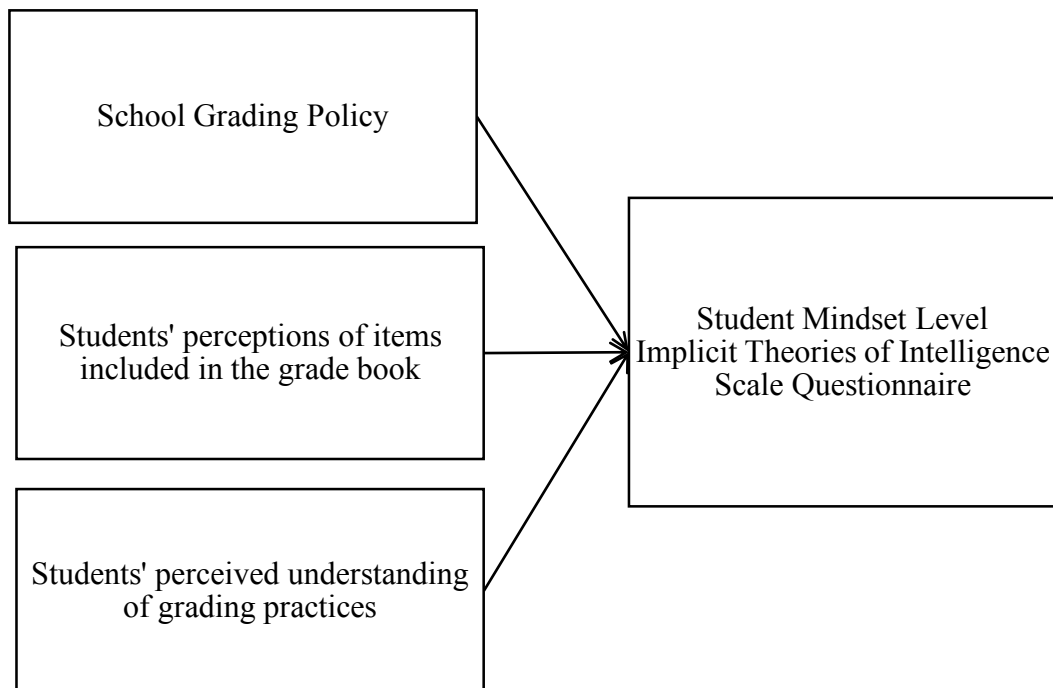
This research design allowed for examination of the impact that each of the three sets of independent variables had on the dependent variable, the students' mindset level. This design was chosen based on the pre-existing conditions set in place in the schools and the ease of comprehension and interpretation by teachers interested in reforming grading practices (Gall, Gall, & Borg, 2007). The researcher looked for differences in the mindset levels of students regarding the various aspects of the grading practices, based on policy and student perception, as well as the alignment of policy and perception.

Population

The research study was conducted in an urban area in the Mid-Western region of the United States of America. The school district is one of the largest districts in the state, serving over 17,000 students in grades pre-kindergarten through twelve. The following demographics were reported by the school district, 39% free and reduced price lunch enrollment and 12% student census poverty rate. Of the student population, 71% are white/Caucasian, 20% African American, 5% Hispanic, 3% Asian, and less than 1% American Indian or unclassified, resulting in nearly 29% minority students. 2.5% of the enrolled students are considered for the English Language Learners program and 16% are provided special education services. From this population, 6 middle schools were identified as being in the transition and implementation phases of standards based grading practices, thus meeting the criteria to be included in the study.

The specific school district was also chosen based on the commitment to professional development in regards to innovative practices. All teachers participated in professional learning communities with a focus on implementing reform practices, including accurate and consistent grading practices. The district included in the study employed a grading facilitator to assist teachers with implementing traditional and standards based grading practices. Teachers new to

the district participated in professional development related to grading practices in place at specific buildings. District professional development was orchestrated to introduce and maintain teachers' awareness of grading practices. Teachers continually monitored their grade book and reflected on specific aspects, terminology and design of the grade report. The professional development opportunities provided to teachers and the importance placed on grading practices by the district were attempts to raise the teachers level of mindfulness of grading practices and heightens their awareness of shifting practices.

Sampling Techniques

The sample frame included students enrolled in four of the middle schools, two, which are graded traditionally and two, which implement standards based grading practices. The district has more than four middle schools, but to appropriately match the participants, as Creswell (2014) explains, the following district reported demographics were used to determine which two traditionally graded middle schools are similar to the two standards based grading schools to help eliminate unreliability of findings. To provide further confidentiality, the two middle schools using standard based grading policies are referred to as schools A and B, and the two middle schools using traditionally graded policies are referred to as schools C and D. School A reported the following about the school population, 59% are white/Caucasian, 29% African American, 8% Hispanic, 4% Asian, and less than 1% American Indian, resulting in nearly 41% minority students. School D chosen to similarly resemble school A reported the closest demographic relationship, 72% are white/Caucasian, 21% African American, 5% Hispanic, 2% Asian, and less than 1% American Indian, resulting in nearly 28% minority students. School B, a standards based graded school, reported the following demographics of the student population, 61% are white/Caucasian, 35% African American, 2% Hispanic, 1% Asian, and less than 1% American

Indian, resulting in nearly 39% minority students. School C reported the following

demographics, 72% are white/Caucasian, 20% African American, 4% Hispanic, 3% Asian, and

1% American Indian, resulting in nearly 28% minority student, which most closely aligned with

school B. Although these were not perfect matches in the demographics, these schools most

closely aligned with one another throughout the district and were chosen to be included in this

study, based on these relationships.

Based on the quasi-experimental design model (Creswell, 2014), a convenience sample

was used because the researcher utilized groups that had already been formed based on student's

enrollment in one of the four schools described above. Schools A and B both employed standards

based grading policies, while schools C and D claimed to use traditional grading policies. Within

the school district, each school building is responsible for setting a grading policy. School A was

in its' third year of standards based grading implementation, while school B was in its' first year.

The standards based grading policies state that standards, chosen at the building level, will be

used to report students' achievement. Figure 3 provides an example of the reporting form used

at both schools implementing standards based grading. Schools C and D did not have set

grading policies, but teachers were responsible for setting their own grading guidelines. A brief

document analysis was conducted to look for similarities or discrepancies among the two schools

with traditional grading practices, and trends could be seen at the team level, but not the school

level. As noted in the literature review, a variety of academic and non-academic items were

included in the gradebook and different scales, calculation methods, and grading practices were

found in the individual teacher policies at the two schools with traditional grading policies. All

elementary schools in the district report the use of criterion-referenced grading, in a variety of

formats.

