

Lindenwood University

Digital Commons@Lindenwood University

Dissertations

Theses & Dissertations

Summer 7-2015

An Analysis of the Comparison between Classroom Grades Earned with a Standards- Based Grading System and Grade-Level Assessment Scores as Measured by the Missouri Assessment Program

Gary L. Greene
Lindenwood University

Follow this and additional works at: <https://digitalcommons.lindenwood.edu/dissertations>



Part of the [Educational Assessment, Evaluation, and Research Commons](#)

Recommended Citation

Greene, Gary L., "An Analysis of the Comparison between Classroom Grades Earned with a Standards-Based Grading System and Grade-Level Assessment Scores as Measured by the Missouri Assessment Program" (2015). *Dissertations*. 334.

<https://digitalcommons.lindenwood.edu/dissertations/334>

This Dissertation is brought to you for free and open access by the Theses & Dissertations at Digital Commons@Lindenwood University. It has been accepted for inclusion in Dissertations by an authorized administrator of Digital Commons@Lindenwood University. For more information, please contact phuffman@lindenwood.edu.

An Analysis of the Comparison between Classroom Grades Earned with a Standards-
Based Grading System and Grade-Level Assessment Scores as Measured
by the Missouri Assessment Program

by

Gary L. Greene

July, 2015

A Dissertation submitted to the Education Faculty of Lindenwood University in
partial fulfillment of the requirements for the degree of
Doctor of Education
School of Education

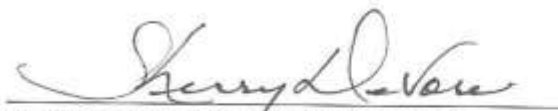
An Analysis of the Comparison between Classroom Grades Earned with a Standards-
Based Grading System and Grade-Level Assessment Scores as Measured
by the Missouri Assessment Program

by

Gary L. Greene

July, 2015

This Dissertation has been approved as partial fulfillment of the
requirements for the degree of Doctor of Education
Lindenwood University,
School of Education



Dr. Sherry DeVore, Dissertation Chair

7-22-15
Date



Dr. Phillip Guy, Committee Member

7-22-2015
Date



Dr. Don Forrest, Committee Member

7-22-2015
Date

Declaration of Originality

I do hereby declare and attest to the fact that this is an original study based solely upon my own scholarly work here at Lindenwood University and that I have not submitted it for any other college or university course or degree here or elsewhere.

Full Legal Name: Gary Layne Greene

Signature:  Date: 7/22/15

Acknowledgements

Thank you to Dr. Phillip Guy, Dr. Sherry DeVore, and Dr. Don Forrest for their support and guidance throughout this process. I would also like to thank those teachers and administrators who participated in this study for their willingness to take the time to talk to me and provide the data for this study. I want to also thank my wife, Erin, my children, Spencer, Sydnee, and Sadee for their patience and support during this process. Additionally, I would like to thank the faculty at Mansfield Middle School for their understanding and support, especially Mrs. Christie Grubbs for her time spent proofreading and editing all my work. Finally, I want to thank God for allowing me this opportunity to pursue higher education and for His saving grace.

Abstract

This study was designed to examine the ability of traditional and standards-based grading practices to predict student performance on the Missouri Assessment Program (MAP) Grade-Level Assessments at the middle school level. This study also explored the perceptions Missouri middle school teachers and administrators had concerning the use of standards-based grading and identified obstacles educators faced during and after its implementation. The research was conducted in phases to observe two sets of data. Phase One involved the collection and analysis of quantitative data from two schools in Missouri that use standards-based grading in the seventh and eighth grades and two schools in Missouri that utilize a traditional method of grading. Data consisted of semester grades and subsequent MAP achievement levels for each student in math and English language arts in the seventh and eighth grades. Student data were analyzed using the chi-square goodness-of-fit test to determine if a statistical difference existed between the ability of standards-based and traditional grading systems to predict MAP achievement. Phase Two included the collection and analysis of qualitative data which consisted of teacher and administrator responses to open-ended interview questions. Phase One data showed no ability of either standards-based or traditional grading to accurately predict subsequent MAP achievement levels. Phase Two data revealed that while the majority of respondents believed standards-based grading was a more accurate measure of student knowledge, teachers harbored negative feelings concerning this grading system, and administrators failed to provide adequate initial and ongoing professional development.

Table of Contents

Abstract	iii
List of Tables	vii
List of Figures	viii
Chapter One: Introduction	1
Background of the Study	3
Theoretical Framework	7
Statement of the Problem	8
Purpose of the Study	10
Research Questions and Hypotheses	12
Definitions of Key Terms	12
Limitations and Assumptions	14
Summary	16
Chapter Two: Review of Literature	17
Student Grading.....	19
Grading Systems: Traditional and Standards-based	28
Standards-based Grading: Implications of the Research.....	38
Obstacles to and Suggestions for Implementing Standards-based Grading.....	45
Standardized Testing and Accountability.....	51
Summary	55
Chapter Three: Methodology	56
Problem and Purpose Overview	56
Research Questions and Hypotheses	59

Research Design	60
Population and Sample	61
Instrumentation	62
Data Collection	64
Data Analysis	65
Summary	66
Chapter Four: Analysis of Data	67
Organization of the Chapter	68
Phase One: Quantitative Data	69
Phase Two: Qualitative Data	78
Demographic Analysis	78
Response to Interview Questions	78
Theme One: Positive Perceptions	79
Theme Two: Negative Perceptions	84
Theme Three: Obstacles to Implementation	88
Summary	95
Chapter Five: Summary and Conclusions	97
Findings	97
Phase One: Quantitative Data	98
Phase Two: Qualitative Data	99
Conclusions	104
Implications for Practice	111
Recommendations for Future Research	113

Summary	115
Appendix A	117
Appendix B	119
Appendix C.....	121
Appendix D	123
Appendix E	125
References	127
Vita	136

List of Tables

Table 1. <i>Chi-square Goodness-of-Fit Results</i>	99
--	----

List of Figures

<i>Figure 1.</i> English language arts (ELA) and math student semester grades as compared to student MAP achievement levels in traditionally-graded classrooms.....	71
<i>Figure 2.</i> English language arts (ELA) student semester grades as compared to student ELA MAP achievement levels in traditionally-graded classrooms.....	73
<i>Figure 3.</i> Math student semester grades as compared to student math MAP achievement levels in traditionally-graded classrooms.....	74
<i>Figure 4.</i> English language arts (ELA) and math student semester grades as compared to student MAP achievement levels in standards-based graded classrooms.....	75
<i>Figure 5.</i> English language arts (ELA) student semester grades as compared to student ELA MAP achievement levels in standards-based graded classrooms.....	76
<i>Figure 6.</i> Math student semester grades as compared to student math MAP achievement levels in standards-based graded classrooms.....	77

Chapter One: Introduction

Research on grading practices over the last 20 years has shown that teachers hold firmly to their own methods, and these methods vary greatly from school to school and even within the same grade levels in the same school (Campbell, 2012). Research has also revealed that grading practices are most effective when they provide teachers, students, and parents with specific and accurate feedback concerning academic performance, and this feedback is presented in a timely manner for the purpose of improving student performance (Marzano 2000; O'Connor, 2010). Despite these research-based claims, Marzano (2000) referred to grades in American schools as meaningless.

Reeves (2008) illustrated Marzano's concern when he asked thousands of teachers to calculate a final grade for a student who had received the following 10 grades: three C's, two B's, one A, one D, and three missing assignments. Every time he conducted this experiment, Reeves (2008) got the same results. According to Reeves (2008), "The final grades range from F to A and include everything in between. As this experiment demonstrates, the difference between failure and the honor roll often depends on the grading policies of the teacher" (p. 85). Reeves (2008) stated that if schools want to reduce failure rates they need to look less at curricula, principals, teachers, or technology and focus their efforts on using a better grading system. The public is increasingly calling for greater accountability of student knowledge, yet continuing to use methods that are inconsistent and oftentimes subjective can lead to inequalities for students (Campbell, 2012).

As educators become increasingly concerned that student learning is not accurately measured by current grading practices, educational leaders are beginning to research more accurate ways to assess and report student learning (Hanover Research, 2011). In search of more meaningful grading practices, attention has been given to standards-based grading practices. Standards-based grading measures student mastery of specific standards and, unlike traditional grading paradigms, is not influenced by nonacademic factors such as behavior and work habits (Marzano & Heflebower, 2011; Proulx, Spencer-May & Westerberg, 2012). Brookhart (2011b) argued the standards and accountability movement in the United States has its counterpart in standards-based grading, as this grading practice focuses solely on assessing students on their abilities to demonstrate proficiency on the state standards.

Being able to prepare students adequately for the state assessments and being able to predict success are especially significant since the results of the state tests are the primary means for determining whether schools are meeting Adequate Yearly Progress (AYP) goals (U.S. Department of Education, 2009). Jung and Guskey (2011) stated not only should grades be accurate indicators of what students know, but they should also be good predictors of how students will perform on state assessments. According to Gordon (2010), a grant-funded study conducted by two middle school math teachers showed that hard-working students might earn passing grades on their report cards but fail the standardized tests. The Austin, Minnesota, math teachers came to see traditional grading practices as potentially misrepresentative of a student's academic success (Gordon, 2010).

A background of the topic of effective and ineffective grading practices as it pertains to the study is provided in Chapter One. In this chapter, the educational problems stemming from this issue are addressed, and the purpose of the study and the possible implications for teachers, principals, and students are described. The questions addressed by the study are introduced, the meanings of terms used are clarified, and the study's limitations are discussed.

Background of the Study

Grading practices in education have largely remained unchanged for decades. Jung and Guskey (2011) reported that practices in grading have not evolved at the same pace as the ever-changing requirements of education, and teachers' grading practices are grounded more in tradition rather than being based upon research on best practice. Guskey, Swan, and Jung (2011) stated that, in the measurement community, grades have been identified as being unreliable due to the various criteria teachers use to assign grades. The body of research on grading practices does not contain a clear and consistent definition of traditional grading. Brookhart (2011b) listed the following practices as both traditional and harmful: averaging scores; grading on the curve; and combining scores for achievement, behavior, and progress into one grade. According to Marzano and Heflebower (2011), "In the traditional system, students acquire points for various activities, assignments, and behaviors, which accrue throughout a grading period" (p. 34). Many teachers factor nonacademic variables into grades, including behavior, turning in assignments on time, participation, and attendance (Marzano & Heflebower, 2011).

Jung and Guskey (2011) stated that teachers continue to grade on a curve and average grades even though there is evidence which suggests these practices have

harmful consequences, such as not accurately showing what students have learned and not being good predictors of how students will perform on state assessments. Allen (2005) stated that educators at all levels make grading decisions with no basis on sound principles of validity. According to Allen (2005), many teachers either did not take college courses in assessment, never had their long-held beliefs on grading challenged, or courses taken on assessment and grading did not effectively address measuring student learning. Jung and Guskey (2011) also pointed to poor teacher preparation programs as a major contributor to the variation and ineffectiveness of grading. According to Guskey et al. (2011), most teachers have limited knowledge of the advantages and disadvantages of traditional and standards-based grading methods and tend to grade their students the same way they were graded in school. Guskey et al. (2011) added, “Rarely do these policies and practices reflect those recommended by researchers and aligned with a standards-based approach” (p. 53).

According to Schafer (2002), the MAP’s grade-level assessments were found to be valid measures of student achievement when independently evaluated. However, Jung and Guskey (2011) reported a disconnect exists between student grades and predictability of how they will perform on state assessments, and “this discrepancy uncovers a long-hidden truth: historically, grades have not been reliable indicators of what students know and are able to do” (p. 32). This, again, is due to the variation of methods traditionally used to calculate grades, including the use of nonacademic or non-achievement based variables which contribute to the overall student’s grade. Hanover Research (2011) reported these variables and practices, such as incorporating subjective judgment and grading students on a curve, inflate grades and make them inaccurate measurements of

content mastery. Students who simply work hard and are well-behaved are often able to achieve high grades; however, these grades may not accurately measure a student's true level of comprehension (Hanover Research, 2011). Principal Katie Berglung stated, "A portion of our A and B students were not the ones who were gaining the most knowledge but the ones who had learned to do school the best" (as cited in Tyre, 2010, para. 5).

In order to improve student grading, some school districts are turning to standards-based grading methods to find a more accurate method of assessing and reporting student knowledge and to better predict student success on state assessments (Jung & Guskey, 2011). In a standards-based grading system, nonacademic factors are removed from the assignment of grades, and "grades are determined exclusively by students' demonstrated mastery of state standards and benchmarks, making them more accurate than grades that are based on traditional grading systems that incorporate a mixture of academic performance, extra credit, behavior, and work habits" (Proulx et al., 2012, p. 30).

Standards-based grading does not incorporate policies such as grading on a curve, averaging grades, assigning zeroes as punishment, grading group work, and giving extra credit (Hanover Research, 2011). According to O'Connor and Wormeli (2011), these practices do not communicate what individual students know or what they can do at a particular point in time. As an example, a student who earns A's on tests but who has several zeroes for missing assignments, using a traditional, averaging method, would not be assigned a grade that accurately reflects his or her content knowledge (Campbell, 2012).

Despite researchers' claims that standards-based grading is a more accurate method of assessing students, many teachers believe nonacademic skills, such as responsibility and behavior, are important aspects of a student's education (Erzen, 2014; Sailor, Stowe, Turnbull, & Kleinhammer-Tramill, 2007). In a survey of 255 teachers, Erzen (2014) found that teachers had many concerns regarding key aspects of standards-based grading. Some teachers believed that homework completion develops successful work habits and grades should reflect the learning process as well as the final product (Erzen, 2014). Other teachers felt that allowing students to retake tests when the students do not participate in class or pay attention does not teach responsible behavior (Erzen, 2014). Sailor et al. (2007) argued that social development is strongly related to the achievement of content standards and social-behavioral development skills; therefore, social-behavioral development skills should be embedded in academic content areas.

In contrast, Proulx et al. (2012) stated a standards-based grading system would clearly communicate student expectations on what students should know in a subject and only report on how well students are performing at meeting those expectations. In using standards-based grading practices, this is accomplished by assessing individual student achievement in a summative format with assessments being directly related to specific standards (Proulx et al., 2012). In addition, students are "measured against specific academic standards, not their peers" (Hanover Research, 2011, p. 17). During a review of the Omaha, Nebraska, school district's standards-based grading program, it was reported that student learning was higher and trend scores improved after a standards-based grading program was implemented (Proulx et al., 2012).

Theoretical Framework

Vygotsky's social constructivist theory, the zone of proximal development (ZPD), provides an appropriate lens through which to view the research on effective assessment and grading practices. The ZPD was defined as "the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance, or in collaboration with more capable peers" (Vygotsky, 1978, p. 86). The ZPD is predicated on the belief that students benefit from scaffolding, or individualized support, to master tasks, and when that scaffolding is removed, students will be able to master and complete tasks on their own (Coffey, 2014; McLeod, 2014).

Coffey (2014) described how the concept of scaffolding enables the learner to build on prior knowledge to master new concepts. She listed important tips for proper scaffolding, one of which is at the heart of standards-based grading (Coffey, 2014). Coffey (2014) suggested that tasks should "clearly indicate differences between the child's work and the standard or desired solution" (Scaffolding in the Classroom section, para. 2). According to Marzano (2000), the use of formative assessments to guide instruction is essential for a standards-based classroom. Formative assessments provide students with information about what they need to improve upon and provide teachers with progress monitoring of individual students (Marzano, 2000).

Hardegree (2012) stated that observing and measuring what students can do with and without help and then designing instruction to bridge that gap is the central tenet of standards-based grading. According to Hardegree (2012), assessments should both guide instruction and measure student learning. Practices such as averaging grades may not

show mastery since those grades might have come from assessments where scaffolding was provided (Hardegree, 2012). In contrast, the goal of standards-based grading is to communicate what students know and are able to do independently (Hardegree, 2012).

Grades should reflect the achievement of learning outcomes and accurately measure student proficiency in meeting specific standards (Brookhart, 2011a; Oliver, 2011). When students are able to show mastery of concepts and no longer need scaffolding, they have moved out of the ZPD for those specific standards (Belolan, 2013). Vygotsky's social constructivist ideas on how children learn can impact the way teachers view assessments, bringing focus to the separation of the learning process and the evidence of what students know and can do independently (Hatch, 2010). Since this current study will compare the accuracy of two different grading methods in predicting state achievement levels, it is important to be able to identify when students leave the ZPD and have mastered those standards on which they will be assessed.

Statement of the Problem

Marzano (2000) expressed his concern about current, traditional grading methods with a simple statement. According to Marzano (2000), "Grades are so imprecise that they are almost meaningless" (p. 1). Even with advanced grading and reporting methods, this imprecision still exists in many schools and districts (O'Connor & Wormeli, 2011). A student who receives a C grade in a classroom would more than likely be thought of as an average performer; however, according to Guskey and Jung (2012), when variables other than the measurement of academic proficiency have been factored into a student's grade, it may not provide a meaningful picture of achievement.

In traditional practices, variables such as attendance, behavior, and homework completion contaminate the overall grades of students (Marzano & Heflebower, 2011). As a consequence of the tremendous variation among traditional grading practices, it is difficult to predict success or failure for students on state assessments (Guskey & Jung, 2012). In contrast, the use of summative assessments in the standards-based grading system provides reliable measures of content mastery as these types of assessments only report academic achievement, “. . . and not some confusing amalgamation that’s impossible to interpret and that rarely presents a true picture of students’ proficiency” (Guskey & Jung, 2012, p. 25).

The majority of states today, including Missouri, have developed standards for student learning and have accountability assessment programs to measure student proficiency based on those standards (Guskey et al., 2011; Missouri Learning Standards, 2014a). Standards-based grading is increasingly being seen as a logical choice for many school districts searching for ways to measure academic achievement more accurately (Jung & Guskey, 2011). Proulx et al. (2012) explained standards-based grading as a method of grading that establishes clear learning targets aligned to state standards and one which gives students continuous feedback on achievement.

According to Proulx et al. (2012), grades in a standards-based grading system are not used to punish students, as students are given multiple opportunities to demonstrate mastery and are not penalized for late work. Students are graded, “solely on the basis of evidence of their learning” (Proulx et al., 2012, p. 32). Oliver (2011) stated:

For us to turn a blind eye to this new way of thinking limits our ability to measure student achievement as well as putting into practice effective ways to motivate

and encourage our students to perform at higher levels and increase their learning. We must continue to ask ourselves: Is learning the goal or is grading the goal? Should we be looking for and emphasizing student growth and not simply assignment completion? And finally, shouldn't we be teaching our students what true quality looks like? The time has come to move our thinking along.

(Concluding Remarks section, para. 1)

In this statement, Oliver (2011) alluded to the possibility of teacher resistance to standards-based grading.

In an effort to assist administrators in the task of transitioning to standards-based grading, Oliver (2011) suggested teachers who are forced to switch to a standards-based system may have a problem committing to such a drastic departure from the norm. Teachers view their assessments as sacred ground and, therefore, are unwilling to part with them readily (Oliver, 2011). However, Guskey and Jung (2012) stressed that as states continue to implement standards-based curricula and measure students' knowledge with standardized assessments, grading practices need to adapt in order to be meaningful. According to Guskey and Jung (2012), school leaders are beginning to notice that many of their teachers' grading practices are riddled with inconsistencies and subjectivity. In turn, it is nearly impossible to determine if letter grades are accurate predictors of the same level of proficiency on the state's targeted objectives (Guskey & Jung, 2012).

Purpose of the Study

The purpose of this study was to examine the ability of traditional and standards-based grading practices to predict student performance on the MAP Grade-Level Assessments at the middle school level. By determining which grading methods most

accurately predict achievement, as measured by the seventh and eighth-grade state assessments, school districts can either provide rationale for making changes to outdated grading practices or provide justification for continuing to use their current, traditional practices. This research will aid school district officials when attempting to implement grading practices which closely align with desired student outcomes and performance abilities.

This study also explored the perceptions that Missouri middle school teachers and administrators have concerning the implementation and use of a standards-based grading system. Schools in the Omaha, Nebraska, school district began using various aspects of standards-based grading in 2002 and fully implemented the practice in 2010 (Proulx et al., 2012). The district reported challenges such as faculty training, developing proficiency scales, and stakeholder buy-in and discussed those strategies considered most helpful during implementation and those which were considered less helpful (Proulx et al., 2012).

Proulx et al. (2012) reported when district leaders looked back at the process, administrators were not trained well enough and did not have the in-depth knowledge needed to implement standards-based grading consistently throughout the district. On the positive side, several Kentucky school districts are leading a statewide initiative to move to a standards-based reporting system, and teachers surveyed in those districts were nearly unanimous in agreeing that the new standards-based report cards communicated better and clearer information to parents (Guskey et al., 2011). This study attempted to identify both the positive aspects of standards-based grading as well as the challenges educators faced during and after the implementation of this grading method.

Research questions and hypotheses. The following research questions guided this study:

1. What difference, if any, exists between semester grades assigned from traditional grading paradigms and correspondingly similar MAP achievement levels?

2. What difference, if any, exists between semester grades assigned from a standards-based grading system and correspondingly similar MAP achievement levels?

3. What differences in perceptions exist among teachers and administrators regarding the use of standards-based grading verses traditional grading systems?

4. What obstacles do teachers and administrators report when implementing and using a standards-based grading system?

H1₀: There is no difference between semester grades assigned from traditional grading paradigms and correspondingly similar MAP achievement levels.

H1_a: There is a difference between semester grades assigned from traditional grading paradigms and correspondingly similar MAP achievement levels.

H2₀: There is no difference between semester grades assigned from a standards-based grading system and correspondingly similar MAP achievement levels.

H2_a: There is a difference between semester grades assigned from a standards-based grading system and correspondingly similar MAP achievement levels.

Definitions of Key Terms

For the purposes of this study, the following terms were defined:

Adequate Yearly Progress. Adequate Yearly Progress (AYP) is "...the measure by which schools, districts, and states are held accountable for student performance under

Title I of the No Child Left Behind Act of 2001” (Editorial Projects in Education Research Center, 2011, para. 1).

Common Core State Standards. The Common Core State Standards (CCSS) are a set of high-quality math and English language arts academic standards. The standards provide the framework for what students in each grade level should know upon completion of the school year. The standards were designed to ensure all students are prepared for life after high school, regardless of the state in which they reside and receive their education (Common Core State Standards Initiative, 2015).

Formative assessments. Formative assessments include a variety of methods teachers use to evaluate student comprehension of standards, identify weaknesses, and chart progress during a lesson or unit. These assessments are in-process evaluations used for the purpose of adjusting instruction to improve student learning (Abbott, 2014).

Missouri Department of Elementary and Secondary Education (MODESE). The MODESE (2014b) is the government department responsible for overseeing the performance of public schools in Missouri (MODESE, 2014b). Its mission is to guarantee the preparation and performance of Missouri public school students, and its goals include preparing students for college or a career and developing effective educators (MODESE, 2014b).

Middle school. For the purpose of this study, middle school will refer to the seventh and eighth-grade classrooms in the participating school districts.

Scaffolding. Scaffolding is an instructional technique in which individualized support is given by the teacher to improve a student’s level of knowledge about a concept incrementally (Coffey, 2014). Students build upon their prior knowledge, and through the

instructor's guidance, eventually internalize the information and are able to demonstrate knowledge on their own (Coffey, 2014).

Standards-based grading. The standards-based grading method assesses “students only on their academic performance and proficiency, not on any behavioral factors. In a standards-based system, students are measured against specific academic standards, not their peers” (Hanover Research, 2011, p. 17).

Summative assessments. Summative assessments include tests or projects given at the conclusion of a unit or instructional period to determine if students have learned the material taught and to identify the level of academic achievement (Abbott, 2014). The scores on these assessments are usually recorded as grades (Abbott, 2014).

Traditional grading. Traditional grading is a system of grading dating back over 100 years in which a single letter or number represents a wide variety of skills (Bieber, 2011). In this system, nonacademic factors are typically used in the calculation of grades, and these factors include behavior, effort, attitude, class preparation, extra credit, and penalties for late work or zeroes for missing assignments (Hanover Research, 2011). Both process and product grades are usually taken, and all grades are averaged into one final grade at the semester (Bieber, 2011).

Limitations and Assumptions

The following limitations were identified:

Sample demographics. The data used in this study were quantitative MAP achievement level data and corresponding classroom grades obtained from districts using traditional grading methods and those using standards-based grading practices. The data for this study were derived from four Missouri middle schools. Data collected for this

study were from the 2013-2014 school year. The MAP achievement levels and the semester grades of randomly selected students from two school districts identified as standards-based grading schools were analyzed. The MAP achievement levels and semester grades of randomly selected students from two school districts identified as using a traditional method of grading were also analyzed. Approximately 100 students' data from each method of grading were statistically examined to determine if one method of grading more accurately predicted MAP achievement levels than the other.

The differences that exist in traditionally-graded classrooms in measurement and recording could be substantial. These differences should not, however, change the fact that classroom grades from traditional grading systems are obtained in essentially the same manner from one classroom to the next (Hanover Research, 2011). Grades are determined by averaging test scores and homework assignments to culminate in a percentage grade that would equate to a letter grade between an A and F.

Due to the arbitrary nature of the MODESE, MAP tests change in dynamics, as do achievement levels. The MODESE determines MAP scale scores and cut-off ranges for the four achievement levels each year. Because of this, achievement level determination for each subject area and grade level does not necessarily remain static. The possibility for variation in achievement level scores from year to year was a limitation for this study.

Instrument. Qualitative data were procured using standardized, open-ended interview questions. The interview process was a limitation in and of itself due to the humanistic nature of the process. The perceptual nature of the data and possibility of compromise to the authentic nature of the responses was acknowledged.

The following assumptions were accepted:

1. Interviewees answered all questions in an honest and unbiased manner.
2. Interviewees answered all questions based on their personal experience and to the best of their individual abilities.

Summary

Traditional grading systems are typically inundated with many nonacademic factors which can artificially inflate grades, and consequently, do not reflect true academic achievement (Hanover Research, 2011). With standards-based grading, educators can employ a system which eliminates such factors and potentially offers a more accurate reflection of student achievement (Hanover Research, 2011). Eliminating the variables that do not measure achievement would give educators a more honest evaluation of teaching strategies, which in turn, would allow school districts to predict student success on state achievement tests (Jung & Guskey, 2011).

This research compared the effectiveness of traditional grading methods and standards-based grading systems to predict student performance on seventh and eighth-grade state achievement tests. The data were gathered in an attempt to indicate whether classroom grades assigned using one grading system more closely correspond to MAP achievement levels than the other. This research also identified the challenges teachers and administrators faced when implementing a standards-based grading system.

In the upcoming chapter, the reader is presented with the history of student grading, as well as the current purpose of grades. Traditional and standards-based grading systems are compared and contrasted according to current research, obstacles to implementing standards-based grading are identified, and the impact of standardized testing and accountability, as they are related to student grades, are discussed.

Chapter Two: Review of Literature

O'Connor and Wormeli (2011) discussed a growing concern among educators: the validity and ability of grades to report student learning and to predict student performance on standardized assessments. They stated, "With accountability measures on the rise and both businesses and colleges questioning the validity of the modern high school diploma, grading and standards are now under intense scrutiny" (O'Connor & Wormeli, 2011, p. 44). Higher education institutions use student grades as predictors of how students will perform academically, yet stories are abundant of straight A students being required to take remedial college classes, suggesting current grading systems are imperfect tools (Koumpilova,2013).

Iamarino (2014) expressed concern about conventional, or traditional, grading as it often incentivizes students with points for basic classroom requirements. The accumulation of points for attendance and the completion of homework assignments does not lead to a focus on the bigger picture of academic achievement as does a method of grading known as standards-based grading (Iamarino, 2014). Iamarino (2014) reported that this concept of attempting to measure student achievement through various methods of point totaling is common throughout many classrooms in America, but standards-based grading provides a more focused and complete summation of student mastery of content. Iamarino (2014) described traditional grading as internally flawed and producing only small images of the true measure of student efforts, while standards-based grading measures "a student's ability to meet a clear set of standards" (p. 2). Erickson (2011) stated that grades should only be reflective of student knowledge of content and went on to say that many practices in grading either inflate or deflate student course grades.

According to Koumpilova (2013), teachers give differing weight to variables such as work ethic and student attitudes, which makes it difficult to compare grades from one classroom to another. Koumpilova (2013) explained how, in several Minnesota school districts, the examination of students' grades as measured against state assessments uncovered a disconnect: the B math students had state math test scores that were "all over the spectrum" (An Imperfect Tool section, para. 1). Fisher, Frey, and Pumpian (2011) reported a glaring admission from teachers in San Diego, California, who when taking inventory of grading practices said this about their struggling students, "We really don't know why most of them are failing. In fact, a whole group of them may actually understand the content but have compliance issues. We just don't know any other way to grade" (p. 46). Examples such as these form the basis for this literature review.

The analysis of traditional grading versus standards-based grading as each relate to state assessment achievement is the backbone of this study. In this literature review, the many facets of traditional and standards-based grading are mapped out, and a clear understanding is provided in regards to what makes the two practices different from each other and how those differences can affect student achievement in classrooms across America. A history of student grading is also provided, and research-based best practices and those practices educators should avoid are exposed. The obstacles many educators face when implementing standards-based grading are noted in this chapter, along with information regarding standardized testing and accountability as it relates to grading in schools.

The literature was chosen for examination based upon its relevance to the topic of grading methods and each method's ability to report student knowledge. The analysis of

the literature helps determine whether there is a lack of accuracy when it comes to how students are currently being graded using traditional grading methods and justifies the need for more research on this topic. Lastly, an informational background on which to guide this study in terms of data collection and interpretation is provided in this chapter.

Student Grading

Beginning historically with the earliest educational settings, teachers have had the responsibility of evaluating the quality of work students provide in order to determine how well the students understand new concepts. Moll (1998) explained how the first professional qualifying examination system in Britain was established in the early 1800s as a result of attempting to assess the training doctors received. During the 1870s, when the British civil service could no longer be filled using traditional methods, the first “public examination” system was created (Moll, 1998, para. 1). As compulsory education became prominent, this practice became the norm in schools and universities.

Moll (1998) described how, during the early part of the 20th century in America, one-room schoolhouses became less prominent, and schools in larger urban areas created what became known as report cards. From the middle of the 19th century to the early years of the 20th century, percentage grading was the standard method of grading in schools across America (Moll, 1998). Between 1911 and 1960, there were multiple efforts to change or modify the system, and as a result, numerical scores gave way to letter grades, which remain the most common system of grading today (Moll, 1998). Guskey (2011) wrote that today’s report cards look similar to the way they looked a century ago, listing the subject areas and a single grade for each one.

Keeney (2000) provided a timeline of grading practices in the United States, noting that before the year 1850 grading and reporting were virtually non-existent, and instead, teachers merely wrote down the skills students had mastered. At Harvard University in the 1880s, letter grades became a fundamental practice, and not long after, letter grades had swept the nation (Goodwin, 2011). However, according to Goodwin (2011), less than a decade later, Harvard instructors were so unhappy with the way grades were handed out they feared the university would lose credibility if people discovered what they were doing. In the early 1900s, public schools increased in number and percentage grading was introduced (Keeney, 2000). In 1918, the three-point scale in categories of Excellent, Average, and Poor became a common practice, and by 1930, a new practice called *grading on the curve* grew in popularity. Curve grading is a distribution of grades indicating the performance of individual students in relation to the performance of other students, rather than assigning grades based on standards of achievement (*Merriam-Webster's Online Dictionary*, 2014).

In 1958, Ellis Page conducted a study in which secondary school teachers administered a test and assigned each student a numerical score and a letter grade, using an A through F letter system. The tests were organized into three groups with one group only receiving a letter and numerical grade, while the other two groups were given a letter grade with comments (Keeney, 2000). Keeney (2000) explained the third group had even more individualized comments than the second. After the next test, Page discovered the students who were given comments achieved higher scores than those with only letter and numerical grades (Keeney, 2000). Page concluded that letter grades can be

productive but only if accompanied with specific comments describing student performances (Keeney, 2000).

Stephens (2010) reported that teachers' attitudes toward grading are often established by the way they themselves were graded as students, their personal beliefs, district or grade-level policies, or by their undergraduate degree programs. Shippy, Washer, and Perrin (2013) also agreed grading systems are ingrained in educators through past experiences. Brookhart (2011b) urged educators to reach consensus on the purpose of grades, as many teachers cannot agree on what the actual purpose of grading should be. In her discussion with teachers, some argued for a motivational purpose to grading, while others stressed effort as being the most important factor (Brookhart, 2011b). Brookhart (2011b) reported academic variables also played a key role, especially when considering the impetus placed on state testing.

Guskey (2011) explained one traditional grading practice used by many teachers known as a curve grading system, which was introduced more than 80 years ago. Guskey (2011) described how grading on a curve simply compares students to one another and is not based exclusively on measures of student knowledge. In using this method of grading, when a student receives a C, it does not necessarily mean that he or she has reached step three out of five in a content mastery scale but that he or she was simply average or middle of the pack (Guskey, 2011). Consequently, receiving a high grade does not necessarily prove proficiency but only that a particular student out-performed his or her classmates (Guskey, 2011).

In contrast, when discussing the grading system known as standards-based grading, Oliver (2011) argued this method of grading would align grading practices with

content standards by measuring accurately the proficiency of students in meeting specific standards. Varlas (2013) agreed, claiming that grades should report the progress that students have made towards learning goals, and she argued that grades should give all stakeholders (students, parents, and teachers) valuable information about the adjustments needed to meet these goals. According to Varlas (2013), nonacademic criteria should be removed from grading practices, while Stitt and Pula (2014) argued that subjective factors, such as effort and participation, should be included in grades.

As many educators are moving away from traditional methods of grading, one of the more common issues is how to reach unanimity on the actual purpose of grading. Brookhart (2011b) explained how, when she spoke with educators about grading and assessment, emotions tended to run high, and the gamut of opinions is large. Brookhart (2011b) shared the following teacher comments:

Our state test scores were rising, but our grades weren't. Aren't we supposed to be measuring the same standards? Our kids used to complain that with some teachers they'd get an A, and with others they'd get a B. We're trying to be more consistent. (p. 10)

As sentiments regarding the importance of grades are continuing to be debated, teachers are starting to question the traditional grading methods that categorized students by learners and non-learners (Brookhart, 2011b).

O'Connor and Wormeli, (2011) believed effective grading would resemble that which is reliable, significant, exact, and supportive of the learning process. As stated previously, traditional grading includes the use of nonacademic variables averaged with assessments that result in a letter or percentage grade being given to the student (Jung &

Guskey, 2011). In that paradigm, it is difficult to know exactly what a grade means, and for this reason, Jung and Guskey (2011) argued for making the objectives of grades clear at the beginning.

Hanover Research (2011) described purposeful grading as that which provides specific feedback on ability and performance as it relates to class objectives. However, as Campbell (2012) reported, grading habits vary from class to class even in the same buildings, and grading strategies which are supported by current research are very seldom seen. Campbell (2012) went on to say that many grades are given to students as rewards for completed tasks as opposed to measuring achievement. O'Connor and Wormeli (2011) described traditional grading practices as those where teachers provide material and then report students' failures with the concepts, which does not serve a valuable purpose.

Many teachers believe they have a responsibility, through the assignment of grades, to prepare students for the real world, and some teachers believe denying students the opportunity to redo an assignment or retake a test is one of the ways that can be accomplished (Wormeli, 2011). Wormeli (2011) suggested teachers who believe they are doing students a favor by not allowing them to redo assignments or tests are forgetting how the real world works. As Wormeli (2011) explained, adult professionals actually excel through the use of redos. Examples include pilots who practice in simulators before they actually fly, doctors who practice on cadavers in medical school, and architects who redesign plans to meet certain building codes (Wormeli, 2011).

Knowing what grades should communicate to students and parents is a concerning issue among teachers, as illustrated by Nesbit (2014). One Washington

teacher noted a student might bring home a B due to high-quality homework completion but lack a thorough understanding of concepts, while another student might have the same grade because of high test scores, signifying mastery of concepts, but with no homework completion or classroom participation (Nesbit, 2014). This example provides the crux of the issues facing schools when assessing grading systems for maximal learning. As Nesbit (2014) illustrated, each student earned a similar grade with varying reasons for doing so, yet neither students' parents have enough information to ascertain exactly what the students knows.

According to Deddeh, Main, and Fulkerson (2010), teachers have a tendency to equate performance with practice, and the fault in doing so can be explained using real-world analogies. In the sports world, for example, athletes would be evaluated and paid based on their performance during practices, and Broadway performers could receive negative critiques if they forget their lines in rehearsal even if their performance event was flawless (Deddeh et al., 2010). Research would suggest, due to the differing beliefs about what information to use when factoring grades, educators might not be accurately communicating what grades measure or reporting on true achievement (Wormeli, 2011).

Oliver (2011) argued if teachers are required to teach using a specific set of standards, then grading should mirror that expectation. Oliver (2011) stated that any changes in grading practices could be smooth and uncomplicated for some teachers and difficult and perplexing to others. In order to make a transition to a system of grading that is more pragmatic and sensible, school districts must have a clear purpose for what grades should mean (Oliver, 2011). In a standards-based grading system, simply assessing and recording student proficiency in meeting specific standards should be the

norm, and such practices should be clearly aligned with stated learner objectives (Oliver, 2011).

Because of the varying opinions concerning what grades should communicate to stakeholders, Brookhart (2011b) urged educational leaders to use the following points to start a discussion about grading so that whatever practices are employed, grading will reflect learning:

- Grades should reflect achievement of the designated learning outcomes, whether the school is using a traditional, subject-based report card or one that represents the outcomes as standards.
- Students and their parents should be the primary audiences for receiving the message that grades convey, and the information should be useful and timely.
- Grades should reflect the individual achievement of each student, and academic grades should be kept separate from the measurement of nonacademic skills.
- Grading policies should motivate students to learn. (Brookhart, 2011b)

Despite these basic beliefs about grading, there remain many differences in how academic performance is evaluated and reported. These differences lead to a “grade fog” where the level of mastery is misleading and adversely affected by nonacademic factors (Deddeh et al., 2010, p. 54).

Erickson (2011) described how teachers in Minnesota, after analyzing grading policies, determined many teachers were engaging in practices that were either inflating or deflating student grades. The example was given of how students were required to have a pink pass to use the bathroom, and when the quarter ended, they could turn in

unused pink passes for extra credit which would be calculated into the students' final grade (Erickson, 2011). Similar practices, such as bringing tissues or items for food drives, elicited extra credit points. Erickson (2011) argued that such strategies artificially inflate grades, falsify the summative grade report, and make the grading procedure more of a game as opposed to an accurate indication of learning. Reeves (2011) made the case that incentivizing work rather than nonacademic factors will lead to lower rates of failure, less discipline issues in classrooms, improved time management skills, and will increase the value students place on teacher feedback. Reeves (2011) also argued the practice of using grading as a means of punishment by penalizing students for lack of homework completion and poor time management has not provided teachers, students, and parents with the feedback they desire.

Peters and Buckmiller (2014) described the question, "How is my child doing in school?" as one of the most common and judicious inquiries a parent could make (Review of the Literature section, para. 3). Peters and Buckmiller (2014) identified grades as being hallowed and steeped in tradition in public school education, so much so that traditional grading has gone essentially unchallenged since its inception. The result, according to Peters and Buckmiller (2014), is that a solitary grade for an individual subject is insufficient in detail to answer the most basic of questions and concerns parents have as it relates to their child's performance. Surprisingly, although traditional grading systems in America are more than a hundred years old, these systems have existed for this long without the support of a significant framework of research (Peters & Buckmiller, 2014).

The differing beliefs on the purpose of grades and the variation in grading systems used by educators can be attributed to teacher training, or the absence thereof, in the area of grading. Guskey et al. (2011) reported this variation is caused “in part from the lack of formal training teachers receive on grading and reporting” (p. 53). Guskey et al. (2011) stated that most teachers have very little knowledge concerning the advantages and disadvantages of different grading practices and the effects on students. Guskey and Jung (2012) reiterated this sentiment, adding this limited knowledge on student grading slows down grading reform efforts that could bring about more accurate and relevant grades for students.

Stiggins (2002) reported the majority of states do not assess, as part of their licensing requirements, teachers’ competency in assessing student learning, stating, “The result is the misdiagnosis of student needs, students' misunderstanding of their own ability to learn, miscommunication to parents and others about student progress, and virtually no effective assessment for learning in classrooms” (p. 762). Allen (2005) proclaimed that one of the most important measurement decisions classroom teachers make is the assigning of grades. Therefore, “One of the goals of a teacher education program should be to prepare pre-service and in-service teachers to develop effective methods to assess students and to communicate clearly and accurately through their grading practices that assessment to others” (Allen, 2005, p. 220). In the debate about grading, Reeves (2011) hoped all educational stakeholders would realize that, “Suggestions of reform are not a criticism of the past but a hope for the future” (p. 79).

Grading Systems: Traditional and Standards-based

Hanover Research (2011) stated that grades have been a subject of controversy among the educational community for several years. Hanover Research (2011) reported the grading debate centers on whether grades should communicate students' academic ability in conjunction with performance in nonacademic areas, such as effort and attitude, or simply report academic proficiency in a subject area, showing only what students know about the material. Marzano and Heflebower (2011) referred to grading systems that include many factors, both academic and nonacademic, in a single grade, as traditional grading. The method of determining grades by looking exclusively at students' mastery of state standards is known as standards-based grading (Proulx et al., 2012). While both methods aim to provide feedback for students and parents concerning student performance, these methods vary in how performance should be assessed and what variables are deemed worthy of inclusion (Hanover Research, 2011).

Nesbit (2014) summed up the main advantages of using a standards-based system by explaining how standards-based grading separates students' progress on an academic concept with their behavior and work ethic. In this way, parents know exactly what the students' deficiencies are and what level of mastery they have attained on academic objectives (Nesbit, 2014). Deddeh et al. (2010) flatly stated the purpose of a grade is to communicate student achievement. Including classwork as a part of the grade falsely communicates the level of mastery (Deddeh et al., 2010). One issue standards-based grading eliminates is the scenario where students score at a lower level on a summative assessment after receiving high scores on homework (Erickson, 2010). These incidents leave parents confused as they seek to understand how students can score well on one but

not the other (Erickson, 2010). Erickson (2010) explained that, when using standards-based grading, teachers' attitudes regarding homework changed from a focus on homework completion to utilizing homework as a way to continually monitor student progress.

Shippy et al. (2013) claimed that homework, behavior, and attendance should not be included in a student's grade since these nonacademic factors do not prove the acquisition of content knowledge, whereas standards-based grading would lead to a greater learning experience and higher student motivation. In a traditional grading system, a geometry student, for example, might receive a grade for having an organized notebook at the end of the quarter. O'Connor and Wormeli (2011) argued that such a practice would inaccurately reflect the student's level of content mastery. An organized notebook does not constitute a geometric standard, and therefore, does not have a measurable purpose relating to content mastery. Varlas (2013) explained the conflict between a traditional system of grading and a standards-based system by pointing out that traditional grading rewards *working* and standards-based grading rewards *learning*.