Figure 3: Example of Standards Based Grade Report

	Q1	Q2	S1
Present			
Absence			

MARKING KEY
E=Exceeds Standard
M=Meets Standard
W=Working Towards the Standard
U=Minimal Understanding
X=No Evidence

Course/Teacher	Standard	Q1	Q2	S1
Algebra One	21st Century Skills - Employability			M
	Create equations and inequalities in one variable			E
	Solve linear equations and inequalities in one variable			M
	Solve systems of linear equations			E
	Calculate and interpret average rate of change			E
	Graph functions			M
Band 8-1	21st Century Skills - Employability			M
	Music Literacy			X
	Performance			M
	Accountability			M
Language Arts 8-1	21st Century Skills - Employability			M
	SL-Engage effectively in a range of collaborative discussions			M
	SL-Come to discussions prepared			M
	SL-Present findings, emphasizing salient points, evidence, and details			E
	W-Produce writing in which the development/organization/style are appropriate			M
	W-Draw evidence from literary or informational texts			M
	W-Apply grade 8 Reading standards to literature			M
	W-Apply grade 8 Reading standards to literary nonfiction			M

Multiple email correspondences were sent to the district grading facilitator to determine interest in participating in the study. After initial contact and approval by district superintendents were made, a solicitation email was sent to the four middle school principals chosen from the school district, seeking student participation in the study. These emails were sent following the template forms in Appendices A – C.

Using aspects of the Dillman Tailored Design Method for survey research (Dillman, Smyth, & Christian, 2009), an initial contact was made with district superintendents and grading facilitator to discuss interest in the study through phone and email. To establish trust, the researcher discussed the importance of the findings to the districts grading and mindset

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initiatives. To increase the benefits of participation, all teachers of participants and participants were given information about the survey, outlined in the consent/assent form in Appendix D.

The researcher used positive regards in all interactions with the district representatives, administrators, teachers and participants involved in the study. Dillman, Smyth and Christian emphasize the importance of balancing the benefits and figurative costs to the participants (2009). To decrease the cost of time and inconvenience to the participants, the researcher provided both electronic and paper/pencil versions of the consent/assent forms and paper/pencil versions of the questionnaire. The researcher avoided all uses of subordinating language and used a short questionnaire that was comprehendible by the participants (Dillman, Smyth, & Christian, 2009).

Data Collection

Before collecting data from the participants a consent and parent assent form (Appendix D) was signed and collected either through email or paper/pencil. Emails were sent from building principal email accounts to all parents/guardians of students. After an appropriate wait time of one week, paper/pencil versions of the consent/assent forms were sent home with students. All consent/assent forms were recorded before any data was collected from participants.

The instrument used in this study was a brief questionnaire about student's mindsets. This questionnaire, *Implicit Theories of Intelligence*, was created by Dweck (2006) and permission was granted to use the questions without further adaptations. Likert scales, seeking the degree of agreement or disagreement to eight statements regarding students' beliefs about their abilities and intelligence, comprised most of the questionnaire. See Appendix F for the complete questionnaire. Additional information was collected about students' perceptions of the grading

practices being implemented and whether students understand their teachers' grading practices. As the researcher was unable to control each participants' experiences prior to their current enrollment in a specific school, a cross-sectional survey was used as the instrument for data collection because data was collected at one point in time (Creswell, 2014). This one-time data collection across a variety of schools allowed the researcher to compare the mindset levels of a variety of middle level students from multiple sites.

The questionnaire was self-administered to students in paper/pencil format. Vogt, Garnder & Haeffele (2012) illustrated the importance of using self-administered surveys when identity is anonymous, all participants need to hear the same information, and respondents are able to read on their own. Dillman, Smythe & Christian (2009) noted the importance of lessening the burden of participants by implementing the survey in the easiest format. Using a paper/pencil questionnaire allowed participants to quickly complete the survey in the classroom without any additional burdens being placed on the school, teacher, or student. All surveys were collected at the individual school sites.

Data Analysis

The first step in the data analysis process was to reverse code the data. The questionnaire was made up of eight statements, four positively aimed at the growth mindset and four negatively aimed at the fixed mindset. After reverse coding the negatively aimed responses, totals were calculated for each participant to determine the overall level of their mindset ranging from a low score of 8, indicating a strong fixed mindset to a high score of 48, indicating a strong growth mindset. There are varying levels of fixed and growth mindset with 29 being the cut-off number to delegate either fixed mindset, if below or growth mindset, if at or above.

After inputting and combining the responses, the next step included running an exploratory data analysis, including descriptive statistics for responses to each of the 8 Likert scale questions on the mindset survey and the total calculated mindset level. The researcher ran an independent samples t-test with significance level of 0.05, on the overall mindset score in regards to the different grading policies to answer the first research question. Further descriptive statistics were run to examine the alignment of students' perceptions of items included in the grade book and the written grading policy. In regards to the second series of hypotheses with research question two, descriptive statistics were run to measure the mindset levels of students based on what items they perceived as being included in their grade. An independent samples t-test was run for each item students' perceived to be included in the grade book to look for significant differences in students' mindset levels. To analyze results for the third research question, frequencies were calculated for student's perceptions of the item that has the most impact on their grade and an analysis of variance (ANOVA) was run to detect any effect of students' perceptions of the most impactful item of their grade on their total mindset level. Descriptive statistics were run on students' perceptions of what items they are allowed to retake/redo, followed by independent samples t-tests on the impact of students' perceptions of being able to retake/redo each item or not on their mindset levels. Independent samples t-tests were also run to determine if students' perceived understanding of what their grade means impacted their mindset levels. All of these tests were run using a statistical software package (SPSS) and the findings are reported in chapter 4.

Reliability and Validity

The 8-part likert-scale questionnaire, the *Implicit Theories of Intelligence* mindset survey, used in this study was reported to have good internal consistency with a Chronbach's alpha for

this scale of 0.85 (Visser, 2014). Three of the eight items were tested by Dweck, Chiu, and Hong (1995) with good internal consistency of 0.85 - 0.94 and test-retest reliabilities at two weeks of 0.80 - 0.82. As another measure, the researcher also ran reliability statistics and found the data from this study to have a quite high reliability rating, with a Chronbach's alpha of 0.729.

The researcher sought advice from the district grading facilitator and a team of four teachers, in regards to what information they would like to have collected in addition to the questionnaire and terminology that students would understand relating to specific elements of the various grading practices. The *Implicit Theories of Intelligence* questionnaire, referred to as the mindset survey, was used in its' published state (2006), with written permission from the copyright holder (Dweck, 2006). Based on feedback from the district representatives, the researcher depicted the work item on the additional survey questions into two categories, in-class work and homework. The researcher used the terms standards/ learning targets, as this is the common language used to refer to standards based practices in the district. The researcher added a question to the original survey after discussions with the district representatives to include, "if there is an opportunity to improve your grade, how often do you take advantage of it?" This question was added to provide depth to the students' own perception of the grading practices in their building and to allow for exploration of students' self-reported actions.