Similarly, Erickson (2010) referred to traditional practices, such as percentage scales which factor in failures at the early stages of learning, behavioral issues which are unrelated to content, extra credit which inflates grades, and the grading curve which compares students to one another, as "lethal" since they "harm students and set them on a course for failure" (p. 26). In contrast, the purpose for using a standards-based grading system is to align grading practices with content standards by simply measuring and accurately reporting how proficient students are in meeting these standards (Oliver, 2011).

Guskey (2001) discussed the practice of norm-referenced grading, also known as grading on a curve, where teachers compare each student's performance against the other students' performances. This is a common practice in traditional grading, and using such a method tends to produce consistent grades from one teacher to the next and causes students to compete for the few high grades in a class (Guskey, 2001). Guskey (2001) contended that students would be less likely to help other students due to the competitive nature this grading method produces. By probability, the number of high grades would be small, meaning most students would have lower grades, causing learning to become a contest of winners versus losers (Guskey, 2001). According to Guskey (2001), such practices are harmful to students and teachers and diminish their ability to relate to one another (2001).

Wormeli (2006) expounded on the practice of traditional grading by explaining how teachers are often so engrossed in the need to hold students accountable for behavior, they are not accurately measuring mastery of concepts. Many teachers believe that not accepting late work and assigning zeroes will punish students, thereby encouraging them to be more responsible and make better grades (Wormeli, 2006). However, Wormeli (2006) stated that the majority of middle school and high school students do not have the necessary maturity levels or life experience to have absolute control over their educational choices. Receiving zeroes on incomplete work or being given F's to punish students for behavior can lead to hopelessness, and students feel they have no chance of recovery (Wormeli, 2006). Wormeli (2006) argued that accountability in student learning is not one-directional and should be multi-faceted.

Traditional grading is often used as a way to attempt to motivate or punish students, when it should be the teacher's responsibility to find ways to encourage learning (Wormeli, 2006). Wormeli (2006) encouraged teachers to grade in such a way that students do not lose hope and teachers do not expect grades alone to motivate or do their teaching for them. Wormeli (2006) said many teachers operate under a "caughtya" mentality where they approach learning and grading as an activity where they catch students making mistakes and record it as achievement (p. 16). Similarly, Winger (2007) described his former grading practices as a way to create cooperative students and stated students responded to his approach with greater concern for a letter grade than with actual learning, which was contradictory to his greater purposes as a teacher.

Campbell (2012) stated that despite there being no evidence to support the claim that grading as a form of punishment is beneficial, 84% of the 167 California teachers surveyed about their grading practices reported calculating zeroes into a final grade. Campbell (2012) explained that if a student earns A's on tests and has several zeroes for missing assignments, his or her final grade of averaged scores will not reflect content knowledge. Therefore, standards-based grading systems do not use this specific grading policy that Campbell (2012) labeled as "toxic" (p. 31). Wormeli (2006) stated that most teachers would assign a zero on a 4-point scale for an assignment that was not completed and turned in. Wormeli (2006) went on to explain that a zero in a 100-point scale would mathematically equal a negative six on the 4-point scale, giving the zero a disproportionate influence on the student's grade.

Other toxic practices include using nonacademic factors in the calculations of grades, grading on a curve, and averaging every grade into a final grade at the end of a

semester (Campbell, 2012). Campbell (2012) stated that many teachers use these practices, yet none provide clear evidence of content acquisition. Miller (2013) agreed that in a standards-based grading system, where the goal is content mastery, it makes little difference that students may not complete the same amount of homework assignments; it matters whether or not learning is proven.

Scriffiny (2008) once believed it was essential to score students' homework assignments for fear the assignments would not get turned in. Brookhart (2011) spoke to teachers who agreed and who advocated for the inclusion of effort in a student's grade. One teacher declared an A was not possible without doing homework and used the real-world analogy that if people do half the work on their jobs they would likely be terminated (Brookhart, 2011). Scriffiny (2008) described a scenario where the students in her classes were undoubtedly learning yet earned low grades due to a lack of homework completion. Consequently, other students had learned little, if any, yet they earned high grades due to extra credit work and homework scores (Scriffiny, 2008). Scriffiny (2008) went on to explain that she no longer formally grades homework but routinely provides students with logical and wide-ranging feedback, which encourages students to continue to complete homework for the purpose of practice and reinforcement of skills needed to master content.

Miller (2013) concurred by explaining if mastery is the goal, then it matters not if students complete the same number of assignments. The focus should not be on what the students are doing; it should be on what they are learning (Miller, 2013). Jung and Guskey (2011) added to the body of research which has revealed the harmful consequences of using traditional grading practices, claiming the use of a combination of

variables to calculate a grade, including homework and behavior, is not grounded in comprehensive research and is damaging to students.

In an effort to advance grading reform and address the doubts and concerns of parents and teachers, Erickson (2010) concluded that standards-based grading not only measures student achievement but also has a positive effect on student attendance and discipline. Parents reported having fears that students would be truant more often under a standards-based grading system if attendance was not part of the grading process, which is a common practice in traditional grading (Erickson, 2010). However, Erickson (2010) reported school data which showed attendance significantly improved and discipline issues reduced dramatically in number when using a standards-based grading system.

When describing the importance of a standards-based grading system, Scriffiny (2008) referred to the performance assessment aspect of the adult world, citing the inability to measure one's quality of work yields undesirable results. Standards-based grading systems teach the skill of recognizing quality and increasing self-sufficiency by demanding quality work from students, and this is done by asking students to revise and improve sub-par work submissions (Scriffiny, 2008). Where this practice differs from most traditional systems is that in a standards-based grading system a new grade is assigned for retakes, rather than averaging the old and new grades (Hanover Research, 2011). Wormeli (2006) explained the importance of retakes in this way: "When we don't allow re-takes, we allow students to get away with not learning. When we mandate re-takes, however, we are in students' faces, tenacious, demanding excellence" (p. 21). Students, according to Scriffiny (2008), find that they have a greater level of control over

their grades in a standards-based classroom, which leads to higher levels of student accountability.

A traditional grading system may present an inaccurate report by averaging grades, as O'Connor and Wormeli (2011) stated. A student who receives an F on a chapter test and, after re-teaching and practice, is reassessed and receives an A would have an average of a C. This example would not indicate an accurate reflection of the student's proficiency. If the second assessment is valid, then the first test score would be inconsequential (O'Connor & Wormeli, 2011). Wormeli (2006) referred to averaging grades, giving partial credit, and not allowing students to make A's on assessments they retake as, "Learn or I Will Hurt You" mindsets, which result in inaccurate and unusable grades (p. 21).

Averaging grades can also cause students to lose hope in their course of study (Erickson, 2010). Erickson (2010) argued for a system that encourages students to keep trying to achieve mastery; not one in which early grades, indicative of a lack of understanding, cause the student to give up since he or she cannot recover grade-wise from early failures. Erickson (2010) also decried the use of percentage scales by questioning how effective a system could be in which a grade of less than 60% has six times the impact of other percentages. To explain, Erickson (2010) stated that an F in a percentage scale usually represents the percentage of 60 and below, all the way to zero. However, grades A, B, C, and D only have a 10-point range each. Therefore, the F is actually six times more impactful to students with its range of 60 points (Erickson, 2010). When classroom activities are tied to specific objectives, Wormeli (2013) stated that a 4-point scale would be more reliable than a 100-point scale. Wormeli (2013) reported that

mathematical averaging of grades is an inaccurate measure of mastery and when left to teacher judgment becomes subjective. Wormeli (2013) explained how this causes students and parents to become more focused on grades and less on learning.

In Kentucky, schools employing a standards-based system used a 4-point scale, with four as *exemplary*, three considered *proficient*, two *progressing*, and one described as *struggling* (Guskey, Swan, & Jung 2011). For schools wanting to continue to use a letter grade system, Guskey et al. (2011) explained how certain Kentucky schools included an achievement letter grade on their standards-based grade card to help determine grade point average, among other things. According to Guskey et al. (2011), the only requirements were that achievement, or product grades, were only to reflect academic factors and consisted of the most current evidence available. Regardless of the make-up of forms used by schools, it is imperative to know what grades are meant to communicate and to whom they are to be communicated, which is what standards-based grading is intended to do (Brookhart, 2011).

Marzano and Heflebower (2011) stated their criticism of averaging as it relates to reporting of the knowledge of specific standards. To explain, Marzano and Heflebower (2011) used the following example:

. . . assume that a teacher designs a test worth 100 points that covers two of the topics reported in figure 1—patterns and data analysis. Let's assume that 35 of the 100 points deal with patterns and 65 of the 100 points address data analysis. Now consider two students, both of whom have attained a score of 70. The first student might have acquired all 35 of the 35 points on patterns but only 35 of the 65 points on data analysis. The student has demonstrated a robust understanding of

patterns but only a partial understanding of data analysis. The second student might have received only 5 of the 35 points on patterns but all 65 points on data analysis. (p. 35)

This example illustrated why averaging makes determining individual student understanding of specific standards essentially impossible (Marzano & Heflebower, 2011).

To help educators further understand the conundrum teachers face regarding grading, Spencer (2012) documented a New York physics teacher, Frank Noschese. Noschese realized some of his eleventh-grade students were able to make A's simply by mastering the easier concepts yet were still struggling to master complex concepts (Spencer, 2011). Spencer (2011) cited Noschese's desire to assess student learning more effectively and described how more and more teachers are adopting standards-based grading to remedy the problem of meaningless grades. By using a standards-based grading system, Noschese's students were given feedback on specific concepts and given multiple opportunities, in a variety of ways, to show mastery, which encouraged students to move to the more difficult concepts and rewarded them for obtaining knowledge (Spencer, 2012).

Townsley (2013) described the confusion surrounding traditional grading, strengthening the claim that grading continues to be a source of concern for many teachers. Townsley (2013) reported on two students in the same traditionally-graded class where the first student earned grades of 50% on homework, 60% on quizzes, and 100% on tests. The second student scored 100% in all three areas. The first student, as described by Townsley (2013), asked a relative who was a former math teacher for help after

scoring poorly on the quizzes. Once the student gained a new understanding of the content, the score on the test was reflective of a new level of learning (Townasley, 2013). Townasley (2013) then asked which student earned the higher grade. In this particular example, the second student would have had a higher percentage grade than the first, even though both students showed the same level of proficiency on the tests (Townasley, 2013). As it turns out, according to Townasley (2013), the first student would be punished for having struggled early on.

Townasley (2013) went on to report even further how his school wrestled with inconsistent grading and what letter grades actually meant. To illustrate, he asked whether a student with a B only understood 85% of the content or if the student understood 100% of the content yet only turned in 85% of the assignments. Townasley (2013) described how his grading theories evolved after he learned two axioms. The first was to report learning targets instead of assignments and behavior, and the second was to place more value on *what* students learn over *when* they learn it (Townasley, 2013). Traditional grading can often be counterproductive to those grading goals. According to Iamarino (2014), standards-based grading offers a more accurate depiction of student learning because it allows teachers to verify not how many assignments have been completed but whether or not students are prepared with the skills necessary to succeed in future assignments.

Standards-based grading, according to Proulx et al. (2012), improves student success, causes grades to be reported in a more impartial manner, and enriches communication between teachers and all other stakeholders. Another advantage of standards-based grading is that it will, if used correctly, provide schools with a much

clearer image of college and career readiness (Proulx et al., 2012). Scriffiny (2008) described standards-based grading as a means to new reforms when teachers re-evaluate curriculum and adjust learner objectives due to the fact that this grading system will not be effective without specific and clear objectives. Oliver (2011) described the importance of measurable objectives, which are imperative in a standards-based system, as a fundamental element necessary for success.

Jung and Guskey (2011) reported many schools are making the change to standards-based grading in an attempt to provide more accurate reporting of student achievement in order for grades to become more purposeful and focused. The next section explores in greater depth the claim that standards-based grading is a more effective method of measuring and reporting academic achievement, as well as predicting performance on state assessments. Presented is the current research that has been conducted concerning the implementation of standards-based grading, the results of the studies, and the implications of the data.

Standards-based Grading: Implications of the Research

In his research on grading reform, Cox (2011) noted as the country has shifted to standards-based assessments in education, few educational leaders and researchers have examined the effectiveness of classroom grades to assess those standards. Content standards have helped to facilitate curricular consistency in districts, yet the methods of grading are primarily left up to the individual teachers (Cox, 2011). In his study, Cox (2011) found that effort is still a large factor in assigning grades, especially at the secondary level, and this practice does not align to the standards-based movement in K-12 education. Paepflow (2011) also noted a scarcity of research relating to grading

systems and the implementation of standards-based grading, even though educators have recognized the inherent ability of standards-based grading to make grading more equitable. A number of studies that attempted to ascertain whether standards-based grading was a more effective means of measuring academic achievement and communicating that achievement to stakeholders is examined in this section.

Staff members, administrators, and teachers in Minnetonka, Minnesota, after evaluating their grading system, identified the need for changes to be made, and made the decision to press ahead with a change to a standards-based grading system (Erickson, 2010). Erickson (2010) reported the district proceeded to pursue change in spite of not having complete buy-in from all stakeholders, having reasoned that buy-in would not evolve until teachers saw evidence of the effects of their efforts. Despite the lack of buy-in, Minnetonka educators agreed they were using grading strategies that did not effectively report what stakeholders needed to know, and these strategies included using a 100-point system, percentage scales, behavior issues, and extra credit to determine grades (Erickson, 2010).

In Minnetonka, educators made significant changes to grading policies identified as failing to report what students actually know (Erickson, 2010). Erickson (2010) identified several changes and subsequent benefits the district enjoyed. Eliminating the point system where all grades were averaged allowed teachers to use the most recent evidence to accurately measure what students know, and the elimination of zeroes and the percentage scales allowed students to maintain hope for success even if early failure occurred (Erickson, 2010). Minnetonka no longer allowed for extra credit and curve grading which, in turn, resulted in students being measured against specific learning

objectives and not other students (Erickson, 2010). Erickson (2010) concluded by stating Minnetonka educators found their efforts to be challenging, yet productive and transformative.

Hu (2009) described a similar change to a standards-based grading system in Pelham, New York, that was met with praise from educators, yet disdain from parents. After exchanging a letter-grade system for a numbers-based system, parents expressed concern (Hu, 2009). One parent in Pelham gave the explanation, “We’re running around the school saying ‘2 is cool,’ but in my world, 2 out of 4 is not so cool” (Hu, 2009, para. 5). Hu (2009) reported that Pelham officials planned to make changes that would enhance the new system’s ability to identify more judicious reports of student progress as parents argued the new system’s use of year-end standards did not give them an adequate and up-to-date assessment of students’ progress throughout the school year. In an effort to address the concerns of parents, Pelham decided to assess standards using benchmarks for each quarter and to include teacher comments in the report cards (Hu, 2009)

A high failure rate in Algebra 1 at the public charter high school, Health Sciences High and Middle College (HSHMC), in San Diego, California, led educators to make drastic changes in grading strategies (Fisher et al., 2011). Fisher et al., reported faculty members began to develop performance assessments which would indicate what students knew in regard to the performance standards or objectives. At the center of the debate at the HSHMC was whether or not to include homework as part of the final grades. The HSHMC teachers decided that grades would not reflect practice, or homework, and final grades would only represent content mastery (Fisher et al., 2011). After coming to agreement on the purpose of grades, the HSHMC teachers developed a wide range of

measurement tools with which to assess student learning, including tests, oral presentations, projects, and various writing events (Fisher et al., 2011).

Students at the HSHMC were allowed to retake assessments they scored poorly on as long as all practice assignments were completed (Fisher et al., 2011). The HSHMC teachers set 70% as the minimum level of proficiency students had to meet to not be required to attend an intervention tutorial. To further encourage success, students who did not clear any incomplete assessments within nine weeks lost the privilege of extracurricular activity participation (Fisher et al., 2011). The increased involvement of extracurricular coaches and sponsors in helping to ensure students were attending tutorials added an important element to the HSHMC's support structure, and students began to achieve at higher levels (Fisher et al., 2011). Fisher et al. (2011) reported GPAs increased from 2.89 to 3.36, specifically among students from a high poverty background, and homework completion exceeded 90%. In addition, on state standardized tests, the HSHMC saw an increase of 33% in English and reported scoring higher than similar schools in California by 11% (Fisher et al., 2011).

In 2009, Omaha, Nebraska, school districts began making a shift from traditional grading practices to standards-based grading in an effort to increase student proficiency on academic standards (Proulx et al., 2012). In their study of Omaha's implementation of standards-based grading, Proulx et al. (2012) noted what worked and what did not, as well as the changes in students' grades. When analyzing and comparing letter grades, the schools found the number of B's and C's increased, while the A's, D's, and F's decreased (Proulx et al., 2012). The districts expected the decrease of lower grades due to standards-based grading's allowance of retakes and the unacceptance of subpar work.

However, allowing students to redo assessments, which leads to a more in-depth understanding of concepts, would cause one to assume the number of A's would then increase (Proulx et al., 2012). Proulx et al. (2012) identified numerous factors they believed contributed to the lower number of A's, including the removal of extra credit and the focus on higher-level thinking. The implications of this study suggested that standards-based grading practices should be constantly and consistently monitored and adjusted to promote higher levels of cognition and to make grades fairer, more accurate, and a better communicator of achievement (Proulx et al., 2012).

Knaack, Kreuz, and Zawlocki (2012), in their action research project, investigated the limitations of traditional grading to report student learning and the use of standards-based grading to improve the ability of grades to determine content mastery. Students, parents, and teachers were surveyed and interviewed to uncover their beliefs about the current, traditional grading system (Knaack et al., 2012). When it was discovered that parents and students were not satisfied with traditional grading, teachers in the researchers' schools adjusted their lessons to focus on specific standards, sent home bi-weekly progress reports showing students' progress toward the state standards, and removed nonacademic factors from the makeup of students' grades (Knaack et al., 2012). Knaack et al. (2012) collected data from 158 students, 95 parents, and 14 teachers; the study produced the following results:

- Parents had difficulty interpreting the meaning of traditional grades due to the multiple factors included in a single letter grade.
- Parents and students had difficulty understanding why particular grades were assigned in a traditional system.

- Students' strengths and weaknesses were not easily identifiable using traditional grading methods.
- After moving toward a standards-based grading system, 84% of students surveyed agreed that grades were fair.

The researchers concluded from their data that students worked more assiduously to meet academic goals when they were effectively made aware of what standards needed to be mastered and the ways in which mastery could be achieved (Knaack et al., 2012).

Other districts have attempted to assess the effectiveness of standards-based grading through the collection and analysis of student data in the form of state assessment scores. Wake County Public School System (WCPSS) was interested in examining their implementation of standards-based grading to determine if there was a correlation between classroom grades and state assessments (Paepflow, 2011). The WCPSS adopted standards-based grading in an effort to be aligned with the Student Accountability Standards in the state of North Carolina (Paepflow, 2011). Paepflow (2011) stated the use of standards-based report cards would remove teacher subjectivity and provide students and parents with an objective measure of academic performance, causing grades to be more meaningful. While the WCPSS combined summative grades into one grade at the end of a marking period, which is inconsistent with what standards-based grading research recommends, the schools' grading system focused solely on content mastery and did not allow homework to be included in the factoring of grades (Paepflow, 2011).

At the conclusion of the study, the data exposed a strong relationship between fourth-quarter classroom grades and End-of-Grade (EOG) scores, which measure student proficiency on state learning standards (Paepflow, 2011). Further, Paepflow (2011) found

that second quarter grades, when used to predict EOG scores, allowed teachers to identify students who would benefit from academic intervention. The results of the study suggested that standards-based grading is more beneficial to teachers and students when compared to traditional grading practices (Paepflow, 2011). Paepflow's (2011) conclusion was based on standards-based grading's fairness in assigning grades, its ability to help teachers identify students who are struggling with concepts, and its use as a predictor of scores on state assessments. However, other studies, such as the one conducted by Welsh, D'Agostino, and Kaniskan (2013) in a school district in the southwestern United States, showed only a moderate correlation between standards-based progress reports (SBPR) and the scores on state assessments. Even with the moderate rates of convergence, the researchers concluded, "SBPR implementation helps improve consistency in grading practices" (Welsh et al., 2013, p. 35).

It is evident by the high number of results yielded when conducting an internet search for schools using standards-based grading, the popularity of this practice is increasing despite a much smaller finding of specific research on its effectiveness. In addition, a portion of the research available is seemingly inconclusive or contradictory to other, similar research. What nearly all studies in this review have in common is the presence of obstacles during the implementation of standards-based grading. Research suggested that parents, teachers, and students might be resistant to grading changes or, at minimum, have questions and concerns (Brookhart, 2011b; Guskey, 2011; Guskey & Jung, 2012; Scriffiny, 2008). In the following section, these obstacles, as well as the research-based solutions to overcoming them, are presented.

Obstacles to and Suggestions for Implementing Standards-based Grading

Although there exists a growing body of research pointing to the benefits of using a standards-based grading system, implementing a new method of grading raises concerns for teachers and administrators. In fact, Wormeli (2009) compared asking teachers to make grading changes to pulling “the safety pin on a faculty grenade” (“Leadership for Grading,” para. 1). There are concerns about the extra time it might take to report on multiple standards, as well as a fear that students will not be motivated to study for tests since they know they will have multiple opportunities to make up bad scores (Spencer, 2012). Similarly, Oliver (2011) reported teacher concerns about standards-based grading creating a poor work ethic in students since retakes are allowed. Various obstacles to implementation are reported in this section, along with suggestions from experts in the field of grading reform regarding ways to encourage buy-in from educational stakeholders.

In their study, Guskey et al. (2011) followed districts in Kentucky as they implemented standards-based report cards in their schools, reporting on the successes and failures of the process. According to Guskey et al. (2011), when surveyed, Kentucky teachers almost unanimously agreed the new standards-based report cards provided better and clearer information, but they did not like the time it took to complete the forms. However, teachers also reported the quality of information provided by the standards-based grading system made the extra effort worthwhile (Guskey et al., 2011).

Although parents, by a wide margin, preferred the standards-based report cards to the traditional ones, they were disappointed in the absence of a percentage grade (Guskey et al., 2011). Guskey et al. (2011) reported, moving forward, schools would revise the

make-up of the reporting form based on feedback from parents and teachers. The study found the most prominent obstacles of implementation were related to the professional development offered to staff and the technical issues which had arisen during implementation (Guskey et al., 2011). To remedy these problems, Guskey et al. (2011) stated districts would provide online support and additional training sessions for staff, conduct multi-session training for new teachers led by those staff members who have already been using standards-based grading, and share any revised forms with the other Kentucky districts for review by leadership teams. The Kentucky districts stressed the importance of various topics for professional development, stating the sessions will “explain how the new forms were developed, the rationale behind their structure and format, record-keeping procedures, and the available technical support and follow-up assistance” (Guskey et al., 2011, p. 57).

Oliver (2011) pointed out that some teachers believe providing students with the time flexibility to continue turning in work after a due date adds to the already habitually poor work ethic seen in society today. While this is a valid concern, many teachers who have switched to standards-based grading report that homework completion remains steady, and holding students accountable for their performance on assessments actually increases responsibility (Scriffiny, 2008). Teachers might argue that employees who do not complete tasks in a timely fashion are often fired, but Oliver (2011) reminded educators since firing a student is not an option, teachers must work to reinforce positive work habits, assignment completion, and persistence in achieving goals. This is done through making student assignments necessary and important which leads to, as reported

by teachers using standards-based grading, an increase in work completion (Oliver, 2011).

According to Wormeli (2009), obstacles to standards-based grading facing administrators include the request by teachers for more time to collaborate as well as increased funding for instruction and research. The most predictable response from faculty will be to resist such change, because to make drastic changes to teachers' grading practices would indicate a failure in instructional strategies somewhere along the line (Wormeli, 2009). Based on his research, Wormeli (2009) reported the steps schools are taking to change many of the strongly-held beliefs which cause teachers to resist grading reform:

- Create clear definitions and goals of standards-based grading.
- Create and make available specific examples of what is and what is not standards-based grading.
- Conduct several small-group “venting” sessions which include all departments and grade levels during which staff members ask questions and voice frustrations, as well as have the opportunity to receive useful advice for ways to respond to various issues and problems that may arise in their classrooms. (Understanding the Teacher’s Process section, para. 6)
- Provide an ample amount of continuous professional development through conferences, webinars, book studies, and conversations with national grading reform leaders.

In summation, Wormeli (2009) argued the changing times call for changes in the ways teachers assess and grade students, stating outdated practices lead to ineffective grading

which can cause cynicism and disinterest among educators. Helping teachers monitor their own practices through informal observation questions, in addition to following the previous implementation suggestions, will aid districts in making the switch to standards-based grading (Wormeli, 2009).

Guskey (2011) identified five obstacles to implementing standards-based grading. Each of these obstacles dealt with changing teachers' perceptions of commonly-held beliefs about grading (Guskey, 2011). For example, according to Guskey (2011), teachers need to realize there is no research to support the idea that poor grades encourage students to try harder, yet teachers often cite this belief when refusing to allow students to re-do assessments. Research actually suggests low grades can cause withdrawal from learning and feelings of helplessness (Guskey, 2011). As an alternative to assigning low grades as a means of punishment, Guskey (2011) reported some schools are beginning to assign I's for incomplete, and students are then required to attend an intervention session to raise their achievement levels on that standard. Although these intervention practices may call for more funding, if implemented correctly, the interventions could ultimately save the district money by identifying and helping struggling students before larger remediation efforts are necessary later on (Guskey, 2011).

Another major obstacle Guskey (2011) identified is the ingrained practice of averaging all scores, whether from tests, projects, homework, effort, or punctual performance, into one grade for the subject. According to Guskey (2011), educators are beginning to identify the need to separate grades into product, process, and progress grades, yet they are concerned this new method of assigning grades will require more

work. However, research conducted by Guskey et al. (2011) revealed separating grades actually requires less work and makes grading less difficult since teachers do not have to worry about weighting the various types of assignments.

In summary, Guskey (2011) pointed out the challenge of changing traditions will not be easy, and administrators need to be prepared with research-based alternatives to help change perceptions. There can be no more “we’ve always done it that way” approach to grading (Guskey, 2011, p. 21). According to Guskey (2011), removing old traditions cannot be accomplished if educational leaders are not well-informed about and motivated to implement new strategies.

In her study on standards-based grading implementation at the middle school level, Urich (2012) investigated the differing supports necessary for a successful transition from traditional grading to standards-based reporting. Urich (2012) uncovered the following:

- Constant interaction, confidence in, and support from administrators is appreciated by teachers and necessary for success.
- Time for training, collaboration, and professional development are important to the implementation process.
- Using a reporting tool that is designed for standards-based grading is imperative.
- Educating parents and communicating effectively with stakeholders is needed for implementation to be successful.
- A multi-year implementation process was cited as a reason for the successful transition to the new method of grading and reporting.

The results of this study also indicated a higher level of job satisfaction among teachers once they made the switch to standards-based reporting, as students were exhibiting increased levels of learning and teachers were more aware of their students' academic needs (Urich, 2012). Lastly, Urich (2012) cited collaboration and a commitment to helping students reach higher levels of academic achievement as key components of a successful implementation of standards-based grading.

Peters and Buckmiller (2014) conducted a study specifically focused on identifying and overcoming barriers to implementing standards-based grading. School leaders from three schools implementing standards-based grading were interviewed about their experiences with implementation (Peters & Buckmiller, 2014). The following barriers were identified: (a) current grading software and online student information systems do not accommodate standards-based grading, (b) parents believe the lack of traditional GPA and class rank causes students to be at a disadvantage when applying for college, (c) teachers resist changing deeply-ingrained grading methods, and (d) teachers are concerned about not scoring homework and allowing test retakes (Peters & Buckmiller, 2014).

Peters and Buckmiller (2014) offered no suggestions, based on their research, for remedying the technology issues. However, concerning parental worries, they spoke with university admissions staff who stated GPAs and class ranks were not always effective in predicting success in college and tend to take a more "holistic" approach (Peters & Buckmiller, 2014, p. 15). According to the qualitative data collected by Peters and Buckmiller (2014), the college personnel interviewed expressed more of an interest in the accuracy of a student's grades as opposed to his or her rank. Suggestions for the other

barriers mentioned included making implementation “purposeful and well communicated” (Peters & Buckmiller, 2014, p. 16). Peters and Buckmiller (2014) specifically noted the importance of an “intentional plan with a reasonable timeline, ongoing professional development and collaboration, and effective two-way communication...” (p. 16), which are recommendations in line with the previous research cited in this section. Lastly, the researchers reported one concession deemed necessary to make during implementation, which is continuing to use letter grades when reporting final achievement levels (Peters & Buckmiller, 2014). This concession was seen as a way to avoid battles “in the interest of winning a more important war” (Peters & Buckmiller, 2014, p. 17).

From the data gathered in the studies cited in this section, it is clear implementing a standards-based system is not without obstacles and barriers (Guskey, 2011; Oliver, 2011; Wormeli, 2009). However, the research by Ulrich (2012) and Peters and Buckmiller (2014) offered various suggestions to school leaders and educators for making implementation successful and the switch to standards-based grading worthwhile. The final section in this literature review addresses the role standardized testing plays in choosing a grading system that accurately measures students’ knowledge of state standards.

Standardized Testing and Accountability

Regardless of the types of assessment and grading practices teachers employ, it is primarily through assessment that teachers discover whether or not their instruction was effective, which is often measured by each state’s accountability program (William, 2010). Standardized tests have been a component of American education since the mid-

1800s, and their use greatly increased after 2002 when President George W. Bush signed the No Child Left Behind (NCLB) Act into law, mandating annual testing in all 50 states (ProCon.org, 2014). The U.S. Department of Education (2009) reported, “Under NCLB, the statewide assessment system is the primary means for determining whether schools and school districts are making adequate yearly progress (AYP) toward educating students to high standards” (p. 5). William (2010) noted, according to the logic behind NCLB, the differences in student achievement as measured by the states’ standardized tests are credited to the varying degrees of educational quality of the schools.

According to the U.S. Department of Education (2010), NCLB mandated the results of state assessments become part of each state’s accountability program, and schools would face sanctions if the testing results did not show sufficient progress being made by students and schools. Under NCLB, states are required to use rewards and sanctions based on AYP, as measured by the state assessments (U.S. Department of Education, 2010). The educational programs of low-performing schools are evaluated to see what measures need to be taken to improve student achievement (U.S. Department of Education, 2010).

According to the Missouri School Improvement Plan (MSIP), academic achievement in each district is measured by the Missouri Assessment Program (MODESE, 2013). The Missouri Assessment Program (MAP) uses grade-level assessments to assess student mastery of the state’s educational standards, called the Show-Me Standards (MODESE, 2014a). Grade-level assessment is defined as a standards-based test used to measure students’ knowledge of specific learning skills, now referred to as the Missouri Learning Standards (Missouri Learning Standards, 2014a;

MODESE, 2014a). The MAP encourages teachers to use formative and interim assessments to adjust teaching, improve student learning, and to keep track of student growth (Missouri Learning Standards, 2014b). At the end of each year, the state-wide summative assessments are given to all students in the state to measure their academic performance on the state standards (Missouri Learning Standards, 2014b).

When considering the use of the MAP achievement levels to determine whether certain grading practices better predict performance on state assessments, the MAP test must first be examined for reliability and validity as a measure of student achievement. Schafer (2002) was commissioned by the Missouri National Education Association to conduct an independent evaluation of the MAP. The MAP test uses three different psychometric characteristics (Schafer, 2002). The three series include the following:

- (a) documentation of achievement-level setting (using the “bookmark” method) separately for each content and grade level, (b) item-by-item tables of inter-rater agreement (perfect and adjacent) for constructed-response items, and (c) technical reports covering reliability and validity. (Schafer, 2002, p. 10)

The psychometric characteristics and the test itself were constructed by CTB/McGraw (Schafer, 2002).

According to Schafer (2002), the MAP test reliability was determined using internal homogeneity coefficients and standard error plots. Alpha coefficients are above 0.90 with minor exceptions, and further tests of reliability do not imply unacceptable levels of inconsistency (Schafer, 2002). Schafer (2002) reported the MAP test validity was addressed by the contractors of the test through various sampling designs, item fit, fairness, and consequential benefits. Through these processes, CTB/McGraw Hill

determined the tests showed a relationship between tested items and Missouri Show-Me Standards (Schafer, 2002). If, during the process of determining testing validity, misfit items appeared, these were flagged and a statistical model was used to determine appropriate fit (Schafer, 2002). Schafer (2002) concluded the MAP test is a valid and reliable measure of identifying student achievement, and there was no evidence to suggest otherwise. Data from Schafer's report also indicated test fairness within minority groups tested in Missouri (Schafer, 2002).

In his evaluation of the MAP, Schafer (2002) indicated that evidence was sufficient to claim appropriate validity. One area of concern was with convergence (agreement with other achievement measures). Schafer (2002) argued for studies such as this current research project to correlate MAP performance with easily-obtained data, including classroom assessments and grades, for the purpose of increasing the measure of validity of the entire program.

Many educators disagree with the use of high-stakes, standardized testing to measure school accountability. Stiggins (2002) stated, "School achievement suffers because these once-a-year tests are incapable of providing teachers with the moment-to-moment and day-to-day information about student achievement that they need to make crucial instructional decisions" (p. 759). However, despite objections to standardized testing, it is, in fact, how school performance is currently measured. That being the case, schools are beginning to explore different ways of grading students in the classroom in an effort to assign more accurate and meaningful grades that report performance on the state standards and are better predictors of how students will perform on the state assessments (Jung & Guskey, 2011).

Summary

The preceding literature review highlighted the research within the standards-based grading realm. However, the review also exposed the lack of research showing a relationship between Missouri state assessments and classroom grades, thus bringing forth the need for this particular study. The results of this current study attempted to provide a clearer picture of how classroom grading, whether standards-based or traditional, aligns with the MAP grade-level assessments in Missouri middle schools. School leaders seeking to switch to standards-based grading would benefit from knowing the perceptions of administrators and teachers regarding its implementation and would be able to use the data from this study to formulate action plans.

Presented in Chapter Three is the methodology of this study. The mixed methods research design is explained and justified. A description of the study's participants and data collection methods are given, including a detailed explanation of both the quantitative and qualitative instruments used. Lastly, provided in this chapter is a description of the way in which data for this mixed methods study were collected and analyzed.

Chapter Three: Methodology

This mixed methods study examined and compared the ability of standards-based grading practices to predict MAP achievement levels to those of traditional grading methods' ability to predict MAP achievement levels. Quantitative data were obtained by identifying districts that use standards-based grading practices and those that use a traditional method of grading and then collecting MAP achievement levels from both types of schools. These data were examined using a chi-square goodness-of-fit test to measure the predictability of achievement levels of students in classrooms using both types of grading methods.

Qualitative data were collected by means of open-ended interviews with focus groups consisting of middle school teachers and through open-ended interviews with administrators (see Appendix A). The purpose of the interviews was to ascertain the perceptions held by principals and teachers regarding the use of standards-based grading and the roadblocks to implementation. The main goal was to determine if standards-based grading is a more accurate predictor of student achievement on Missouri state assessments than traditional grading practices.

Problem and Purpose Overview

Marzano (2000) voiced his doubts about the effectiveness of current, traditional grading methods with a simple statement, "Grades are so imprecise that they are almost meaningless" (p. 1). Even with advanced grading and reporting methods, this imprecision continues to exist in many schools and districts (O'Connor & Wormeli, 2011). There is tremendous variation among traditional grading practices, making it difficult for educators to have a meaningful indicator that accurately predicts student performance on

state assessments (Guskey & Jung, 2012). Missouri, along with the majority of other states, has developed standards for student learning and accompanying accountability assessment programs to measure student proficiency based on those standards (Guskey et al., 2011; Missouri Learning Standards, 2014a). According to Jung and Guskey (2011), standards-based grading is increasingly being seen as a logical choice for many school districts searching for ways to measure academic achievement more accurately.

Proulx et al. (2012) explained standards-based grading as a method of grading that creates and communicates clear learning targets aligned to state standards and one which provides students with continuous feedback on achievement. According to Proulx et al. (2012), grades in a standards-based grading system are not used as a tool for punishing students. Students are given more than one opportunity to demonstrate mastery, and grades are not reduced for late work (Proulx et al., 2012). Students are graded “solely on the basis of evidence of their learning” (Proulx et al., 2012, p. 32).

Oliver (2011) stated:

For us to turn a blind eye to this new way of thinking limits our ability to measure student achievement as well as putting into practice effective ways to motivate and encourage our students to perform at higher levels and increase their learning.

We must continue to ask ourselves: Is learning the goal or is grading the goal?

Should we be looking for and emphasizing student growth and not simply assignment completion? And finally, shouldn't we be teaching our students what true quality looks like? The time has come to move our thinking along.

(Concluding Remarks section, para. 1)

Oliver (2011) made this statement in reference to the effectiveness of standards-based grading and to encourage educators to be open to making changes to their grading practices.

The purpose of this study was to examine the ability of traditional and standards-based grading practices to predict student performance on the MAP grade-level assessments at the middle school level. With this knowledge, school districts can either provide rationale for making changes to grading practices they deem outdated or can provide justification for continuing to use their current, traditional practices. This research will assist school district officials as they attempt to implement grading practices which closely align with desired student outcomes and performance abilities.

This study also explored the perceptions of Missouri teachers and administrators regarding the implementation and use of a standards-based grading system. In Omaha, Nebraska, one school district began experimenting with various aspects of standards-based grading in 2002 and fully implemented the practice in 2010 (Proulx et al., 2012). According to Proulx et al. (2012), the district reported many challenges during implementation, such as faculty training, developing proficiency scales, and stakeholder buy-in. The teachers and administrators discussed those strategies considered most helpful during implementation and those which were considered less helpful (Proulx et al., 2012). After district leaders in Omaha reflected on the implementation process, Proulx et al. (2012) reported that administrators were not adequately trained and did not possess the in-depth knowledge needed to implement standards-based grading consistently throughout the district.

On the positive side of the standards-based grading discussion, several Kentucky school districts are leading a state-wide initiative to move to a standards-based reporting system, and teachers surveyed in those districts were nearly unanimous in agreeing the new standards-based report cards communicated better and clearer information to parents (Guskey et al., 2011). This study attempted to identify both the positive aspects of standards-based grading as well as the challenges educators faced during and after the implementation of this grading method.

Research questions and hypotheses. The following questions guided the research:

1. What difference, if any, exists between semester grades assigned from traditional grading paradigms and correspondingly similar MAP achievement levels?

2. What difference, if any, exists between semester grades assigned from a standards-based grading system and correspondingly similar MAP achievement levels?

3. What differences in perceptions exist among teachers and administrators regarding the use of standards-based grading verses traditional grading systems?

4. What obstacles do teachers and administrators report when implementing and using a standards-based grading system?

H1₀: There is no difference between semester grades assigned from traditional grading paradigms and correspondingly similar MAP achievement levels.

H1_a: There is a difference between semester grades assigned from traditional grading paradigms and correspondingly similar MAP achievement levels.

H2₀: There is no difference between semester grades assigned from a standards-based grading system and correspondingly similar MAP achievement levels.

H2_a: There is a difference between semester grades assigned from a standards-based grading system and correspondingly similar MAP achievement levels.

Research Design

In order to determine what, if any, difference exists between classroom grades and corresponding MAP achievement levels, a mixed methods approach was used. According to Fraenkel, Wallen, and Hyun (2012), the use of a mixed methods study provides a clearer understanding of research questions and clarifies what, if any, differences exist between variables. Quantitative data were analyzed to determine classroom grades' predictability concerning MAP achievement levels, and qualitative data were assessed regarding teacher and administrator perceptions of standards-based grading implementation.

Once approval of the project was given by the Lindenwood University IRB (see Appendix B) then the data collection phase began. Quantitative data were collected from two schools in Missouri that use standards-based grading in the seventh and eighth grades. Data consisted of semester grades and subsequent MAP achievement levels for each student in math and English language arts in the seventh and eighth grades. Quantitative data were also collected from two schools in Missouri that use a traditional method of grading in the seventh and eighth grades. Again, MAP achievement levels were compared with subsequent semester grades for students in seventh and eighth-grade math and English language arts.

All quantitative data were analyzed using the chi-square goodness-of-fit test to determine if a statistical difference exists between the ability of standards-based and traditional grading to predict MAP test achievement. The purpose of the chi-square test is

to allow researchers to reject or not reject a study's hypotheses (Bluman, 2014). Bluman (2014) also explained that the chi-square distribution could be used to determine if the variables are independent of one another. This study sought to determine if one variable (standards-based grading) predicts MAP achievement levels more accurately than the second variable (traditional grading practices).

Qualitative research consisted of broad, open-ended questions which allow for participants to respond and be uninhibited by the researcher's perspective and free to answer honestly and openly (Creswell, 2012). Data of the nature were procured for the purpose of filling in gaps that may exist in the quantitative research. In this study, qualitative data were collected using a series of open-ended questions designed to allow the participants to share concerns, comments, and general thoughts which articulated the perceptions and roadblocks pertinent to the implementation of standards-based grading.

Population and Sample

The data for this study were collected from four middle schools in the state of Missouri. Data collected for this study were from the 2013-2014 school year. The MAP achievement levels and the semester grades from randomly-selected students from two school districts identified as standards-based grading schools were analyzed. Both school districts selected for this study had been using a standards-based grading system for more than three years. The findings of existing research on the implementation and use of standards-based grading, which was reviewed in Chapter Two, were reported at least three years after the pilot year (Guskey et al., 2011; Proulx et al., 2012). The MAP achievement levels and semester grades from randomly selected students from two school districts identified as using a traditional method of grading were also analyzed.

For the purpose of this study, the standards-based grading schools were identified using the criteria reviewed in Chapter Two. Likewise, schools identified as using traditional methods followed the same description of grading as discussed in Chapter Two.

Approximately 100 students' data from each method of grading were statistically examined to determine if one method of grading more accurately predicts MAP achievement levels than the other. Principals and teachers from the school districts used for this study were interviewed in regard to their perceptions and concerns of implementing and using standards-based grading. These qualitative data were used in conjunction with the quantitative data to determine if one form of data supported the other and, therefore, provided a more transparent view of the results of the study. Creswell (2012) listed three options when prioritizing types of data in a mixed methods study. For the purpose of this study, greater emphasis was placed on quantitative data as opposed to qualitative data.

Instrumentation

For this mixed methods study, the data were analyzed behind the lens of an explanatory sequential design model, as described by Creswell (2012). Quantitative data were given higher priority over qualitative data and were collected in the first phase of the study. In the second phase, qualitative data were collected and used to further explain quantitative results. The qualitative data allowed for refinement, elaboration, and follow-up to the information received in the quantitative portion of the study. The results were interpreted to determine the effects of standards-based grading on Missouri MAP achievement levels.