Summary

This chapter detailed the specific methodology that were used during this study. The purpose of this quasi-experimental, causal comparative survey study was to examine the impact that grading practices, specifically traditional and standards based, have on students' mindset levels. The researcher also explored the impact that students' perceptions of items included in the gradebook and their understanding of their grade have on their mindset levels. Sound methods

of survey research were applied according to the Dillman Tailored Design Method (Dillman, Smyth, & Christian, 2009), which included balancing the cost and benefits to the participants. By using statistical data analysis measures described above, the researcher explored differences between the mindsets of students based on a variety of grading practices implemented at the building level.

Chapter 4 - Results

The purpose of this research was to examine the impact grading policies and practices have on students' mindsets in four urban Midwestern middle schools. The components of this research relied on the grading policies in place at the school level and students reporting of their mindset. This chapter provides the statistical results for the specific research questions for this study:

1. Do statistically significant differences exist between the mindset level of students enrolled in a traditionally graded school and the mindset level of students enrolled in a standards based graded school?

2. Do statistically significant differences exist between the students' perceptions of the items included in the grade book (classwork, homework, assessments, extra credit, standards) and the students' mindset level?

3. How do students' perceived understandings of grading practices impact student mindset levels?

This survey research study implemented a paper-pencil survey given to students enrolled in grades 6, 7 and 8 from one school district. The total number of participants was 287 (N=287). Of the total, 173 participants were enrolled in a school with a standards based grading policy and 114 participants were enrolled in a school with traditional grading policies. Table 1 provides more information about the number of participants from each school.

Table 1: Participant Numbers

	School A	School B	School C	School D	Total
Total Participants (N)	96	77	58	56	287
6th Grade	38	23	6	17	84
7th Grade	35	31	34	22	122
8th Grade	23	23	18	17	81

Schools A and B had standards based grading policies, while Schools C and D had traditional grading policies, set by classroom teachers or teams.

The survey contained 8 Likert scale questions, ranging from disagree a lot to agree a lot with a 6-point variance. See Appendix F for the complete survey. The total for all 8 questions, after reverse coding 4 of the questions, makes up the total mindset level, ranging from 8 to 48. This total mindset level was used throughout the study to explore the impact that various features of grading practices may have on student mindsets. Participants with total mindset levels from 8 to 28 are considered to have a fixed mindset, while participants with total mindset levels from 29 to 48 display a growth mindset. The remainder of the survey collected data regarding a variety of grading practices which included what the students' perceived as being included in their grade book, what had the most impact on their grade, if they were allowed to retake/redo items, and whether they understood what their grade meant. These questions were all used to analyze the impact that various aspects of grading practices have on the students' mindset level.

Response Rate

The specific numbers of participants outlined in Table 1 represent a response rate of 14%. The response rates at each school varied from 9% to 18%. Of the students that completed the survey 29% were enrolled in 6th grade, 43% in 7th grade and 28% in 8th grade. Two out of the 287 students that were given the survey did not complete the survey entirely, therefore, that data was removed before data analysis.

Research Question One

The first research question, do statistically significant differences exist between the mindset level of students enrolled in a traditionally graded school and the mindset level of students enrolled in a standards based graded school was explored by comparing the total mindset level to each school's identified grading policy. The null Hypothesis, H_o1 wasthat there are no statistically significant differences between the mindset levels of students in a traditionally graded classroom and the mindset levels of students in a standards based graded (SBG) classroom. Descriptive statistics were calculated to explore the responses to each of the 8 questions on the Implicit Theories of Intelligence scale, the mindset survey. A student response of 1 indicates a strong fixed mindset, while a high mark of 6 indicates a strong growth mindset. Table 2 shows the mean and standard deviation of the responses to each of the eight questions.

Table 2: Descriptive Statistics: Individual responses to mindset survey

		Mean	SD
1. No matter how much intelligence you have, you can always change it a good deal.	SBG	4.83	0.96
	Traditional	4.82	0.96
2. You can learn new things, but you cannot really change your basic level of intelligence.	SBG	4.44	1.30
	Traditional	4.56	1.20
3. I like my work best when it makes me think hard.	SBG	4.10	1.33
	Traditional	3.80	1.35
4. I like my work best when I can do it really well without too much trouble.	SBG	2.49	1.35
	Traditional	2.27	1.21
5. I like work that I'll learn from even if I make a lot of mistakes.	SBG	4.62	1.18
	Traditional	4.58	1.06
6. I like my work best when I can do it perfectly without any mistakes.	SBG	2.71	1.53
	Traditional	2.56	1.45
7. When something is hard, it just makes me want to work on it more, not less.	SBG	3.92	1.40
	Traditional	4.17	1.47
8. To tell the truth, when I work hard, it makes me feel as though I'm not very smart.	SBG	4.36	1.42
	Traditional	4.18	1.53

As noted above, the responses to each question were totaled to give an overall mindset score. The mean mindset level of the entire sample was 31.25, meaning that the average mindset level was in the growth range, by just over 2 points. This finding was surprising to the researcher as

Ricci (2014) states that over 60% of children entering grade 6 have a fairly fixed mindset level. This led the researcher to look for differences in mindset levels between the two grading practices, but noting that overall, the participants of this study have a higher growth mindset level than other documented studies have shown.

An independent samples t-test was conducted to compare the total mindset levels of students enrolled in schools with standards based grading policies and schools with traditional grading policies. Levene's test of homogeneity provided a p-value of 0.937, indicating that the two groups have statistically equal variance. The t-test also indicated that there was not a statistically significant difference between the mindset levels of students enrolled in schools with standards based grading policies (M=31.46, SD=5.51) and the mindset levels of students enrolled in schools with traditional grading policies (M=30.95, SD=6.22), therefore the researcher failed to reject the null hypothesis with the following results; $t(285) = 0.736$, $p = 0.462$. To further explain this finding, the researcher explored the alignment of student perceptions of the grading practices to the schools' written grading policy. Descriptive statistics were run on the students' responses to an additional question on the survey, regarding which items were included in the gradebook and split into groups by school grading policy, either standards based or traditional. Table 3 provides the descriptive statistics for this comparison. Students either responded yes or no, coded 1 or 0 respectively.

Table 3: Descriptive Statistics: Grading policy and students' perceptions of items included in their grade

		Mean	SD
Homework	SBG	0.68	0.47
	Traditional	0.88	0.33
In-class work	SBG	0.89	0.31
	Traditional	0.90	0.29
Assessments	SBG	0.94	0.23
	Traditional	0.94	0.24
Extra Credit	SBG	0.54	0.50
	Traditional	0.76	0.43
Standards/Learning Targets	SBG	0.88	0.33
	Traditional	0.60	0.49

Students enrolled in SBG schools should theoretically only mark assessments and standards/learning targets, as these are the only two items included in their gradebook, per the policy. Students enrolled in traditionally graded classrooms could mark any or all items, except standards/learning targets. It is clearly evident that the students' perceptions are not aligned with the written grading policy. Some highlights from the table include: 68% of SBG students noted that homework was included, 89% marked in-class work, 60% of traditionally graded students marked that standards/learning targets were included in their grade and both groups of students had 94% noting that assessments were included. These mixed perceptions will be further discussed in Chapter 5.