Quantitative data. Student grades and MAP achievement levels from two schools operating under a standards-based grading system were randomly selected from a pool of middle school student data which the participating schools provided for this study. Likewise, randomly-selected student grades and MAP achievement levels from two schools using a traditional method of grading were provided. The participating schools were asked to ensure privacy of student data by redacting names or identifiers connected to the MAP scores.

Quantitative data were analyzed using the chi-square goodness-of-fit test. Approximately 200 middle school students' semester grades were compared with their MAP achievement levels and analyzed using the chi-square formula. The chi-square was used to determine if there is a statistical difference between classroom grades' alignment to MAP achievement levels in a standards-based grading system and a traditional grading system. Bluman (2014) explained the goodness-of-fit test as one which will predict whether a frequency distribution subscribes to a specific pattern. In order to determine whether or not predictability of MAP achievement levels is higher with standards-based grading versus a traditional system, the goodness-of-fit test provided an opportunity to determine whether the expected outcome exceeded the observed outcome.

Qualitative data. Following a letter of recruitment (see Appendix C) those interested in participating in the study were provided an informed consent form (see Appendix D). Middle school teachers in the participating standards-based grading districts were interviewed via focus groups for the purpose of collecting viewpoints regarding the implementation of standards-based grading. The data painted a clear and accurate depiction of the attitudes and thoughts of those responsible for using standards-

based grading. Administrators from the districts being analyzed were interviewed via phone or in person for their thoughts and feedback regarding standards-based grading practices in their respective districts.

Interview questions were original and created specifically for this study. Information gleaned from a review of literature provided the basis for the questions. Interview questions consisted of a combination of focus group interviews following Creswell's (2012) guide to collecting qualitative data. Prior to the interviews being conducted, the questions were posed to doctoral cohort students, faculty members, and graduate students in a master's cohort. Revisions, when necessary, were made after each round of piloting occurred. The interviews were standardized, open-ended interviews as explained by Fraenkel et al. (2012).

Data Collection

Approximately 200 sets of seventh and eighth-grade student semester grades and MAP achievement levels from four Missouri school districts were provided for analysis. Two districts were identified as standards-based grading schools, while the other two utilized a traditional method of grading. A letter of invitation was sent to the selected districts requesting their participation in the study.

Quantitative data were collected by the participating districts with the recommendation that student names be replaced by numbers assigned by the districts to ensure privacy of students. After data were analyzed, all copies of student grades and MAP levels were destroyed to further ensure privacy of individual students.

Once the quantitative data were solidified and collected, administrators and teachers from the two standards-based grading school districts were interviewed via

telephone and focus group interviews. Interview questions were standardized and open-ended as described by Fraenkel et al. (2012). Time of participation for interviewees was approximately one hour.

Data Analysis

Data were examined using a chi-square goodness-of-fit test to measure the predictability of achievement levels of students on the MAP test in classrooms using both types of grading. Qualitative data were obtained through the analysis of interview questions which examined the perceptions of standards-based grading and the roadblocks to implementation that principals and teachers identified. This analysis served in conjunction with the quantitative data to create a clearer image of the study.

The chi-square distribution was used to dissect the quantitative data. According to Bluman (2014), if a frequency distribution meets a certain and specific pattern, the goodness-of-fit test would be the most appropriate. In a chi-square test, the observed frequencies will most often be different from the expected ones (Bluman, 2014). Bluman (2014) made it clear that the chi-square test will determine if a significant difference exists and whether or not it is determined by chance. It is this ability to determine a statistical significance that made the chi-square scientifically sufficient for this study.

Classroom letter grades and MAP achievement levels were considered “corresponding” based on the conversion and translation tables (see Appendix E) created by Marzano (2010). Marzano (2010) illustrated how to convert a summative score across multiple goals into an omnibus letter grade. For example a scale score within the 3.00-3.25 range would translate into an A- (Marzano, 2010, p. 106). Next, Marzano (2010) demonstrated how to translate scale scores into the descriptors, “Advanced, Proficient,

Basic, and Below Basic” (p. 109). For example, a scale score of 3.25 would be considered “Advanced.”

Creswell (2012) described qualitative research as interpretive research. The data in this study were personally assessed and used to determine if the findings fit a particular situation or theme that encompassed the categories of information. This does not assume the personal interpretation is better or more accurate; it simply implies the perspective of the researcher is the primary source of interpretation (Creswell, 2012). Creswell (2012) also described qualitative research as an eclectic process, meaning there is no one accepted approach to analysis. Unlike quantitative data, qualitative data can simultaneously be analyzed while it is being collected (Creswell, 2012). Major themes, and those iterative in nature which developed in the analysis of data, were revisited in order to fill gaps in the results as the analysis proceeded.

Summary

This study sought to determine if standards-based grading presents school districts with a more effective option to predict student achievement on state assessments than traditional grading. In particular, research questions focused on the claim by some researchers that student achievement in the classroom will mirror MAP achievement levels in a standards-based grading system more so than in a traditionally-graded classroom (Jung & Guskey, 2011). The results of this mixed methods study are presented in Chapter Four, including the documentation and description of the data analysis related to the research questions.

Chapter Four: Analysis of Data

According to Keeney (2000), grading student learning has been a part of education in some form or another since the 1800s. Grading practices have remained essentially unchanged for such a long period of time that for decades students have been assessed using traditional grading (Jung & Guskey, 2011). The purpose of this study was to determine if grades earned by middle school students in a standards-based grading system were more likely to predict subsequent MAP achievement levels than grades earned by middle school students in a traditional grading system. Jung and Guskey (2011) indicated standards-based grading should be a better predictor of student success on state assessments.

As Guskey and Jung (2012) explained, traditional grading practices vary widely from one school to the next and even from one teacher to another. It is this inconsistency that makes traditional grading unlikely to give schools the information needed to determine if students are on course to show mastery when taking state-mandated assessments (Guskey & Jung, 2012). Standards-based grading is a relatively new grading strategy that some schools have implemented successfully (Peters & Buckmiller, 2014). However, Peters and Buckmiller (2014) also indicated schools attempting to implement standards-based grading encounter many roadblocks that can hinder efforts to transition to a standards-based system. As the Omaha, Nebraska, school district determined, moving to a standards-based grading system needed to be done and while challenging, provided a fair and accurate method of grading that was worth the effort (Proulx et al., 2012).

For this study, middle school student semester grades and corresponding MAP achievement levels were obtained from two districts in Missouri that use a traditional grading system and two districts that use a standards-based grading system. All student data provided for this study were prepared and sent by the participating districts in such a manner that all student identities were redacted. Following the collection of data, a chi-square goodness-of-fit test was conducted. To further enhance the study, open-ended interviews were conducted with teacher focus groups and administrators from the schools using standards-based grading.

The purpose of the chi-square goodness-of-fit test was to determine if the grades earned in each system of grading reflected corresponding similar MAP achievement levels. The open-ended interview questions posed to focus groups and administrators were evaluated and interpreted to determine if underlying factors, such as teacher buy-in and implementation techniques, could have affected the ability of standards-based grading to be successful. The purpose of this study was to examine the differences in perceptions of teachers and administrators in schools using standards-based grading and identify the obstacles to implementation as well as provide a statistical determination of the ability of classroom grades, both standards-based and traditional, to accurately predict student MAP achievement levels.

Organization of the Chapter

In this chapter, quantitative and qualitative data are analyzed in two separate phases as part of an explanatory sequential design model (Creswell, 2012). Included in Phase One is an analysis of quantitative data collected. Semester grades and subsequent MAP achievement levels of seventh and eighth-grade students in math and English

language arts were collected from schools using traditional grading methods and those using standards-based grading. The chi-square goodness-of-fit test was used to determine if a statistical difference exists between traditional grades and MAP achievement levels and standards-based grades and MAP achievement levels.

Phase Two describes the qualitative data collected after open-ended interview questions were posed to focus groups consisting of middle school teachers and administrators from the schools whose standards-based grades and MAP achievement levels were evaluated. Qualitative data were used to enhance the study and enrich the quantitative data to ensure a complete and accurate data analysis.

Phase One: Quantitative Data

Data collected for this study were comprised of student semester grades and corresponding MAP achievement levels from four school districts, two of which utilize standards-based grading strategies and two which use traditional methods of grading. An internet search conducted by the researcher identified several districts in Missouri which use standards-based grading to assess middle school students. Two districts were found to have standards-based grading systems which met the characteristics described in Chapter Two. After being contacted, the two schools employing standards-based grading agreed to provide student semester grades and corresponding MAP achievement levels of students in math and English language arts (ELA). Two schools using a traditional method of grading were selected to participate in the research and likewise provided student data which included semester grades and corresponding MAP achievement levels. Anonymity was insured by the participating districts by providing student data identified by a number instead of a name.

To conduct a chi-square goodness-of-fit test, data were grouped into six different categories: (a) all ELA and math grades and MAP levels from traditional grading systems, (b) all ELA grades and MAP achievement levels from traditional grading systems, (c) all math grades and MAP achievement levels from traditional grading systems, (d) all ELA and math grades and MAP levels from standards-based grading systems, (e) all ELA grades and MAP achievement levels from standards-based grading systems, and (f) all math grades and MAP achievement levels from standards-based grading systems. All data collected were included and compared using the chi-square goodness-of-fit test and analyzed for the purpose of statistical conclusions.

To conduct an accurate chi-square test, five steps were followed, as outlined by Bluman (2014).

1. The hypothesis was stated and the claim identified.
2. The researcher found the critical value. The critical value for this study was determined by finding the degrees of freedom and the probability of a type I error. For this study, the number of degrees of freedom was three and the probability of a type I error was 0.05. According to Bluman (2014), the critical value was found to be 7.815.
3. The test value was calculated by “subtracting the expected value from the corresponding observed value, squaring the result and dividing by the expected value, and finding the sum” (Bluman, 2014, p. 512).
4. A decision to reject or not reject the null hypothesis was made. For this study, the null hypothesis would be rejected if the chi-square test values were greater than the critical value of 7.815.

5. The results were summarized. The rejection of the null hypothesis for this study would indicate there is not a good fit.

The following groups and corresponding chi-square values were all greater than the critical value of 7.815. Therefore, all groups tested were not a good fit; the null hypotheses were rejected, and the alternate hypotheses were supported.

Group 1. Data collected for this group consisted of 248 sets of semester grades and corresponding MAP achievement levels of ELA and math students graded in a traditional method (see Figure 1). The chi-square value for this group was 270.1677463. This statistical value was greater than the critical value of 7.815; hence, the null hypothesis was rejected and the alternate hypothesis was supported.

H₀: There is no difference between semester grades assigned from traditional grading paradigms and correspondingly similar MAP achievement levels.

H_a: There is a difference between semester grades assigned from traditional grading paradigms and correspondingly similar MAP achievement levels.

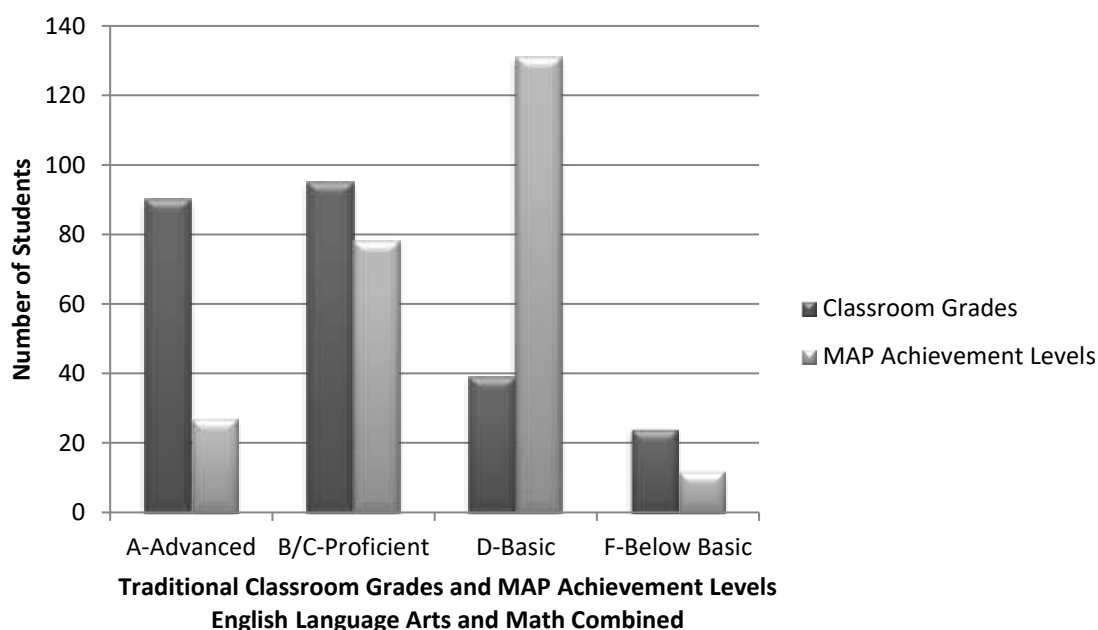


Figure 1. English language arts (ELA) and math student semester grades as compared to student MAP achievement levels in traditionally-graded classrooms. This figure shows the number of each type of classroom grade earned in classrooms using traditional grading methods for ELA and math for the 2013-2014 school year. This quantity was compared to the number of students who received corresponding MAP achievement levels in ELA and math for the 2013-2014 school year.

Group 2. Data collected for this group consisted of 100 sets of semester grades and corresponding MAP achievement levels of ELA students graded in a traditional method (see Figure 2). The chi-square value for this group was 165.960101. This statistical value was greater than the critical value of 7.815; hence, the null hypothesis was rejected and the alternate hypothesis was supported.

H₀: There is no difference between semester grades assigned from traditional grading paradigms and correspondingly similar MAP achievement levels.

H_a: There is a difference between semester grades assigned from traditional grading paradigms and correspondingly similar MAP achievement levels.

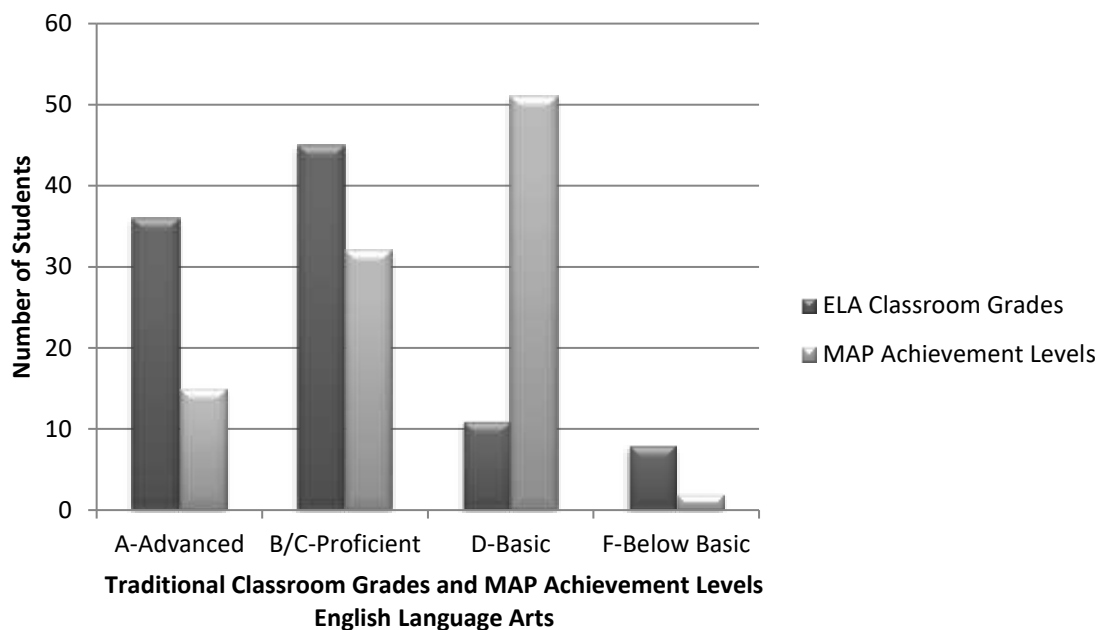


Figure 2. English language arts (ELA) student semester grades as compared to student ELA MAP achievement levels in traditionally-graded classrooms. This figure shows the number of each type of classroom grade earned in classrooms using traditional grading methods in ELA for the 2013-2014 school year. This quantity was compared to the number of students who received corresponding ELA MAP achievement levels for the 2013-2014 school year.

Group 3. Data collected for this group consisted of 148 sets of semester grades and corresponding MAP achievement levels of math students graded in a traditional method (see Figure 3). The chi-square value for this group was 131.8080952. This statistical value was greater than the critical value of 7.815; hence, the null hypothesis was rejected and the alternate hypothesis was supported.

H₁₀: There is no difference between semester grades assigned from traditional grading paradigms and correspondingly similar MAP achievement levels.

$H1_a$: There is a difference between semester grades assigned from traditional grading paradigms and correspondingly similar MAP achievement levels.

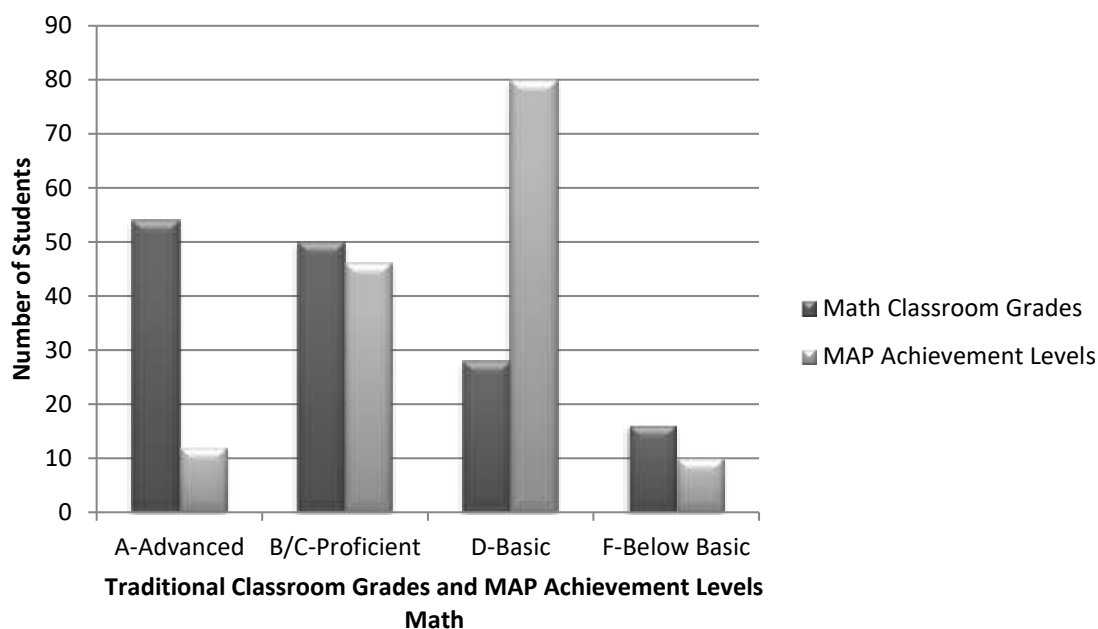


Figure 3. Math student semester grades as compared to student math MAP achievement levels in traditionally-graded classrooms. This figure shows the number of each type of classroom grade earned in classrooms using traditional grading methods in math for the 2013-2014 school year. This quantity was compared to the number of students who received corresponding math MAP achievement levels for the 2013-2014 school year.

Group 4. Data collected for this group consisted of 294 sets of semester grades and corresponding MAP achievement levels of ELA and math students graded in a standards-based grading method (see Figure 4). The chi-square value for this group was 649.4477273. This statistical value was greater than the critical value of 7.815; hence, the null hypothesis was rejected and the alternate hypothesis was supported.

$H2_o$: There is no difference between semester grades assigned from a standards-based grading system and correspondingly similar MAP achievement levels.

H2_a: There is a difference between semester grades assigned from a standards-based grading system and correspondingly similar MAP achievement levels.

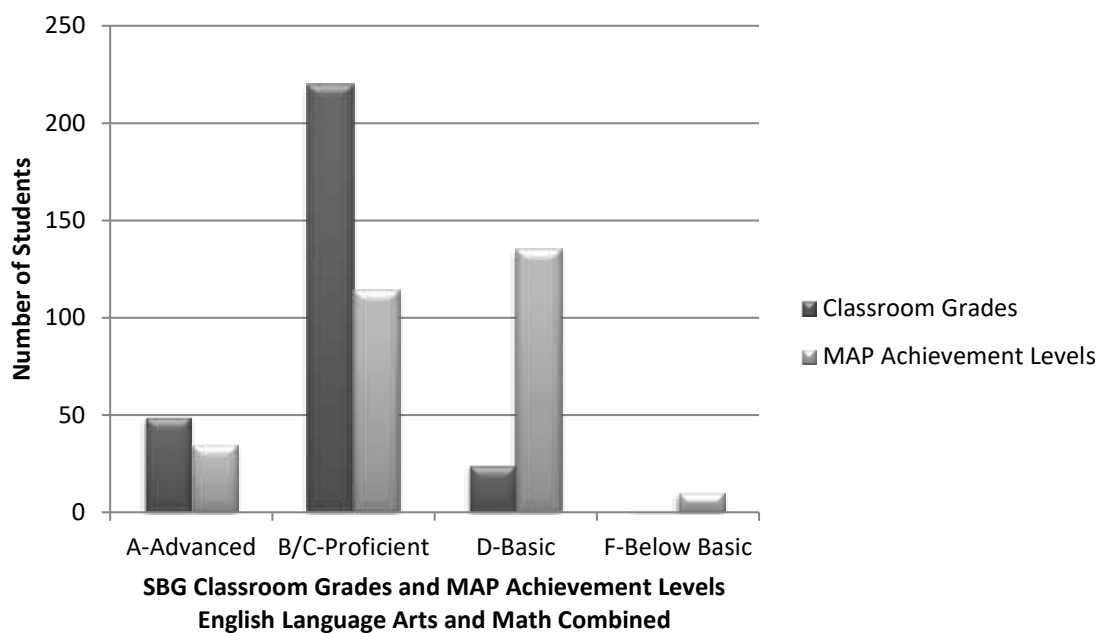


Figure 4. English language arts (ELA) and math student semester grades as compared to student MAP achievement levels in standards-based graded classrooms. This figure shows the number of each type of classroom grade earned in classrooms using a standards-based grading (SBG) method for ELA and math for the 2013-2014 school year. This quantity was compared to the number of students who received corresponding MAP achievement levels in ELA and math for the 2013-2014 school year.