Research Question Two

The second research question focused on the students' perceptions of items that impact their grade. The following questions and hypotheses were analyzed using independent samples t-tests: Do statistically significant differences exist between the students' perceptions of the items included in the grade book (classwork, homework, assessments, extra credit, standards) and the

students' mindset level? Null Hypothesis, $H_o2.1$: There are no statistically significant differences between classwork included in the grade book and a students' mindset level. Null Hypothesis, $H_o2.2$: There are no statistically significant differences between homework included in the grade book and a students' mindset level. Null Hpythesis, $H_o2.3$: There are no statistically significant differences between assessments included in the grade book and a students' mindset level. Null Hpythesis, $H_o2.4$: There are no statistically significant differences between extra credit included in the grade book and a students' mindset level. Null Hpythesis, $H_o2.5$: There were no statistically significant differences between standards included in the grade book and a students' mindset level. Descriptive statistics, presented in Table 4, were run to explore the effect of students' perceptions of the inclusion of homework, in-class work, assessments, extra credit and standards/learning targets in their grade on students' mindset levels in standards based and traditionally graded schools.

Table 4: Descriptive Statistics: Students' perception of items included in their grade and total mindset level, by grading practice

			N	Mean	SD
Homework	SBG	Yes	118	31.05	5.67
		No	55	32.35	5.08
	Traditional	Yes	100	31.01	6.08
		No	14	30.50	7.39
In-class work	SBG	Yes	154	31.55	5.59
		No	19	30.79	4.89
	Traditional	Yes	103	31.11	6.32
		No	11	29.45	5.18
Assessment	SBG	Yes	163	31.60	5.58
		No	10	29.20	3.58
	Traditional	Yes	107	31.00	6.36
		No	7	30.14	3.44
Extra Credit	SBG	Yes	94	31.56	5.24
		No	79	31.34	5.84
	Traditional	Yes	87	31.43	5.99
		No	27	29.41	6.78
Standards/Learning Targets	SBG	Yes	152	31.64	5.57
		No	21	30.19	4.94
	Traditional	Yes	68	30.69	6.92
		No	46	31.33	5.05

Based on the findings presented in table 4, independent samples t-tests were conducted to compare students' total mindset level depending on whether or not students' perceived that each item was included in their grade, removing the school grading policy separation. There were no statistically significant differences between any of the variable items students' perceived to be included in their grade and their total mindset levels, therefore, the researcher failed to reject each of the null hypotheses with the following conditions. There was not a statistically

significant difference in the mindset levels of students that perceived homework was included (N=218, M=31.03, SD=5.85) and homework was not included (N=69, M=31.97, SD=5.61), $t(118.326)=1.119$, $p=0.233$. There was not a statistically significant difference in the mindset levels of students that perceived in-class work was included (N=257, M=31.37, SD=5.88) and in-class work was not included (N=30, M=30.30, SD=4.96), $t(39.202)=-1.095$, $p=0.280$. There was not a statistically significant difference in the mindset levels of students that perceived assessment was included (N=270, M=31.36, SD=5.9) and assessment was not included (N=17, M=29.59, SD=3.45), $t(285)=-1.226$, $p=0.221$. There was not a statistically significant difference in the mindset levels of students that perceived extra credit was included (N=181, M=31.50, SD=5.60) and extra credit was not included (N=106, M=30.85, SD=6.12), $t(204.648)=-0.894$, $p=0.373$. There was not a statistically significant difference in the mindset levels of students that perceived standards/learning targets were included (N=220, M=31.35, SD=6.02) and standards/learning targets were not included (N=67, M=30.97, SD=5.00), $t(129.495)=-0.511$, $p=0.610$. When combined with the grading practice split data in table 4, it is evident that there is much confusion between the items students' perceived are included in the grade book by students that are enrolled in standards based and traditional grading practices. There are no patterns that emerge from the data that would provide evidence of a consistent grading policy being perceived by the students based on what is included or not included in the gradebook, therefore the lack of effect on the students' mindset level is consistent with the data analyzed to answer the first question regarding the specific grading practices and the impact on students' mindset levels.

Research Question Three

   The third research question combines the various perceived aspects of grading practices that students were asked about on the survey, including, what has the most impact on their grade, which items students are allowed to retake/redo and if they perceive that they understand their grade. The specific research question the researcher wants to answer was, how does students' perceived understandings of grading practices impact student mindset levels? The null Hypothesis, H_o3 is that students' perceived understanding of grading practices has no impact on student mindset levels. Descriptive statistics, independent samples t-tests, or ANOVA were appropriately run on the data as needed to present the findings.

   The first student responses that were analyzed regarded what students perceived to have the most impact on their grade: homework, in-class work, assessments, extra credit or standards/learning targets. Descriptive statistics are presented in table 5, followed by ANOVA results comparing the items students' perceived to have the most impact on their grade and their total mindset level.

Table 5: Frequency: Students' perceptions of items that have the most impact on grade

		Frequency	Percent
Homework	SBG	20	11.6
	Traditional	18	15.8
In-class work	SBG	23	13.3
	Traditional	20	17.5
Assessments	SBG	104	60.1
	Traditional	72	63.2
Extra Credit	SBG	5	2.9
	Traditional	1	0.9
Standards/Learning	SBG	21	12.1
Targets	Traditional	3	2.6

This frequency table shows great overlap in responses by students from standards based graded schools and traditional graded schools. Noteworthy is the very small percentage of students (12%) enrolled in standards based graded schools that perceived standards/learning targets as having the most impact on their grade, also of importance is that a larger percentage of students from those schools marked extra credit as having the most impact and although this was a small number of students, the exclusion of extra credit in the gradebook is one of the primary caveats of standards based grading practices. Across the two types of policies, very similar percentages of students found that homework, in-class work, and assessments had the most impact on their grade.

An ANOVA was conducted and reported no statistically significant effect of the students' perception of the most impactful item in their grade on their total mindset level at the $p<0.05$ level for the 5 conditions, $F_{(4,281)}=0.749$, $p=0.559$. Taken together, these results follow the assumption that students in standards based graded and traditionally graded schools may not have a clear picture of what item has the most impact on their grade, making the resulting impact on their mindset level from this study unaccounted for.

Another aspect of grading practices, regarding the impact that students' perceptions of what items they are allowed to retake or redo have on students' mindset levels was analyzed by running descriptive statistics and an independent samples t-test. Table 6 includes the descriptive statistics, students either responded yes or no, coded 1 or 0 respectively.

Table 6: Descriptive Statistics: Students' perceptions of items that can be retaken/redone

		Mean	SD
Homework	SBG	0.63	0.49
	Traditional	0.63	0.48
In-class work	SBG	0.72	0.45
	Traditional	0.62	0.49
Assessments	SBG	0.69	0.46
	Traditional	0.53	0.50
Extra Credit	SBG	0.31	0.46
	Traditional	0.21	0.41
Standards/Learning	SBG	0.62	0.49
Targets	Traditional	0.43	0.50

In exploring the descriptive statistics, it is worth noting that the largest discrepancy between students' perceptions of items they could retake/redo at standards based graded and traditionally graded schools was standards/learning targets, which reported a 0.19 difference in means, with assessments close behind at a difference of 0.16. After analyzing these descriptive statistics, independent samples t-tests were conducted to examine the impact that students' perceptions of being able to retake/redo each item reported above would have on their mindset level. There were no statistically significant differences between any of the variable items students' perceived they were able to retake/redo and their total mindset levels. Specifically, there was not a statistically significant difference in the mindset levels of students that perceived homework could be retaken/redone (N=180, M=31.22, SD=5.52) and homework could not be retaken/redone (N=107, M=31.32, SD=6.26), $t(201.159)=0.131$, $p=0.896$. There was not a statistically significant difference in the mindset levels of students that perceived in-class work could be retaken/redone (N=195, M=31.33, SD=5.57) and in-class work could not be retaken/redone (N=92, M=31.10, SD=6.23), $t(160.728)=-0.307$, $p=0.759$. There was not a

statistically significant difference in the mindset levels of students that perceived assessments could be retaken/redone (N=180, M=31.62, SD=5.80) and assessments could not be retaken/redone (N=107, M=30.65, SD=5.76), $t(223.870)$=-1.365, p=0.174. There was not a statistically significant difference in the mindset levels of students that perceived extra credit could be retaken/redone (N=77, M=30.57, SD=5.82) and extra credit could not be retaken/redone (N=210, M=31.51, SD=6.5.78), $t(134.576)$=1.213, p=0.227. There was not a statistically significant difference in the mindset levels of students that perceived standards/learning targets could be retaken/redone (N=157, M=31.26, SD=5.55) and standards/learning targets could not be retaken/redone (N=130, M=31.25, SD=6.10), $t(263.897)$=-0.41, p=0.992.

The final aspect of grading practices that students were asked, was, "when I get my report card, I understand what my grade means." Students replied yes or no to this question. Descriptive statistics were run to examine the impact that students' perception of understanding their grade has on their mindset level. After exploring the descriptive statistics, the researcher conducted an independent samples t-test. The results from this analysis resulted in a statistically significant difference in the mindset levels of students reporting that they do not understanding their grade (M=27.97, SD=6.93) and students reporting that they do understand their grade (M=31.71, SD=5.48) conditions, $t(40.130) = -3.067$, $p = 0.004$. These results suggest that students' perceived understanding of their grade has an effect of their mindset level, specifically if they say they understand what their grade means, their mindset level is higher, indicating a more growth mindset. In this specific case, students that state they do not understand their grade fall in the fixed mindset range (under 29) while students that perceive to understand what their grade means fall in the growth mindset range.

Summary

The purpose of this study was to examine the impact grading practices have on students' mindset levels, specifically exploring the differences that the schools' written grading policy, the students' perceptions of items included in the grade and students' perceptions and understandings of various aspects that differentiate standards based and traditional grading practices, could have on students' mindset levels. There were no statistically significant differences in student's mindset levels based on their schools' written grading policy, their perception of what was included in their grade, their perception of items that had the most impact on their grade or their perception of items they could retake/redo. However, there were statistically significant differences in students' mindset levels based on their perceived understanding of the meaning of their grade. A discussion and implications of these findings follows in chapter 5.

Chapter 5 - Discussions and Implications

Most of the research regarding grading practices focuses on the concerns, purpose and interpretation of grades. The alignment of teachers' practices with school policy, the consistency of teachers grades and the lack of meaning all provide a basis for this research study (Brookhart, 1993 & 1994, Guskey, 2015, Marzano, 2000 & O'Connor, 2009a). These researchers have uncovered many of the inconsistent policies and practices that can be found in school districts across the United States. This study focused on a district with different grading policies in place at the middle school level to determine if and how the written policies impacted students, specifically their mindset levels.

The purpose of this study was to explore the impact that grading policies and students' perceptions of grading practices had on students' mindset levels in four urban Midwestern middle schools. The results of this study add to the limited set of research studies regarding the impact that reform grading practices have on students' (Guskey, 2015 & O'Connor, 2009a). A limited number of statistically significant findings were discovered, however, this study was aimed at exploring and examining the impacts of grading policies and practices on students' mindset levels and the alignment of students' perceptions to the practices and policies in place. The significance of merely exploring the impact grading practices have on students' mindset levels was the propelling point for this study, which will lead to further research. The remainder of this chapter includes discussions and implications of the findings as they relate to students, teachers, school districts, and future research. The findings have been organized within four major categories including the lack of impact grading policies have on students' mindset levels, the inconsistency and misalignment of students' perceptions and the schools' policies, the

blending of grading policies and the impact that students' perceived understanding has on their mindset levels.

Students' mindset levels not impacted by written school policy or students' perceptions of grading practices

In chapter 2, the literature review theoretically aligned traditional grading practices with a fixed mindset orientation and standards based grading practices with a growth mindset orientation, however, the initial findings of this research study showed little to no differences in the mindset levels of students based on their schools' written grading policy. Upon analyzing the descriptive statistics presented in table two of the students' individual responses to the mindset survey questions, the researcher noted that there were no significant differences in the mean score responses of students in standard based graded and traditionally graded classrooms.

While analyzing the students' responses to each of the questions on the mindset survey, the researcher also totaled the responses to produce a total mindset level, as described in the methodology. Independent samples t-test further clarified these initial findings, showing that no statistically significant differences were found between the mindset levels of the students enrolled in the schools with the two different grading policies. This does not confirm the work of Masters (2014) that schools' reporting methods send a message to students about their abilities, at least as it is related to their mindset towards their abilities. These findings however, do not show that reporting practices do not impact students, but in this specific case, no impact was made on the students' mindset levels. It was also noted that the average total mindset levels of all students, regardless of the schools' grading policy, fell in the growth mindset classification. Ricci (2014) stated that 60% of entering 6th graders fell within the fixed mindset classification. It would appear that another initiative at the district level may be impacting students. Further

research would be needed to rule out other programs or practices that may be impacting all student's mindset levels in this particular district.

It was also evident in the insignificant findings that students' perceptions of whether or not items, such as homework, in-class work, assessments, extra credit and standards/learning targets, were included in the gradebook or the students' perceptions of the item with the most impact on their grade did not influence their mindset levels, which further establishes the thought that grading practices may not impact students' mindset levels in the practical setting, as was established in the theoretical sense within the literature review. It is the work of future research to determine exactly what impact this message being sent to students has on them in the long term, possibly through a longitudinal study, following students as they transition throughout a variety of grading practices in their academic careers.