Group 5. Data collected for this group consisted of 158 sets of semester grades and corresponding MAP achievement levels of ELA students graded in a standards-based grading method (see Figure 5). The chi-square value for this group was 925.7342193. This statistical value was greater than the critical value of 7.815; hence, the null hypothesis was rejected and the alternate hypothesis was supported.

$H2_0$: There is no difference between semester grades assigned from a standards-based grading system and correspondingly similar MAP achievement levels.

$H2_a$: There is a difference between semester grades assigned from a standards-based grading system and correspondingly similar MAP achievement levels.

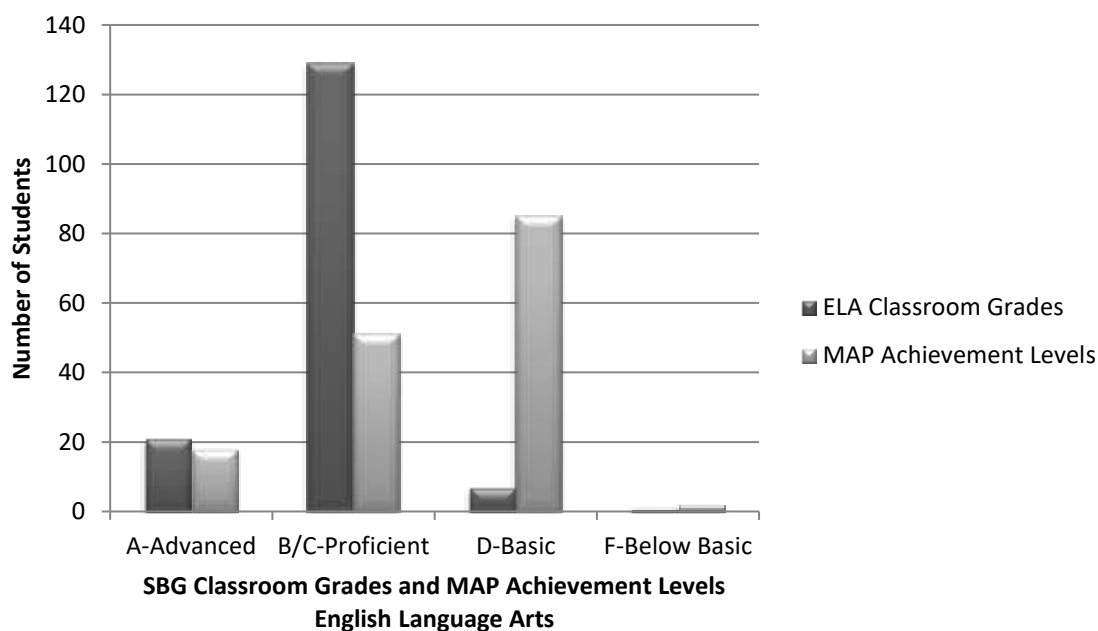


Figure 5. English language arts (ELA) student semester grades as compared to student ELA MAP achievement levels in standards-based graded classrooms. This figure shows the number of each type of classroom grade earned in classrooms using a standards-based grading (SBG) method in ELA for the 2013-2014 school year. This quantity was compared to the number of students who received corresponding ELA MAP achievement levels for the 2013-2014 school year.

Group 6. Data collected for this group consisted of 136 sets of semester grades and corresponding MAP achievement levels of math students graded in a standards-based grading method (see Figure 6). The chi-square value for this group was 110.1868132.

This statistical value was greater than the critical value of 7.815; hence, the null hypothesis was rejected and the alternate hypothesis was supported.

H_{2o} : There is no difference between semester grades assigned from a standards-based grading system and correspondingly similar MAP achievement levels.

H_{2a} : There is a difference between semester grades assigned from a standards-based grading system and correspondingly similar MAP achievement levels.

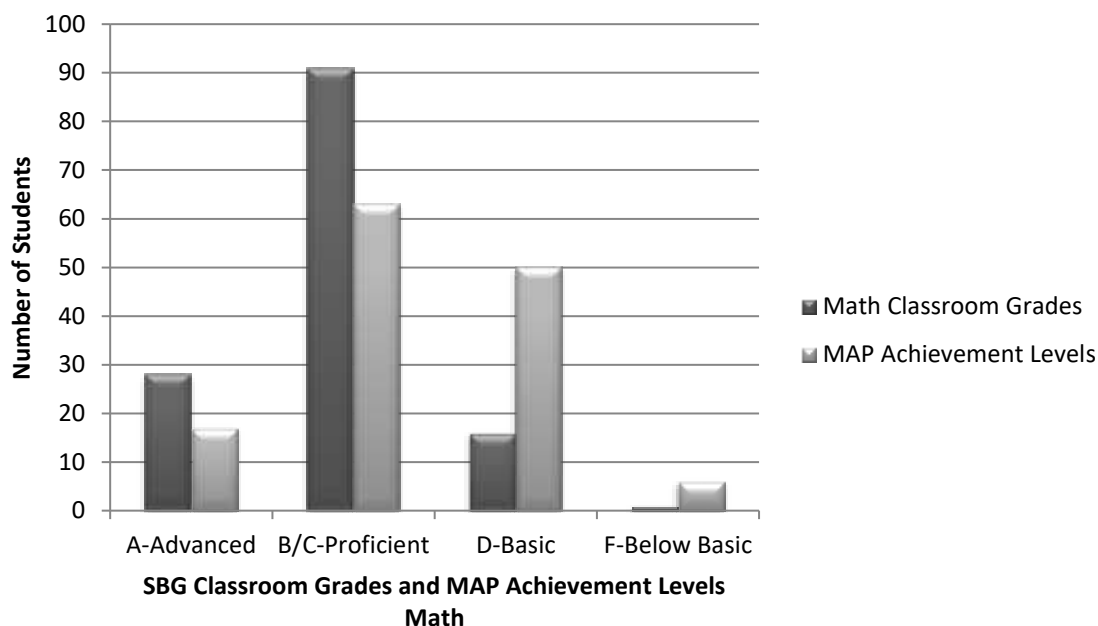


Figure 6. Math student semester grades as compared to student math MAP achievement levels in standards-based graded classrooms. This figure shows the number of each type of classroom grade earned in classrooms using a standards-based grading (SBG) method in math for the 2013-2014 school year. This quantity was compared to the number of students who received corresponding math MAP achievement levels for the 2013-2014 school year.

Phase Two: Qualitative Data

For this study, qualitative data were used to elaborate on and explain Phase One's quantitative findings (Creswell, 2012). The perceptions and opinions of standards-based grading as stated by the teachers and administrators interviewed were examined and evaluated for themes for the purpose of completing the overall analysis of the study. Qualitative data were collected using open-ended interview questions conducted in focus groups with 15 teachers from two schools identified as using standards-based grading. Teachers were asked seven questions and responded freely. All answers were recorded and transcribed. Two administrators from the same two schools also participated in interviews and were asked 10 questions and responded freely. All answers were recorded and transcribed.

Demographics analysis. Two school districts utilizing standards-based grading were invited to participate in Phase Two of this study. Middle school administrators in the two districts were asked to answer interview questions and to invite teachers to participate in the focus group interviews. Two administrators agreed to participate, and 15 middle school teachers accepted the invitation to be part of the focus groups. Among the teachers interviewed, years of teaching experience ranged from four to 20 years with a mean of 9.8 years teaching.

Responses to Interview Questions

As stated in the purpose of the study, perceptions of teachers and administrators regarding standards-based grading were evaluated to identify roadblocks to implementation and to determine if the perceptions they held affected quantitative data results. This chapter serves to present the qualitative data in a manner which identifies

common themes in the responses to the open-ended interview questions. In doing so, roadblocks, or obstacles, to standards-based grading were identified.

Qualitative data were coded by highlighting text and assigning letters to teacher and administrator responses based upon the theme or subtheme the text addressed. Some codes were established prior to the collection of data due to the nature of the interview question. For example, teacher interview question five asked teachers what the biggest challenges were to implementing standards-based grading, and any answer that addressed obstacles to implementation was highlighted a particular color. However, a number of responses to other questions, both teacher and administrator, fit into the theme of implementation obstacles as well and were subsequently highlighted the same color. For that reason, along with the difference in questions for the two groups of participants, data were presented by theme, rather than by individual questions.

In addition to predetermined themes, many codes were created as various subthemes began to emerge from the data. For example, many teachers cited teacher and parent buy-in as a challenge to implementation; therefore, the code “B” was used to identify this subtheme of obstacles. From the interview responses, three major themes were identified: positive perceptions, negative perceptions, and obstacles to implementation. Within the three major themes, nine subthemes emerged, all of which are described in this chapter and supported by the responses given in the interviews. Specific teachers are identified by the letters A through O, and the administrators are identified by the numbers 1 and 2.

Theme one: Positive perceptions. Interview question three asked teachers, “What specific components of your school’s standards-based grading system do you find

more beneficial when compared to traditional methods, and for whom are those practices beneficial?” The responses to this question inherently fit into this first theme and were reviewed and analyzed for commonalities with the intent to identify smaller subthemes. Teacher questions one and seven allowed for respondents to express their opinions and were also reviewed and analyzed within this first major theme of positive perceptions. Teacher question one was, “In your opinion, does standards-based grading more accurately reflect student learning as compared to a traditional grading system you may have used prior to standards-based grading?” In response, five interviewees simply stated *yes*; they believed it does, thereby demonstrating their perception that standards-based grading fulfills researchers’ claims that it is a more accurate measure of student knowledge (Hanover Research, 2011). Since these teachers did not wish to elaborate on their statement, their responses were not included in any of the following subthemes. However, 11 of the 15 interviewees answered questions one, three, or seven in more detail, and from these responses, along with the administrator responses to various questions in their interviews, three subthemes emerged: accurate and specific measure of learning standards, differentiated instruction, and removal of nonacademic factors. These subthemes illustrate in greater depth the precise positive aspects and components of standards-based grading as communicated by the teachers in the focus groups and the administrators interviewed.

Accurate and specific measure of learning standards. As educators become increasingly concerned that student learning is not accurately measured by current grading practices, educational leaders are beginning to research more accurate ways to assess and report student learning (Hanover Research, 2011). When asked why standards-

based grading was implemented in his school, Administrator 2 echoed this statement by saying, “We felt like our grades didn't reflect a true measure of learning, and standards-based grading gave us the best option for determining a true indicator of student performance levels.” Overwhelmingly, teachers interviewed conveyed their belief that standards-based grading has its strengths in the ability to accurately measure students’ knowledge or lack of knowledge for specific learning standards. Twelve teachers identified this characteristic of standards-based grading as central to their belief that this grading practice is a positive and productive means of measuring student performance.

A recurring statement made by teachers was the perception that standards-based grading is a better depiction of students’ strengths and weaknesses. Teacher C added that it is also “more beneficial when communicating with students and their families about their successes and shortcomings.” Teachers F, G, K, and O all claimed standards-based grading gives them evidence of students’ lack of knowledge on a specific standard, which allows them to determine the level of remediation the student needs. Teacher K answered question seven with this statement, “I really like standards-based grading, but it’s a continual work in progress that is worth every minute if it opens the door to understanding what kids know and what they need to work on.”

When asked what specific component of standards-based grading was most beneficial, Teacher N responded, “It shows what a student actually knows about a particular standard, not how responsible that student is or how much extra credit he or she was able to earn.” Teacher B summarized many of the other interviewees’ responses, saying, “Students, teachers, and parents have a clear, delineated view of where the student is in relation to the standard.” Administrator 1 added to teachers’ beliefs,

reporting, “New teachers hired repeatedly say they know what a kid actually knows for the first time in their teaching career.” This subtheme was, by far, the most prevalent within the positive perceptions theme.

Differentiated instruction. Five respondents agreed that standards-based grading allows for higher-level learners to seek enrichment opportunities within the classroom. Teacher E indicated the use of unconventional strategies allowed for students to think outside the box and pursue higher-level learning. Teacher M agreed, stating, “Allowing students to move ahead of the class, if available, is great for above-level kids, since they can be working on more engaging and challenging material instead of feeling bored all the time.”

Intervention strategies were also mentioned as a benefit to using a standards-based grading system. Teacher B explained how an intervention and enrichment loop created by their school was one of the more beneficial aspects of using standards-based grading. Teacher A said this about a standards-based system:

I think it benefits the top-end students who work as hard as, if not harder than, they did under the traditional grading system. The retakes somewhat force many of the lower-achieving students to interact with the material more so than if they only get one shot at it.

Both Teacher B and Teacher A described how their school’s standards-based grading system benefits higher and lower-level learners.

Removal of nonacademic factors. Several interviewees alluded to the use of product grades, which are simply achievement-based, as a major strength of standards-based grading. Two teachers’ responses to question four were direct in they could not

find any aspect of traditional grading they would have kept, both citing the removal of nonacademic factors as the reason they would not want to return to the traditional method. Teacher H responded, “I really hate giving students a grade that is inflated because they always did their homework.”

A major component of standards-based grading is using student achievement alone when calculating quarter or semester grades. In a traditional grading system, factors such as behavior and extra credit are often factored into the grades. Teacher O cited the elimination of bias in grading as a favorable factor of standards-based grading, commenting, “I like that personal bias in grading can be eliminated. Either the students know the material or they don’t.” Teacher H described the inclusion of nonacademic factors as “playing school” and expressed a desire never to return to traditional grading. Teacher J expounded on this component of standards-based grading by explaining what students may show in homework at the beginning of a unit may not reflect what they would know at the end of the unit. Teacher N concurred, saying grades should reflect students’ products and not their character traits or the process it took to reach content mastery.

Outliers. In addition to these predominant perceptions, a fewer number of comments were made which supported various controversial, yet research-based, claims about standards-based grading but were not prevalent enough to constitute a subtheme. For example, one teacher reported that students continue to complete homework in a standards-based grading system in spite of grades not being assigned. Teacher K said the following in response to question three:

I have the same percent of kids that do their homework now compared to a traditional grading system. Even though it doesn't count for points, the kids still see that they need to master the skill in order to perform on a test.

Teacher A praised the retake component, another controversial aspect of standards-based grading, claiming retakes are beneficial for lower-level learners.

Conclusion. This first major theme of teacher and administrator perceptions, based upon the responses to the interview questions, revealed the majority of respondents were in agreement that standards-based grading more clearly communicates students' strengths and weaknesses due to the breakdown of mastery according to specific standards. Many teachers also cited standards-based grading's conduciveness to differentiation in the classroom and the removal of nonacademic factors as positive aspects of standards-based grading. The vast majority of positive responses in the qualitative phase of this study were related to one of those three components of standards-based grading.

Theme two: Negative perceptions. Overwhelmingly, teachers interviewed spoke negatively about topics such as student responsibility, deadlines, and a lack of concern for doing quality work prior to retakes. Repeatedly, teachers discussed their concern that students do not complete homework because it will not be graded. This prevailing thought is similar to what Winger (2005) discussed when he explained that homework is typically factored into final grades even though it does not necessarily indicate student learning. Interviewees also had strong feelings regarding late work and missed deadlines and how, in their opinion, standards-based grading practices encouraged students to be lax in meeting these classroom requirements. When asked about the concerns of the staff

prior to standards-based grading implementation, Administrator 2 replied, “How to make students do homework was always a topic of discussion and the retake thing concerned teachers quite a bit. Teachers feel as if students won’t turn in homework without having consequences.” As interview questions were analyzed, three subthemes emerged: retakes, homework, and deadlines and other nonacademic factors. The evidence supporting these themes came exclusively from the focus group interviews as neither administrator spoke negatively about the specific use of standards-based grading in the classroom.

Retakes. Seven teachers interviewed expressed concerns over the usage of retakes in classrooms. Teachers voiced trepidation over retakes due to the manner in which students approach testing. Since students have the option of retaking summative assessments, interviewees believed learning is compromised because of a lack of proper preparation. Teacher C had this to say regarding the retake component of standards-based grading: “It also teaches kids that if you don’t prepare for an assessment, it’s okay because you can just retake it.” Along with a lack of preparation for testing, teachers described a lack of focus on the initial learning of concepts. Teacher M expressed this sentiment by saying, “I feel like it also makes students have the impression that they don’t need to learn it the first time because they can retake it.”

Interviewees used words like responsibility, accountability, and entitlement when describing their feelings of how retakes shape the attitudes of students. Teacher J voiced concern that students were not learning to be responsible and accountable because of standards-based grading. Teacher N expressed disheartenment when she stated, “I’ve witnessed an attitude of entitlement with some students who fail a test from lack of effort or studying who then immediately walk up to a teacher and ask, ‘when’s retakes?’”

Teachers also discussed how retakes add to the workload because of the amount of grading that retakes require. Teacher J vehemently stated, “I wish our district would allow deductions in grades for late work and that we didn’t have to accept so many retakes. It’s a grading nightmare for teachers!” Teacher N conveyed displeasure with the high frequency of retakes and preferred a scheduled time for retakes so as not to interfere with regular class time.

Homework. The second subtheme that emerged was the students’ lack of motivation to complete or do classroom assignments. Teacher H sarcastically used the word “forget” when discussing homework completion in response to question two which asked teachers to describe the weaknesses of standards-based grading. Teachers wanted repercussions for students who do not do homework or complete projects, as made evident by Teacher F who said, “There are no immediate consequences for students who want to slide by.”

Question four asked teachers, “Are there any components of traditional grading you wish you hadn’t given up when your district switched to standards-based grading, and why?” In response to this question, four teachers discussed a desire to grade homework for the sole purpose of motivating students to complete assignments and cultivate accountability. Teacher L responded, “I don’t think homework should count for a lot, but if students realized that homework would count for some part of their grade I feel more students would complete more assignments.”

A number of teachers continued to speak to a lack of accountability on the students’ part as a major weakness of standards-based grading. If homework were being used as part of students’ grades, teachers overwhelmingly believed students would

complete homework more often and subsequently improve their test scores earlier in the learning process. Teacher G made this assessment: “There is no accountability to prepare for the standard prior to a low grade. All of the accountability comes after a student has received a low score on a test.” Teacher N agreed with this sentiment by stating that middle school students show a lack of intrinsic motivation to complete homework assignments if they do not count for a grade.

Deadlines and other nonacademic factors. Four teachers commented on deadlines and discussed their desire to see enforcement of deadlines continue to be a part of classroom policy. Teacher C stated, “Standards-based grading teaches students that deadlines don’t matter because you can get it done whenever.” In response to question four regarding the retention of particular traditional practices, Teacher C expressed a desire to have the option of rewarding and punishing student effort or lack thereof. Teacher D also mentioned motivation as a factor when discussing how classroom work is not being turned in in a timely manner.

Teachers interviewed indicated they would like to see students held accountable for turning in late work with grade reduction as a punishment. Teacher J demonstrated this by saying, “I wish our district would allow for deductions in grades for late work. . .” Teacher D echoed that sentiment, “I wish we still had a late work penalty . . . because kids aren’t doing their work.”

Conclusion. Teachers repeatedly referred to a lack of responsibility and accountability as a bi-product of a standards-based grading approach. In each subtheme, lack of motivation and noncompliance was mentioned as a reason for having a negative view of standards-based grading. Teachers referred to a desire to see homework count

towards grades, which is contrary to a standards-based approach to grading. As mentioned previously, retakes emerged as a source of negative feelings as teachers repeatedly declared their disdain for unlimited retakes. Teacher A even referred to retakes as a “crutch” for students as they fail to learn material properly because retakes are always an option. Lastly, several teachers expressed concern over the removal of nonacademic factors, including effort and deadlines, which they believed should be assessed in some manner. It is worth noting that despite the majority of teachers expressing overall satisfaction with standards-based grading, they were more expressive and descriptive about the negative components of the system as opposed to the positive.

Theme three: Obstacles to implementation. In her study on standards-based grading implementation at the middle school level, Urich (2012) investigated the differing supports necessary for a successful transition from traditional grading to standards-based reporting. Her research uncovered obstacles including proper professional development and communication with parents and other stakeholders (Urich, 2012). Three similar subthemes emerged in this study identifying teachers’ and administrators’ thoughts on implementation of standards-based grading: buy-in, professional development, and parent concerns. Interview question five directly asked teachers, “What were the biggest challenges to the implementation of standards-based grading?” Administrators were not asked to comment about challenges in general. Instead, they were asked several questions about the specific obstacles identified by researchers in Chapter Two. The following subthemes highlight their responses to these questions.

Buy-in. Six teachers cited buy-in as a critical element to success with standards-based grading. Teacher A lamented that all teachers needed to be focused on learning standards and not overall grades and stated, “If *everyone* was focused on learning the standards and not worried about what the bottom line overall grade was, then standards-based grading is really beneficial.” Teacher K described the lack of buy-in as being “half-in” instead of “all in,” and Teacher O concurred by stating that in order for standards-based grading to be effective there should be consistency throughout the building. This idea was reinforced by Administrator 2, who said this about staff members, “...most were supportive, but I have a couple who, even though they are young, have very traditional mindsets. Actually, my most veteran teacher was really willing to embrace the standards-based approach.” When asked what the biggest challenges to implementation were, Teacher N responded by saying, “Buy-in; convincing teachers and parents that this is a better way to assess learning.” Teacher A also included buy-in from all stakeholders as critical to success.