The implications of this finding initially appear to show that students' mindsets are not impacted by the grading policies chosen by districts, therefore, a mindset initiative would not be furthered by changing or transitioning to reform grading practices. There are a number of other reasons to transition to more consistent and reliable grading practices, but it was not confirmed by this study whether or not standards based grading practices impact students' mindset levels. The remainder of the findings further explains how the misalignment and inconsistency of students' perceptions of the policy may confound these findings, at this time in the districts' transition to reform grading practices. The misconceptions of students' perceptions of grading practices and the overall leaning towards the growth mindset, not traditionally found at the middle level of all students involved in this study, may also provide further explanation of this finding (Ricci, 2014).

Inconsistency and misalignment of students' perception and school policy

To determine whether or not the items students' perceived to be included in the gradebook impacted their mindset level, the researcher ran independent samples t-tests on each item, homework, in-class work, assessments, extra credit and standards/learning targets and the impact their inclusion in the gradebook had on students' mindset levels. As noted in chapter 4, all findings showed insignificant differences. Again, somewhat misaligned with former studies, as researchers have noted the impact that only including standards/learning targets and organizing the gradebook by skill instead of activity can have on students (Hooper & Cowell, 2014 & O'Connor, 2009b). This finding further compelled the researcher to find answers as to why the students in this study did not appear to be effected by the grading practices in place.

The researcher then ran descriptive statistics on the items included in the gradebook, both in the standards based graded schools and the traditionally graded classrooms, and found that there were very little differences in the items students perceived as being included in their gradebook between the two types of grading policies. As noted in chapter 4, table 3, over half of the students from the traditionally graded classrooms stated that standards/learning targets were included in their grade and over half of students in standards based graded settings stated that extra credit was included in their grade. Both of these findings, show a misalignment of students' perceptions of the grading practices with the schools' written grading policy. This finding confirms the notions of Cross & Frary (1999) that students were confused about practices and ideals of their teachers. When attempting to interpret their grades, students can become frustrated and confused by inconsistent measures (Iamarino, 2014), and although this study did not aim to gauge students' frustration or confusion levels, their inconsistent responses to the

mindset survey and their lack of cohesive perceptions of the schools grading policy or their teachers' grading practices could lead to this type of confusion.

With the multitude of mixed messages being received from students about their perceptions of items included in the grade book, items they are able to retake, and which items have the most impact on their grade, even when a standards based grading policy is in place, this study confirms the work of many researchers, that the first step in implementing effective grading practices is to define a set purpose (Guskey, 2015, Marzano, 2000, O'Connor & Wormeli, 2013, and Brookhart 2011). Researchers and educators should continue to build upon this study, to include teacher interviews or case study research to get a clearer, in-depth picture of the purpose set forth for grading by individual teachers or schools and compare those findings to the students' perceptions. Only when schools' policy, teachers' practices, and students' perceptions align and there is a set purpose for grading, could true impacts be made on students' mindset levels.

This finding, that students' perceptions of grading practices and the schools' written policies do not align uncovered the importance of transparency of policy and practice when school districts are transitioning between grading practices. One future direction of this research is to look further into the teacher's level of awareness or attentiveness to the school's grading policy, as Tierney, Simon & Charland (2011) and Guskey (2015) have previously conducted studies regarding these concerns, adding another element by connecting or comparing teachers' perceptions of the policy and their practices to the students' perceptions, specifically during the transition phase. Findings of such research could help other districts as they contemplate the task of reforming grading practices, knowing that a true shift in mindset will not take place without true alignment of perception, practice and policy. The school district that participated in this

study has two middle schools within the first three years of implementation and four middle schools, two of which were included in this study, implementing a variety of traditional grading policies. These findings show that in the midst of transitions, there may lie a blurred implementation of the policy.

Two grading policies converge within one district

Based on the mixed responses given by students of their perceptions of the grading practices, the researcher came to the conclusion that within one district, with an active professional learning community, the two grading policies have converged upon one another. Tierny, Simon & Charland (2011) set forth guidelines for implementing effective grading practices. One guideline, the clarity of information communicated to stakeholders, seems to be the link that was missing in this study as not a single student from a traditionally graded school marked only traditionally graded items or practices on the survey and not a single student from a standards based graded school marked only items graded or standards based practice, thus emphasizing the importance of clear communication, if true impacts are to be made on students by grading policies and practices. Without this clear communication of expectations and guidelines, students from schools with a single written policy have the same mindset level as students from traditionally graded schools with a myriad of policies and practices.

Outside the theoretical realm, it may be that in the practical setting, as teachers from the schools with standards based policies interact and share their grading stories with teachers from the traditionally graded schools, aspects from both type of grading policy are implemented throughout the district. Further research into the specific practices, through an ethnographic case study are warranted to explore what exactly is the cause of this blurred implementation of the policy. Marzano & Kendall (1996) also found that teacher's grading practices are completely

different from one another even in the same district or schools with the same policies, as the findings of this study would confirm. Brookhart (1993), Iamarino (2014) & Kohn (1999) all agreed that students' focus in a setting with traditional grading practices was highly on earning points and getting a specific grade, while standards based grading practices allowed students to focus on the learning aspect of education. This study aimed to confirm these statements, but the blurred policies set in place during this time of transition for the specific school district in this study, may have confounded the impact that grading practices can truly have on student learning, thus their mindset levels would not be effected by these policies either.

Students' perceived understandings impact students' mindsets

Although the purpose of standards based grading practices is to provide a meaningful, reliable, consistent picture of students learning, this type of product will be lacking in effectiveness until students, parents, and all stakeholders have a clear understanding. One finding of this study that was significantly impactful on students' mindset levels was the students' perception of understanding what their grade means. Although in reality, every student that marked that they understood their grade, had some missing piece of reality of the grading practices, just thinking that they understood their grade empowered them to have more of a growth mindset orientation.

As a follow-up question, the school district representatives wanted to learn more about whether students took advantage of opportunities to improve their grade through retakes/redoes and the researcher found a significant difference in the responses of students that have a growth mindset and a fixed mindset. The students were asked, on a scale of 1 to 5, 1 being always, 5 being never, if there is an opportunity to improve your grade, how often do you take advantage of it. The researcher conducted an independent samples t-test which yielded a statistically

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significant difference between the mindset levels of students that stated they most of the time or always took advantage of the opportunity to raise their grade (M=32.48, SD=5.10) and those that stated sometimes, rarely or never (M=28.27, SD=6.31), t(285)=-5.903, p<0.000. This confirms the work of Dweck (2007) in which she noted that students with a fixed mindset don't want to try to correct or revise their work, while students with a growth mindset are more likely to value mistakes, thus make revisions to their work in an effort to continue learning. Although this was not initially a focus of the study, the findings also reiterate the findings of Ericcson, Charness, Feltovich & Hoffman (2006) that people react to situations, like revising work or improving grades, differently, based on their mindset, growth or fixed, towards learning. This confirms the work of Blackwell, Trzesniewski & Dweck, where they found that

> adolescents who endorse more of an incremental theory of malleable intelligence also endorse stronger learning goals, hold more positive beliefs about effort, and make fewer ability-based, ''helpless'' attributions, with the result that they choose more positive, effort-based strategies in response to failure. (p. 232)

Boaler (2016) also studied this idea, in a mathematics setting, sharing that students that think they can learn are more likely to value difficult, challenging work and the opportunity to make and revise mistakes. These significant findings show the importance of exploring the impact that grading practices have on students' mindset levels, as mindset levels have such a tremendous impact on students' actions.

The implications of this finding for educators is to ensure that students know they can learn, by instilling a growth mindset, which, this finding suggests, can have profound effects on students' reactions to make mistakes, their willingness to revise their work, and potentially continue to learn from it. Within this study, the researcher found no significant differences in the

mindset level of students that were allowed or not allowed to retake/redo specific items, however, it is apparent that if students have a growth mindset, they are more likely to take the opportunity to revise their work. Further qualitative approaches to this research may be to examine if this is an iterative process in which students will develop more of a growth mindset if given the opportunity to retake/redo by interviewing students while be given these opportunities and noting why they decided to make improvements or not.

Summary

DuFour, Eaker & DuFour (2005) state, "substantive and lasting change will ultimately require a transformation of culture – the beliefs, assumptions, expectations and habits that constitute the norm for people throughout the organization" (p. 11). Although this study exemplifies that these internal transformations, these mindsets, have yet to shift, brain-based research has shown that we can change the inner workings of our brains, thus changing our actions (Sternberg, 2005). The most profound implication of this study suggests that practices are not yet aligned enough to make an impact on a students' belief system, however, the changes that are needed to improve student learning, can happen, given the appropriate time and training.

It is imperative for educators and researchers to continue to examine the impact that grading practices have on students, specifically on the development of a growth mindset. This growth mindset will take them to heights they may have never before imagined and it is truly the educator's task to get out students to see their full potential in life, whether this depends on a specific grading practice being in place or not, further research will need to be done, but the actions students take with a growth mindset, found in this study, truly exemplifies the significance of research in this field of study.

This research also confirmed the notion found in preliminary studies that during the transition phases of grading practice implementation, it is important for educators and administrators to give particular focus to the mixed messages that students may receive from a variety of teachers. The transition phase, especially in districts with multiple schools and multiple buildings, may take a longer time to progress, as teachers share with one another and aspects of both traditional and reform practices may be blended together. It is important that educators do not give up on the transition phase. The initial findings of this research, although not statistically significant on many measures, coincides much with the struggle that may be felt in the school setting, that shifts to reform grading practices may come with setbacks and perceived insignificant findings, but further research is needed to examine the longitudinal impacts of reform grading practices and mindset development.

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Appendix A - Email Solicitation

Teacher,

My name is Julie Thiele. I am a doctoral student at Kansas State University in the department of Curriculum and Instruction. I am conducting a research study examining the impact of grading policies on student's mindset. I wanted to reach out to you to determine if you would be interested in having students in your classroom participate in my survey research study. I am looking to compare students' mindset development at schools with various grading practices. There would be minimal time commitment for the students as the survey will be under ten questions. No personally identifiable information will be associated with your or your student's responses in any reports of this data. Your participation is completely voluntary.

It is only through the help of teachers like you that we can provide information to help improve student learning.

If you would be interested in having your students participate, please contact Julie Thiele at jthiele@ksu.edu or 319-210-5578.

Thank you for your time and consideration,

Julie Thiele
Doctoral Candidate
Kansas State University
jthiele@ksu.edu
319-210-5578

Appendix B - Follow-up Email

Teacher,

I recently sent you an email asking for your students' participation in a brief survey about mindsets. Your students' responses to this survey are important and will help in providing information regarding mindset development.

This survey is short and should take less than ten minutes. If you have not yet responded to the survey, I encourage you to take a few minutes and have your students complete the survey.

Additional paper/pencil copies of the survey can be provided by contacting your district LCA Facilitator or contacting me directly at jthiele@ksu.edu.

Your response is important. Getting direct feedback from students is vital in providing a rich educational experience to your students.

Thank you,

Julie Thiele
Doctoral Student
Graduate Teaching Assistant
Kansas State University

Appendix C - Appendix C – School District Written Permission Request

Superintendent,

Hello, my name is Julie Thiele. I am interested in conducting more research examining the relationship between standards based grading practices and students' mindset development.

I was recently in contact with the LCA/Grading Facilitator, to discuss the possibility of conducting my dissertation research at CRCSD. She immediately welcomed the idea to further discuss the research opportunities that the CRCSD could benefit from.

As much as I am doing this for my dissertation, I feel the true benefit of research is to present meaningful data to teachers and administrators so that they can make the greatest impact on student learning. That being said, I would like to give feedback to you and your teachers as you are continuing efforts to improve grading practices in your district.

I am interested in doing a research study examining the impact of traditional and standards based grading policies on student's mindset. I wanted to reach out to you to determine if you would be interested in having students in your school district participate in my survey research study. I am looking to compare students mindset development at schools with traditional and schools with standards based grading practices. There would be minimal time commitment for the students as the survey will be approximately ten questions.

Following the policies at the district level, I am writing to seek your permission to contact the Learning Centered Assessments Facilitator to gain more information pertaining to your districts' grading practices and to conduct my study within your school district.

If you would be interested in meeting to further discuss your grading practices and possible participation in my study, please contact Julie Thiele at jthiele@ksu.edu or 319-210-5578.

Thank you for your time and consideration,

Julie Thiele

Doctoral Candidate

Kansas State University

jthiele@ksu.edu

319-210-5578

Appendix D - Informed Consent Form

PROJECT TITLE: Grading Practices and Mindset Development: The Growth of Both

APPROVAL DATE OF PROJECT: 3/14/16   EXPIRATION DATE OF PROJECT: 3/14/17

PRINCIPAL INVESTIGATOR: Dr. Sherri Martinie

CO-INVESTIGATOR(S): Julie Thiele

CONTACT NAME AND PHONE FOR ANY PROBLEMS/QUESTIONS: Julie Thiele,

jthiele@ksu.edu, 319-210-5578 or Dr. Sherri Martinie, martini@ksu.edu

IRB CHAIR CONTACT/PHONE INFORMATION*:*

- Rick Scheidt, Chair, Committee on Research Involving Human Subjects, 203 Fairchild Hall, Kansas State University, Manhattan, KS 66506, (785) 532-3224.
- Jerry Jaax, Associate Vice President for Research Compliance and University Veterinarian, 203 Fairchild Hall, Kansas State University, Manhattan, KS 66506, (785) 532-3224.