Teacher G gave this assessment of standards-based grading: “I think you are either all in with standards-based grading or you’re out. A mix of the two would leave staff questioning your commitment and leave too much up to interpretation.” Teacher K, in response to question four, also expressed a desire to see a complete commitment to standards-based grading, saying, “I wish we would’ve done away with percentages and letter grades at the junior high level.” When commenting about the role staff played in the implementation of standards-based grading, Administrator 2 reinforced this concern by sharing how some staff members liked certain components of standards-based grading but also supported grading practices that were “contrary to a true standards-based

approach.” With these statements, Teacher K and Administrator 2 highlighted an issue that many schools reportedly face with standards-based grading, which is buy-in regarding all major components of the grading system rather than picking and choosing various aspects.

Professional development. Lack of proper training emerged as a major source of frustration for teachers interviewed. Teachers continually reported moving too fast without ample training to support a move to standards-based grading. Teacher E summarized this view by responding, “We didn’t implement the program slowly enough to see what the pros and cons were before jumping into it.” Teacher E continued by attaching responsibility for lack of proper training to administration: “When you have an administrator who doesn’t help find resources, it plants a negative feeling.” Teacher G stated the district had no standards-based handbook or policy which, consequently, allowed teachers to interpret implementation on their own. Teacher G believed that such a policy manual would lead to more consistency from room to room. Teacher L stated flatly, “It was difficult for all of us to understand how it works.”

The administrator comments on the topic of professional development helped explain the obvious frustration expressed by teachers. Administrator 1 admitted to not being part of the initial implementation process and did not know how to answer several of the questions. This provided evidence of a lack of support for teachers and a lack of ongoing professional development. Administrator 2 stated he had read several books by Guskey and Marzano and that it “all just made sense.” He described the school’s professional development in this way:

I suggested that my teachers read the book, *Practical Solutions for Serious Problems in Standards-Based Grading*, by Thomas Guskey, and I don't honestly know if they did, but we did discuss several aspects of the book in faculty meetings. I also have been using faculty meetings to rehash the ideas we discussed and how to implement them . . . nothing formal though. (Administrator 2)

This statement illustrated the minimal amount of professional development this school underwent and alluded to a connection between the lack of training and teacher frustration.

Teachers also discussed a need for ongoing and continual training and professional development in order for standards-based grading to be effective. Teacher K described training as “huge” and argued for keeping up with current training each year. Teacher J declared, “I think our district would benefit by making revisions to the standards-based criteria that we currently have.” Teachers agreed that standards-based grading is valuable but must be continually evaluated and updated in order to be most effective. Teacher K validated this statement by saying, “It’s a continual work in progress that is worth every minute if it opens the door to understanding what kids know and what they need to work on.”

Parent concerns. In response to question six which asked teachers to comment on specific concerns communicated by parents, Teacher K declared, “parent concerns are endless.” Consistently, teachers described parents as being confused by what grades now meant under a standards-based system. Teacher H said, “I think the biggest challenge was

parental understanding of the process.” Making sure parents understood what standards-based grading entailed was suggested as a way to prevent recoil. According to Teacher E:

It needs to be spelled out very clearly for them and the students. Once that’s done, parents are pretty good at backing you up, but if they haven’t bought into the program, this could lead to some backlash. . .

Administrator 1 described a specific example of parental backlash concerning standards-based grading:

We had a parent group that formed to do away with it because of "inequality." Several believed kids should be rewarded for hard work and not what they know, and they are upset that another student could receive the same grade due to a retake when their child scored it on the first exam.

This scenario illustrates how great an obstacle parents can be during and even after the implementation process.

Previously having students who routinely made A’s in a traditional system proved troublesome for parents once the standards-based system was in place. Teacher B indicated that parents were concerned about homework not counting towards grades, and they wondered “how students could achieve the level four that’s necessary to earn an A.” Teacher I’s comments coincided with Teacher B: “They didn’t like that their student went from making A’s to B’s. Parents have a hard time making a transition to a number grade instead of a letter grade, and they didn’t understand what mastery meant.”

Administrator 2 validated Teacher I’s claim, stating parents’ biggest concern is not understanding what the number grades mean. Teacher D said parents had concerns with grades because there were no longer “easy A’s.” Administrator 2 stated parents seemed to

want their child to do well but was suspicious of motives, not knowing if parents were more concerned that their child is learning what they need to learn or if they just want their child to make good grades.

Several teachers described parent cooperation as essential yet hard to achieve. Teacher M described it in this way, “There has to be a culture change, and parents have to be on board before it occurs. Also, parents need to be involved because they are the ones that need to be in charge of students doing their homework.” Teacher O said that once parents have some understanding of what standards-based grading is they seemed to be in agreement about the benefits of the system. Many teachers articulated that parents want students to continue to perform well, but understanding the difference between standards-based and traditional grading was paramount to parents fully embracing the change.

Closely linked to parent cooperation is parent communication. Clear communication with parents, according to teachers in the focus groups, is critical to successful standards-based implementation. Administrator 1 admitted that the district had done a better job explaining standards-based grading at the elementary level, but a lack of parental understanding remained at the secondary levels. The responsibility of communicating standards-based grading was a source of disagreement between teachers. Teacher A believed students should be communicating to their parents how the system is supposed to be working. Teacher K held that the responsibility of communication of procedures was at the building level. Teacher O stated, “Informational communication is difficult. Parents are set in percentages and letter grades, not how those percentages and grades are achieved. It’s been a challenge communicating that at times.” Teacher B said

in order for all stakeholders to invest in and embrace standards-based grading, communication “is the key.”

Outliers. While not a topic mentioned enough to warrant a subtheme, two teachers brought up a research-based obstacle, one mentioned in the literature review of this study: colleges. Peters and Buckmiller (2014), stated parents believe the lack of traditional GPA and class rank in a standards-based grading system causes students to be at a disadvantage when applying for college. Teacher A stated, “. . . the traditional letter grades are what are used for college entrance.” Teacher E added, “And it doesn’t make any sense when schools are trying so hard to play the game of testing with all levels of government, how come the colleges aren’t jumping on the bandwagon of standards-based grading?”

Conclusion. Teachers in the focus groups seemed to be of the same mind concerning the obstacles to standards-based grading implementation. Several teachers cited buy-in, on all levels, as critical to the success of implementation. The need for quality and ongoing professional development was another main area of concern. Many teachers believed they had not received adequate instruction, in quantity or quality, regarding the use of standards-based grading. The large number of responses mentioning parent concerns as an obstacle made this topic the most prevalent subtheme. It was evident teachers and administrators believed parents needed to be informed, involved, and on-board for standards-based grading to be effective. Through the analysis of teacher and administrator interview responses, these specific issues emerged as the main roadblocks to implementing standards-based grading.

Summary

The chi-square values of the six groups tested in Phase One of this mixed methods study were all significantly higher than the critical value of 7.815, which was required in order for the null hypothesis to not be rejected. Not rejecting the null hypothesis in any of the groups tested would statistically indicate the ability of a particular grading system to predict MAP achievement levels which align with classroom grades. Quantitative data analyzed for this study showed no statistical ability for either standards-based grading or traditional methods of grading to predict MAP achievement levels with any degree of consistency.

In Phase Two of the data analysis, three major themes emerged as the qualitative data were analyzed: positive perceptions, negative perceptions, and obstacles to implementation of standards-based grading. Among the three major themes, nine subthemes were identified and evaluated as interviewees responses were recorded, transcribed, and subsequently identified to correspond with a certain theme and subtheme. A majority of teachers interviewed stated they were in favor of standards-based grading and felt the grading system gave them a clearer and more accurate description of student learning levels. However, when responding to the interview questions, they were much more likely to be specific in regards to the aspects of standards-based grading they were *not* in favor of. When discussing obstacles to implementation, administrators clearly revealed a deficit in adequate professional development, and teachers communicated this deficit was a significant source of frustration. Other obstacles included the concerns of parents and stakeholder buy-in.

Chapter Five expounds upon the conclusions and findings identified in the data analysis, and recommendations for future research are described. The research questions which guided this study are addressed using the analysis of the quantitative and qualitative data results discussed in Chapter Four. Lastly, results discovered in Chapter Four will be analyzed and compared and contrasted to the literature discussed in Chapter Two.

Chapter Five: Summary and Conclusions

According to Reeves (2008), the difference between failure and success in schools rests on the grading policies of the teachers. The preeminent classrooms across America use many forms of feedback to advance student performance, with grades being only one piece to the puzzle (Reeves, 2008). Research is abundant on the effects grading policies have on student performance. This study focused on the ability of standards-based grading to truthfully project student performance on state assessments at a greater level than that of traditional grading practices. As described in Chapter Three, student semester grades and subsequent MAP achievement levels were analyzed using a chi-square goodness-of-fit test.

This study also examined the perceptions of teachers and administrators regarding implementation of standards-based grading to determine if obstacles exist which would have affected the quantitative data collected. Additionally, Vygotsky's (1978) social constructivist theory, the zone of proximal development, provided an appropriate lens with which to view the use of standards-based grading and determine if it more effectively and efficiently predicts where students are in relation to specific standards of learning. Formative assessments, a staple of standards-based grading, and scaffolding both allow teachers to build upon prior knowledge to determine a student's level of mastery (Coffey, 2014).

Findings

This section links the data from Phases One and Two of this mixed methods study with the literature reviewed in Chapter Two. The results of the quantitative data in Phase One are reviewed and connected to the findings and research-based claims presented in

the literature review. The qualitative data from Phase Two are presented in the same themes and subthemes which emerged in the data analysis in Chapter Four. As with the quantitative data, discussion includes the way in which the findings from the second phase of this study relate to prior research.

Phase one: Quantitative data. Data collected and analyzed in this phase addressed research questions one and two of this study. This study was conducted to determine if classroom grades earned in a standards-based grading system were more likely to predict MAP achievement levels than those earned in a traditionally-graded classroom. According to Jung and Guskey (2011), schools continue to look for ways to assign grades that more accurately predict student success on state assessments. The MAP uses grade-level assessments to measure student mastery of standards known as the Show-Me Standards (MODESE, 2014a). Standards-based grading is used to determine student grades by measuring student mastery over state standards (Proulx et al., 2012). Paepflow (2011) conducted a study to determine if the implementation of standards-based grading would show a stronger correlation between classroom grades and state assessments. Data from this study indicated that, in fact, a strong relationship existed between End-of-Grade (EOG) scores and classroom grades. Data findings such as these helped facilitate the formation of research questions one and two.

In this study, data collected for Phase One showed no ability of either standards-based grading or traditional grading to accurately predict subsequent MAP achievement levels. Contrary to research cited in Chapter Two, standards-based grading was no more reliable in predicting MAP performance levels than traditional grading. The chi-square goodness-of-fit test required a value less than the critical value of 7.815 in order for the

data to indicate a good fit. Three groups of data from traditionally-graded classrooms and three groups from standards-based graded classrooms were tested, and all had significantly higher chi-square values than the critical value. This indicated that neither system of grading could be considered a good fit to accurately predict MAP achievement levels. Table 1 illustrates these findings in greater detail.

Table 1

Chi-square Goodness-of-Fit Results

Categories of Student Data ^a	Statistical Value for Goodness of Fit ^b
ELA and math/Traditional	270.1677463
ELA/Traditional	165.960101
Math/Traditional	131.8080952
ELA and math/SBG	649.4477273
ELA/SBG	925.7342193
Math/SBG	110.1868132

Note. ELA = English language arts; SBG = standards-based grading.

^a Categories of student data consisted of classroom grades and subsequent MAP achievement levels for the subject area/s listed. Additionally, data were grouped by type of grading system used: traditional or standards-based.

^b The chi-square critical value to which the statistical value was compared was 7.815.

Phase two: Qualitative data. Data collected and analyzed in this phase addressed research questions three and four of this study. The researcher sought to determine what perceptions teachers and administrators held regarding standards-based grading, which aligned to research question three. Research question four was designed to identify what obstacles teachers and administrators encountered during the implementation process.

Prior to collecting qualitative data, three major themes were established based upon the interview questions: positive perceptions, negative perceptions, and obstacles to implementation. As the data in each theme were analyzed, nine specific subthemes emerged identifying in more detail teacher and administrator perceptions. Discussion in the following section connects teacher and administrator responses within each subtheme to literature reviewed in Chapter Two. These findings parallel the existing research regarding the implementation and use of standards-based grading.

Positive perceptions: Accurate measure of learning standards. Participant responses centered upon the idea that standards-based grading allows teachers to have a more accurate depiction of student knowledge as it relates to specific learning standards. Additionally, teachers reflected on how standards-based grading allows them to identify student strengths and weaknesses on particular concepts of learning as well as providing guidelines for intervention if necessary. These findings mirror similar studies, which found that standards-based grading accurately measures students' ability to master specific standards (Miller, 2013; Oliver, 2011; Paeplow, 2011; Varlas, 2013).

Positive perceptions: Differentiated instruction. Several teachers reported that standards-based grading gives students the opportunity to move ahead with higher levels of learning as other class members continue to seek mastery of content. Teachers also described the use of unconventional, outside-the-box, thinking as an advantage of standards-based grading. Participants pointed to intervention strategies as another benefit to standards-based grading. These responses emulate those found in other studies, which examined the ability of standards-based grading to benefit learners at varying levels of mastery (Fisher, et al., 2011; Iamarino, 2014; Paeplow, 2011; Townsley, 2013).

Positive perceptions: Removal of nonacademic factors. Numerous teachers specified the use of product grades, or achievement only, as a favorite component of standards-based grading. A recurring theme in existing research was the exclusion of homework and other nonacademic factors in classroom grades in order to have a more delineated view of student knowledge of concepts (Brookhart, 2011b; Campbell, 2012; Deddeh, et al., 2010; Jung & Guskey, 2011; Knaack, et al., 2012; Miller, 2013; Reeves, 2011; Scriffiny, 2008; Varlas, 2013). This theme was echoed by participants in focus group interviews. Teachers reported not wanting to return to traditional methods of grading due to its inclusion of nonacademic factors.

Negative perceptions: Retakes. Teacher responses regarding retakes of summative assessments centered on the idea that unlimited retakes cause students to lack responsibility and accountability. Teachers voiced concerns that students failed to adequately prepare for tests due to the option of retakes under a standards-based grading system. Teachers also mentioned an increased workload that is required when multiple assessments of standards are allowed as a source of contention. Similar findings exist in previous studies on the topic of standards-based grading and the components which govern it (Guskey, 2011; Oliver, 2011; Peters & Buckmiller, 2014; Spencer, 2012).

Negative perceptions: Homework. The majority of responses revealed teachers' beliefs that graded homework assignments motivate students to participate at an elevated rate with an advanced quality of work. As with retakes, lack of student accountability troubled teachers in regards to homework not being used as a grade. Teachers were adamant that due to a lack of intrinsic motivation, students would not complete homework without a grade being attached to it. Prior studies indicated these are

commonly-held sentiments regarding standards-based grading (Brookhart, 2011; Fisher et al., 2011; Peters & Buckmiller, 2014; Scriffiny, 2008).

Negative perceptions: Deadlines and other nonacademic factors. Participants' responses contributing to this subtheme indicated students do not believe deadlines matter in standards-based grading systems. Teachers responded to questions by openly wishing for students to be punished with lower grades when homework deadlines were missed. These thoughts are similar to those documented in previous studies on the subject of standards-based grading implementation (Brookhart, 2011b; Cox, 2011; Oliver, 2011; Stitt & Pula, 2014).

Obstacles to implementation: Buy-in. In this subtheme, teachers and administrators addressed issues regarding implementation of standards-based grading as it relates to staff buy-in. Teachers and administrators alike were clear that without complete buy-in to a standards-based grading system, success would be limited. Teachers referenced communication with all stakeholders as a critical element which hindered implementation. Teachers and administrators also had strong feelings that all components of standards-based grading should be implemented to ensure success. These findings were reflective of those found in earlier studies (Erickson, 2010; Peters & Buckmiller, 2014).

Obstacles to implementation: Professional development. A lack of professional development emerged as a prevailing cause of frustration among teachers. Administrator 1 was not with the district when standards-based grading was implemented, and Administrator 2 admitted to pursuing standards-based grading with less than adequate professional training for teachers. Teachers pointed to a lack of consistency from room to

room in the use of standards-based grading as a result of districts not providing suitable training. Teachers also felt that administrators should have some responsibility in providing resources for teachers and expressed displeasure with this not happening. Teachers reported a desire for annual, updated training to be provided in order for standards-based grading to be as effective as possible. These opinions and perceptions mirror those discussed in previous research (Guskey, et al., 2011; Peters & Buckmiller, 2014; Urich, 2012; Wormeli, 2009).

Obstacles to implementation: Parent concerns. Participants referred to confusion and lack of communication as central to parental concerns regarding standards-based grading implementation. Teachers described parents' confusion being tied to a lack of understanding about what grades are actually reporting under a standards-based grading system. This was due, in part, to number scales being used instead of letter grades. Teachers believed that standards-based grading must be clearly defined and described to parents in order to prevent backlash. Administrator 1 described a specific example of parent criticism where parents felt students should be rewarded for hard work, and that retakes allowed students to receive the same grade as those who did not need to retake assessments. Teachers testified they believed parent cooperation was essential, yet hard to achieve. Administrator 1 agreed but admitted they had not done an adequate job of explaining standards-based grading at the secondary level. Clearly, teachers and administrators felt effective parent communication was a significant key to successfully implementing standards-based grading. Similar findings exist in past research (Erickson, 2010; Hu, 2009; Peters & Buckmiller, 2014; Urich, 2012).

Conclusions

Conclusions reached were centered upon answers to the four research questions which directed the intention of this study. This section addresses those answers and how conclusions were formulated. Data gathered in this study addressed the research questions, and information gleaned provided answers which fit the scope of the study. This information is discussed as well as any other findings which emerged outside the scope of the research questions.

Research question #1: What difference, if any, exists between semester grades assigned from traditional grading paradigms and correspondingly similar MAP achievement levels?

Group one. Group one was comprised of 248 sets of student data which compared semester grades and MAP achievement levels of students in English language arts (ELA) and math from a traditionally-graded system were analyzed using a chi-square goodness-of-fit test. A chi square value of 270.1677463 was determined, which allowed for the null hypothesis to be rejected.

The number of students who received A's was significantly higher than those who scored "advanced" on the MAP test. The number of students who received B's or C's was similar to the number of students who scored "proficient" on the MAP test. A significant difference existed between the number of students who earned a D and those who scored "basic" on the MAP test, and the number of students earning F's was very close to the number of students scoring "below basic" on the MAP test. More students earned B's and C's than any other grade, yet the number of students with a MAP achievement level of "basic" was greater than any other level. Clearly, traditional grading

did not provide any indication that semester grades would align with correspondingly similar MAP achievement levels in the combined subjects of math and ELA.

Group two. In this group, 100 sets of student semester grades from traditionally-graded classrooms and MAP achievement levels in ELA were analyzed using the chi-square goodness-of-fit test. While the test value was much smaller than when ELA was combined with math, the value of 165.960101 was still too high to be considered statistically significant; hence, the null hypothesis was rejected.

As in group one, the number of students earning A's and D's was vastly different from the number of subsequent MAP achievement levels of "advanced" and "basic." Also similar to group one, the number of students earning B's and C's was comparable to the number of those scoring "proficient," and the number of students earning F's was similar to the number scoring "below basic" on the MAP test. However, the results remained too high to indicate traditional grading in ELA closely aligns semester grades and MAP achievement levels.

Group three. Group three consisted of 148 sets of student semester grades from a traditional grading paradigm and MAP achievement levels in math. The chi-square value for this group was even lower than the first two groups at 131.8080952. Nevertheless, the chi-square value was too high, which caused the null hypothesis to be rejected yet again.

The same pattern existed as the first two groups in regard to semester grades and MAP achievement levels. Students with A's were much higher in number than the number of students scoring "advanced," and the number of students with B's and C's was almost identical to the number scoring "proficient." Students scoring "basic" on the MAP test were much higher in number than the amount of students earning D's, and the

number of students with F semester grades was similar in number to the students scoring “below basic” on the MAP test.

Literature examined in Chapter Two stated that traditional grading is not as effective at predicting student success on state assessments as standards-based grading (Koumpilova, 2013). Therefore, it was expected that statistical evidence would point to traditional grading as being unable to successfully forecast a similarity between semester grades and MAP achievement levels.

Research question #2. What difference, if any, exists between semester grades assigned from a standards-based grading system and correspondingly similar MAP achievement levels?

Group four. The ELA and math semester grades and subsequent MAP achievement levels of 294 students’ grades using a standards-based grading system were analyzed using the chi-square goodness-of-fit test. Research examined in Chapter Two argued standards-based grading would be more likely to allow schools to determine with some degree of consistency how students would perform on state assessments based on their semester grades (Paeplov, 2011). After the chi-square value was established, it was clear that, for this study, standards-based grades in the combined subjects of ELA and math did not align with achievement levels on state assessments. The chi-square value for this group was 649.4477273, one of the largest values determined in the study. The number of students with A’s was similar in number to the students with “advanced” scores, as was the number of students with semester F’s and “below basic” levels. Unlike the other groups tested, the number of students with B’s and C’s was vastly different from the number of “proficient” scores, and the number of students with D’s was much

higher than the number of students scoring “basic.” However, like the other groups, the null hypothesis was rejected due to the statistically-significant difference between the students’ semester grades and their MAP achievement levels.