SPONSOR OF PROJECT: Kansas State University, College of Education, Curriculum and Instruction

PURPOSE OF THE RESEARCH: The purpose of this study is to examine the impact that grading policies have on students' mindsets.

PROCEDURES OR METHODS TO BE USED: Students will be asked to complete a short survey during the school day. Names or identifying factors will not be asked.

LENGTH OF STUDY: This study is expected to last 5 weeks.

RISKS OR DISCOMFORTS ANTICIPATED: The researcher does not anticipate any risks or discomforts to the participant.

BENEFITS ANTICIPATED: By taking the survey, students will be able to get a better understanding of their mindset development. The results will also be used to help your school and the school district make improvements.

EXTENT OF CONFIDENTIALITY: Names or identifying factors will not be asked. Alternative names will be used when presenting or publishing research findings.

PARENTAL APPROVAL FOR MINORS: As the participant is a minor, parent/guardian approval will be required before participating in this research study. By signing this form, the parent/guardian agrees that they were informed of the research purpose, methods, and benefits/risks. They are also aware that their child's participation in this study is voluntary and they may withdraw from the study or ask questions at any time.

TERMS OF PARTICIPATION: I understand this project is research, and that my child's participation is completely voluntary. I also understand that if I, with my child, decide to participate in this study, I may withdraw my consent at any time, and stop participating at any time without explanation, penalty, or academic standing to which my child may otherwise be entitled.

I verify that my signature below indicates that I have read and understand this consent form, and willingly agree to participate in this study under the terms described, and that my signature acknowledges that I have received a signed and dated copy of this consent form.

Student's Name _____

Student's Signature _____

Parent/Guardian Signature _____

Date _____

Informed Consent Form Electronic Version

We would like your child to participate in the following survey research that will help our district make decisions about future learning opportunities.

Please read the following consent form and forward this email and one of the following two statements to Kathy Slaman at kslaman@cr.k12.ia.us:

I give permission for my child _____ to participate. My child also agrees to take the survey.

I do not give permission for my child _____ to participate.

I understand this project is research, and that my child's participation is completely voluntary. I also understand that if I, with my child, decide to participate in this study, I may withdraw my consent at any time, and stop participating at any time without explanation, penalty, or academic standing to which my child may otherwise be entitled.

By replying to this email stating that I give my child permission to participate, I am indicating that I have read and understand this consent form, and willingly agree to have my child participate in this study under the terms described below.

PROJECT TITLE: Grading Practices and Mindset Development: The Growth of Both
APPROVAL DATE OF PROJECT: 3/14/16 EXPIRATION DATE OF PROJECT: 3/14/17

CONTACT NAME AND PHONE FOR ANY PROBLEMS/QUESTIONS:
Julie Thiele, jthiele@ksu.edu, 319-210-5578 or Dr. Sherri Martinie, martini@ksu.edu
IRB CHAIR CONTACT/PHONE INFORMATION:
Rick Scheidt, Chair, Committee on Research Involving Human Subjects, 203 Fairchild Hall, Kansas State University, Manhattan, KS 66506, (785) 532-3224.
Jerry Jaax, Associate Vice President for Research Compliance and University Veterinarian, 203 Fairchild Hall, Kansas State University, Manhattan, KS 66506,
(785) 532-3224.
SPONSOR OF PROJECT: Kansas State University, College of Education, Curriculum and Instruction

PURPOSE OF THE RESEARCH: The purpose of this study is to examine the impact that grading policies have on students' mindsets.

PROCEDURES OR METHODS TO BE USED: Students will be asked to complete a short survey during the school day. Names or identifying factors will be removed or changed.

LENGTH OF STUDY: This study is expected to last 5 weeks.

RISKS OR DISCOMFORTS ANTICIPATED: The researcher does not anticipate any risks or discomforts to the participant.

BENEFITS ANTICIPATED: By taking the survey, students will be able to get a better understanding of their mindset development. The results will also be used to help your school and the school district make improvements.

EXTENT OF CONFIDENTIALITY: Names will be changed to non-identifiable numbers, once data is collected. Alternative names will be used when presenting or publishing research findings.

PARENTAL APPROVAL FOR MINORS: As the participant is a minor, parent/guardian approval will be required before participating in this research study. By signing this form, the parent/guardian agrees that they were informed of the research purpose, methods, and benefits/risks. They are also aware that their child's participation in this study is voluntary and they may withdraw from the study or ask questions at any time.

Appendix E - Appendix E – Debriefing Statement

Thank you for your participation in this survey study on students' mindset development as it relates to various grading practices.

Final results will be available from the researcher, Julie Thiele, by August 2016. You may contact me at jthiele@ksu.edu to receive an email copy of the final report. Your participation, including your name and responses, will remain absolutely confidential and any identifiable markers will be fictionalized, even if the report is published.

If you would like to talk to someone other than the researcher, you are encouraged to contact my dissertation committee chair: Dr. Sherri Martinie, martinie@ksu.edu. Also, you may contact the Kansas State University Institutional Revew Board: Dr. Rick Scheidt, Chair Committee on Research Involving Human Subjects or Dr. Jerry Jaax, Associate Vice President for Research Compliance and University Veterinarian. They are both located in 203 Fairchild Hall, Kansas State University, Manhattan, KS 66506 and the telephone number is 785-532-3224.

Appendix F - Appendix F – Questionnaire

This is an opinion survey, not a test. There are no right or wrong answers, so please read each statement carefully and be honest in your answers. By completing this survey you are helping your school and the entire school district make improvements to student learning.

1. Below are a number of statements about your mindset. Please read each one and decide how much you agree or disagree with each statement. Fill in the circle to mark your answer.

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

TURN THIS PAGE OVER. THERE ARE A FEW QUESTIONS ON THE BACK.

2. Are the following included in your grades? Please select either yes or no for each item.

	Yes	No
Homework	○	○
In-class Work	○	○
Assessments	○	○
Extra Credit	○	○
Standards/Learning Targets	○	○

3. Which of the following items has the most impact on your grade? Choose ONE item only.

Homework	○
In-class Work	○
Assessments	○
Extra Credit	○
Standards/Learning Targets	○

4. Are you allowed to retake or redo the following items? Please select yes or no for each item.

	Yes	No
Homework	○	○
In-class Work	○	○
Assessments	○	○
Extra Credit	○	○
Standards/Learning Targets	○	○

5. If you take an assessment and don't do well, do you know how to improve your grade?
   o Yes
   o No

6. If there is an opportunity to improve your grade, do you take advantage of it?
   o Always
   o Most of the time
   o Sometimes
   o Rarely
   o Never

7. When I get my report card, I understand what my grade means?
   o Yes
   o No