Group 5. In this group, 158 sets of semester grades with corresponding MAP achievement levels of ELA students assessed in a standards-based grading system were analyzed with the chi-square test. This group had the highest chi-square value of any group tested at 925.7342193, and the null hypothesis was rejected. Group five mirrored group four in that A and F student grades aligned very closely in number with their subsequent MAP levels, and the number of B/C and D students did not align with their corresponding MAP scores. It would be logical to assume, based on this study, in ELA classrooms, standards-based grading is not as suitable as traditional methods of grading for predicting state assessment scores. This finding is contrary to existing literature which implies standards-based grading is, in fact, more likely to allow teachers to know how students will perform on state tests based on their semester grades (Jung and Guskey, 2011; Paepflow, 2011).

Group 6. Of all the groups tested, this group had the lowest chi-square value. In group six, 136 sets of math grades from a standards-based grading system and MAP achievement levels were examined using the chi-square test. The test value was 110.1868132, which was the closest to the critical value of 7.815 of any group tested. Students with A’s and “advanced” scores were similar in number, as were those with F’s and “below basic” MAP levels. While the other two sets of student grades and MAP levels in this group were not as closely aligned, they were closer than any other group tested.

After scrutinizing the data from all six groups tested in this study, it is clear that neither traditional grading nor standards-based grading is very effective at allowing teachers to predict how students will perform on state assessments based on their semester grades. That said, after examining the answers obtained from research questions three and four, a more detailed picture of why the data showed no ability of either grading system to predict student assessment scores emerged.

Research question #3. What differences in perceptions exist among teachers and administrators regarding the use of standards-based grading verses traditional grading systems?

This question sought to determine perceptions held by teachers and administrators regarding standards-based grading. This research question centered on two major themes: positive perceptions and negative perceptions. Within those two major themes, six subthemes emerged which perhaps illustrated why the quantitative data did not align with recent research which indicated standards-based grading would allow teachers to successfully predict students' state achievement levels.

Positive perceptions. The three subthemes connected to positive perceptions were (a) accurate and specific measure of learning standards, (b) differentiated instruction, and (c) removal of nonacademic factors. According to teacher responses, it was clear teachers believed standards-based grading gives them the opportunity to know specific student strengths and weaknesses in regards to the learning standards. Teachers' responses also indicated they thought standards-based grading affords them the ability to accurately measure student knowledge of specific learning standards. In theory, and based on these beliefs, standards-based grading should have allowed teachers to predict how their

students would perform on state assessments which assess students' knowledge of those standards. The data from this study proved otherwise. However, the fact the number of standards-based graded students performing at the "advanced" level was similar to the number of students who received A's coincides with teachers' positive comments regarding the ability of standards-based grading to promote differentiated instruction. Teachers stated standards-based grading allowed higher-level learners to seek opportunities for enrichment and advancement.

Negative perceptions. Three subthemes connected to negative perceptions were (a) retakes, (b) homework, and (c) deadlines and other nonacademic factors. As the quantitative data began to reveal a disconnect between this study's findings and those of existing research, teachers' negative perceptions offered a possible justification for this discrepancy. Teachers reported having many negative sentiments regarding retakes, including Teacher M who said, "I feel like it also makes students have the impression that they don't need to learn it the first time because they can retake it." It is possible that students do maintain this attitude, which would indicate why students' grades do not correspond with their MAP achievement levels. Teachers also had strong feelings about how standards-based grading practices do not perpetuate student motivation to complete homework, which in turn could affect content mastery. Teachers repeatedly expressed a desire to punish students who do not complete homework assignments or meet deadlines which, according to research reviewed in Chapter Two, does not increase student learning (Wormeli, 2006). These findings imply that many of the teachers interviewed in this study held perceptions and opinions contrary to standards-based grading principles, which could have skewed the data.

Research question #4. What obstacles do teachers and administrators report when implementing and using a standards-based grading system?

Question four explicitly asked teachers and administrators what obstacles existed when implementing a standards-based grading system. Responses to the interview questions shed light upon why quantitative data in this study were contradictory to research reviewed in Chapter Two.

Obstacles to Implementation. Three subthemes emerged within this major theme: (a) buy-in, (b) professional development, and (c) parent concerns. Teacher responses found within these subthemes indicated a potential pattern of faulty implementation of standards-based grading which, consequently, could also have affected the quantitative data found in this study. Research cited in Chapter Two illustrated the importance of adequate professional development in order for standards-based grading to have the intended results schools seek (Urich, 2012; Wormeli, 2009).

As responses to interview questions were analyzed, it was apparent that teachers interviewed felt unprepared to implement standards-based grading correctly. Teacher L declared, “It was difficult for all of us to understand how it works.” Teacher E even blamed administration for the lack of training: “When you have an administrator who doesn’t help find resources, it plants a negative feeling.” Administrator 2 reported a minimal amount of training was offered to staff as they implemented standards-based grading. Undoubtedly, the teachers interviewed for this study did not receive proper training for standards-based grading which, most likely, negatively affected implementation; therefore, quantitative data did not mirror research that suggested standards-based semester grades would align with state assessment scores.

Teachers also testified to having concerns with parent support and communication. As with teacher buy-in, parental buy-in is crucial to successful standards-based grading implementation (Guskey, 2011; Peters & Buckmiller, 2014; Wormeli, 2009). Teachers stated clear communication with parents is critical to successful implementation, and Administrator 1 readily admitted the district did not do a good job of explaining the standards-based grading model to parents. This lack of communication could be why teachers reported parental confusion regarding standards-based grading. This, coupled with a lack of professional development and training, could provide further justification for the quantitative data results from Phase One of this study.

The qualitative data in this study offers insight into why the quantitative data did not mirror existing research concerning standards-based grading. Quantitative data in this study showed no ability for either system of grading to predict MAP achievement levels based on student semester grades. Without proper implementation procedures, it is arguable the quantitative data would not mirror existing research. This is a noteworthy outcome which could give reason for further research to be conducted.

Implications for Practice

There were two substantial findings in this research: (a) the ineffectiveness with which either grading system allowed classroom grades to mirror subsequent MAP achievement levels, and (b) the ability of teacher and administrator perceptions to affect the overall impact of standards-based grading. The latter finding clearly impacted the former as the techniques and approach to implementing standards-based grading must follow sound research-based implementation formats (Oliver, 2011; Proulx, et al., 2012; Scriffiny, 2008). Based on the findings in this study, the following recommendations

regarding professional development are offered to schools seeking to improve upon current grading practices.

Effective professional development. Current research-based professional development should be a focal point of any move to standards-based grading. Standards-based grading requires clear, precise, and measurable objectives to accomplish the goal of accurately measuring students' knowledge of specific learning standards (Hanover, 2011; Scriffiny, 2008). In order for standards-based grading to afford school districts the ability to know exactly what students have learned in relation to learning standards, the standards-based method must be used properly and with full attention to specific safeguards that would allow for appropriate implementation (Wormeli, 2009). Literature exists which specifies proper tactics and strategies for school districts to follow which would guide the transition to a standards-based grading system (Guskey, 2011; Ulrich, 2012).

Several teachers in this study pointed to a lack of quality professional development prior to and during implementation as a reason for standards-based grading not achieving the intended results and being a source of frustration in the workplace. Existing research clearly states the importance of professional development in ensuring standards-based grading's success (Guskey et al., 2011; Oliver, 2011). Professional development would guide teacher and administrator knowledge of standards-based grading attributes and the research behind what makes standards-based grading successful. This knowledge would no doubt assist teachers and administrators as they attempt to effectively communicate the purposes and aspects of standards-based grading to parents in the district.

Administrator 1 described a parent group which formed to address certain “inequalities” they felt existed with standards-based grading regarding the use of retakes and the exclusion of nonacademic factors. This thinking is either evidence that parents do not agree with the research behind standards-based grading or they do not understand the purpose for the various components which make up the grading system due to a failure of school officials to communicate effectively. Proper, research-based, and ongoing professional development would, in essence, allow teachers and administrators to become well-versed regarding standards-based grading and hence encourage buy-in from faculty and prevent backlash from parents.

Recommendations for Future Research

While this study adds to the body of research regarding standards-based grading, it is by no means comprehensive in its scope. Future studies could continue to broaden the range of research focusing on the strengths and weaknesses of standards-based grading. Additional research would aid districts in avoiding potential pitfalls and allow the full measure of standards-based grading benefits to be realized. Further studies could also provide school districts with guidelines for purposeful professional development, which would guide transitions from traditional grading to standards-based grading.

Because this study was concentrated at the middle school level with only math and ELA, there are restrictions on the overview of the findings. Future studies could encompass all grade levels of students and other core academic areas as well as elective courses. Cultural influences could possibly impact the success of standards-based grading implementation; therefore, future studies in different geographical locations with an emphasis on different levels of socioeconomic standing might reveal varying levels of

success. Demographic information for this study was limited due to the data being collected from only two schools. Many factors could possibly change the outcome of similar data-driven studies, including larger or smaller schools, high minority populations, high levels of poverty-stricken students, and students of parents from differing levels of educational background.

The findings of this study indicated that teachers have a large role to play in the success or failure of a standards-based grading system. Therefore, a study on schools' professional development activities, as those activities relate to standards-based grading and how the professional development corresponds with the level of success teachers have achieved, would give schools an abundance of research with which to make decisions regarding standards-based grading implementation.

As standards-based grading becomes increasingly prevalent in schools across America, future studies examining the movement from letter grades to number scales and how this is affecting college placement of students would certainly add to the literature. Managing the potential struggle between the importance of time-honored traditions such as the naming of valedictorian and salutatorian at the high school level and the de-emphasizing of such traditions within standards-based grading could prove to be difficult (Guskey & Jung, 2012). A qualitative study examining perceptions of parents and school officials in regard to the level of support for such changes in grading and reporting would guide future research in determining the best approach for schools to take as they look to implement standards-based grading. Due to the increasing number of schools using standards-based grading, any future research studies would undoubtedly aid in the

process of making sound educational decisions for school officials and those assigned with making student-centered policy decisions.

Summary

This mixed methods study was intended to determine if standards-based grading would allow schools to accurately predict MAP achievement levels based on student semester grades at the middle school level. The study used qualitative data to determine if the quantitative data results could be explained further. The additional explanations derived from the qualitative data were utilized to discover if teacher and administrator perceptions could provide insight as to why quantitative findings did not mirror the literature reviewed in Chapter Two.

Quantitative data were generated using the chi-square goodness-of-fit test in order to determine if semester grades aligned with subsequent MAP achievement levels of middle school students in math and ELA. Qualitative data, which was used to add to the body of research, was obtained by analyzing teacher and administrator responses to open-ended interview questions in focus group interviews. Both phases of this study were designed in an explanatory sequential design model.

Findings from the quantitative data did not reflect the findings discussed in Chapter Two. It was determined that neither standards-based grading nor traditional grading could accurately predict how students would perform on the MAP test using semester grades as a guide. Qualitative data gleaned from interview questions pointed to a fundamentally flawed use of standards-based grading in the schools used for this study. Guskey (2011) described the importance of suitable professional development, which offers up-to-date support and record keeping and technology assistance when

transitioning to standards-based grading from a traditional method of grading. The teachers and administrators interviewed in this study described a less than adequate measure of professional development and training prior to and during the move to a standards-based grading system. These findings suggested that school districts must provide high-quality professional development for teachers in order for standards-based grading to achieve the desired results. Teachers, administrators, and parents all must be well-versed in standards-based grading practices and purposes. Failure to clearly communicate to parents the specific details regarding standards-based grading goals and procedures and exactly what grades mean in this grading system could explain why teachers and administrators in this study reported parental push back with standards-based grading. Study participants held positive perceptions for most of the components of standards-based grading but were clear they felt improperly trained in standards-based grading practices and, therefore, were not achieving the anticipated results.

The implementation of standards-based grading has been researched in schools from Kentucky and Nebraska to Minnesota and Maine (Dodson, 2010; Erickson, 2010; Guskey et al., 2011; Proulx et al., 2012). From the findings of this study, it is evident school leaders in districts wishing to make the switch to standards-based grading should educate themselves thoroughly on the practices, policies, and procedures of this grading system. Emphasis should be placed on finding and providing quality training for teachers and administrators and conducting substantial research of districts that have already made this transition. Much can be learned from not only the success of those districts but from their failures as well.

Appendix A

Interview Questions

Questions for Administrators

1. Why did your district decide to pursue standards-based grading for your building?
2. Describe the research process that led to the implementation of standards-based grading.
3. What professional development was provided for your teachers prior to and during the implementation of standards-based grading?
4. What concerns did your staff identify prior to the implementation of the standards-based grading format?
5. Describe the role your staff played in making the decision to implement standards-based grading.
6. To what extent did members of the school board oppose or support the transition to a standards-based model of grading?
7. Describe the level of buy-in you received from your staff after the implementation of standards-based grading.
8. What concerns about standards-based grading did parents have prior to its implementation?
9. How have parents' perceptions changed since the implementation of standards-based grading?
10. Has standards-based grading achieved the outcome you had hoped for? If not, explain why.

Questions for Teacher Focus Groups

1. In your opinion, does standards-based grading more accurately reflect student learning as compared to a traditional grading system you may have used prior to standards-based grading?
2. What are some of the weaknesses of a standards-based grading system compared to a traditional method of grading, and why do you consider them weaknesses?
3. What specific components of your school's standards-based grading system do you find more beneficial when compared to traditional methods, and for whom are those practices beneficial?
4. Are there any components of traditional grading you wish you had not given up when your district switched to standards-based grading, and why?
5. What were the biggest challenges to the implementation of standards-based grading?
6. What concerns did parents have prior to and after the implementation of standards-based grading in your classrooms?
7. Give any additional thoughts or feelings, both positive and negative, regarding standards-based grading in your district.

Appendix B

IRB Approval Disposition Letter

LINDENWOOD

LINDENWOOD UNIVERSITY ST. CHARLES, MISSOURI

DATE: March 10, 2015

TO: Gary Greene, Ed.D
FROM: Lindenwood University Institutional Review Board

STUDY TITLE: [707411-1] An Analysis of the Comparison between Classroom Grades Earned with a Standards-Based Grading System and Grade Level Assessment Scores as Measured by the Missouri Assessment Program

IRB REFERENCE #:
SUBMISSION TYPE: New Project

ACTION: APPROVED
APPROVAL DATE: March 10, 2015
EXPIRATION DATE: March 10, 2016
REVIEW TYPE: Expedited Review

Thank you for your submission of New Project materials for this research project. Lindenwood University Institutional Review Board has APPROVED your submission. This approval is based on an appropriate risk/benefit ratio and a study design wherein the risks have been minimized. All research must be conducted in accordance with this approved submission.

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

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

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

All SERIOUS and UNEXPECTED adverse events must be reported to this office. Please use the appropriate adverse event forms for this procedure. All FDA and sponsor reporting requirements should also be followed.

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

This project has been determined to be a Minimal Risk project. Based on the risks, this project requires continuing review by this committee on an annual basis. Please use the completion/amendment form for this procedure. Your documentation for continuing review must be received with sufficient time for review and continued approval before the expiration date of March 10, 2016.

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

If you have any questions, please contact Robyne Elder at (314) 566-4864 or relder@lindenwood.edu. Please include your study title and reference number in all correspondence with this office.

If you have any questions, please send them to relder@lindenwood.edu. Please include your project title and reference number in all correspondence with this committee.

This letter has been electronically signed in accordance with all applicable regulations, and a copy is retained within Lindenwood University Institutional Review Board's records.

Appendix C

Invitation Letter



Date

Dear _____:

This letter is an invitation to consider participating in a study I am conducting as part of my doctoral degree in the School of Education at Lindenwood University under the supervision of Dr. Phillip Guy. I would like to provide you with more information about this project and what your involvement would entail if you decide to take part.

As educators become increasingly concerned that student learning is not accurately measured by current grading practices, educational leaders are beginning to research more accurate ways to assess and report student learning. I am conducting a research project for my doctoral dissertation titled, *An Analysis of the Comparison between Classroom Grades Earned with a Standards-Based Grading System and Grade-Level Assessment Scores as Measured by the Missouri Assessment Program*. The purpose of this study is to examine the ability of traditional and standards-based grading practices to accurately predict student performance on the MAP Grade-Level Assessments at the middle school level. By determining which grading methods most accurately predict achievement, as measured by the seventh and eighth-grade state assessments, school districts can either provide rationale for making changes to outdated grading practices or provide justification for continuing to use their current, traditional practices. This research will aid school district officials when attempting to implement grading practices which closely align with desired student outcomes and performance abilities. This study will also explore the perceptions that Missouri middle school teachers and administrators have concerning the implementation and use of a standards-based grading system.

I am requesting your participation in my study by asking that you provide MAP achievement levels and corresponding semester grades for all students in seventh and eighth grade math and English language arts for the 2013-2014 school year. If your school utilizes a standards-based grading system, I am also requesting to interview members of your administrative staff and teachers regarding the implementation and use of standards-based grading. I am not requesting email addresses, phone numbers, mailing addresses, or any personally identifying information about students or staff. Instead, I would ask that you identify students, their grades, and their achievement levels with a single number. My interview questions do not ask for any personally identifying information, ensuring the anonymity of all the study's participants.

Participation in this study is voluntary. It will involve an interview of approximately one hour in length to take place in a mutually agreed upon location. You may decline to

answer any of the interview questions if you so wish. Further, you may decide to withdraw from this study at any time without any negative consequences by advising the researcher. With your permission, the interview will be tape-recorded to facilitate collection of information and later transcribed for analysis. All information you provide is considered completely confidential. Your name will not appear in any thesis or report resulting from this study; however, with your permission anonymous quotations may be used. There are no known or anticipated risks to you as a participant in this study. I would like to assure you that this study has been reviewed and received ethics clearance through the Institutional Review Board at Lindenwood University.

If you have any questions regarding this study, or would like additional information to assist you in reaching a decision about participation, please contact me at (417) [REDACTED] or by e-mail at ggreene@mansfieldschool.net. You can also contact my supervisor, Dr. Phillip Guy by e-mail at PGuy@lindenwood.edu.

I hope that the results of my study will be of benefit to administrators, teachers, and all educational stakeholders, as well as to the broader research community. I very much look forward to speaking with you and thank you in advance for your assistance in this project.

Sincerely,

Gary Greene
Doctoral Student

Dr. Phillip Guy
Adjunct Faculty
Department of Education
Lindenwood University

Appendix D

Adult Informed Consent Form

LINDENWOOD

INFORMED CONSENT FOR PARTICIPATION IN RESEARCH ACTIVITIES

“An Analysis of the Comparison between Classroom Grades Earned with a Standards-Based Grading System and Grade-Level Assessment Scores as Measured by the Missouri Assessment Program”

Principal Investigator : Gary Greene
E-mail: ggreene@mansfieldschool.net

Telephone: 417- [REDACTED]

Participant _____ Contact info _____

1. You are invited to participate in a research study conducted by Gary Greene under the guidance of Dr. Phillip Guy. The purpose of this research is to compare the ability of standards-based grading and traditional grading systems to accurately predict student achievement on Missouri state achievement tests.
2. Your participation will involve participating in a focus group interview answering questions regarding the implementation of standards-based grading in your district. You will also be asked to give your opinion on standards-based grading and any thoughts or concerns that you have or had since the implementation of standards-based grading.
3. The amount of time involved in your participation will be approximately one hour.
4. Approximately 40 subjects will be involved in this research.
5. There are no anticipated risks with this research.
6. There are no direct benefits for your participation in this study. However, your participation will contribute to the knowledge about standards-based grading and may help society.
7. Your participation is voluntary, and you may choose not to participate in this research study or to withdraw your consent at any time. You may choose not to answer any questions that you do not want to answer. You will NOT be penalized in any way should you choose not to participate or to withdraw.
8. We will do everything we can to protect your privacy. As part of this effort, your identity will not be revealed in any publication or presentation that may result from this study, and the information collected will remain in the possession of the investigator in a safe location.
7. If you have any questions or concerns regarding this study, or if any problems arise, you may call the Investigator, Gary Greene (417: [REDACTED]) or the Supervising Faculty, Dr. Phillip Guy (417: [REDACTED]). You may also ask questions about or state concerns regarding your participation to the Lindenwood Institutional Review Board (IRB) by contacting Dr. Jann Weitzel, Vice President for Academic Affairs at 636-949-4846.

I have read this consent form and have been given the opportunity to ask questions. I will also be given a copy of this consent form for my records. I consent to my participation in the research described above.

Participant's Signature Date

Participant's Printed Name

Signature of Principal Investigator Date

Investigator Printed Name

Appendix E

Grade Conversion and Translation Tables

Table E1

Conversion Scale to Traditional Grades

Average Scale Score Across Multiple Goals	Traditional Grade
3.75-4.00	A+
3.26-3.74	A
3.00-3.25	A-
2.84-2.99	B+
2.67-2.83	B
2.50-2.66	B-
2.34-2.49	C+
2.17-2.33	C
2.00-2.16	C-
1.76-1.99	D+
1.26-1.75	D
1.00-1.25	D-
Below 1.00	F

Note. Used with permission. From *Formative Assessment & Standards-Based Grading* by Robert J. Marzano. Copyright 2010 by Marzano Research, 555 North Morton Street, Bloomington, IN 47404, 800.733.6786, <http://www.marzanoresearch.com>. All rights reserved.

Table E2

Translation Scale for Descriptors

Descriptors	Scores
Advanced	4.0
	3.5
Proficient	3.0
	2.5
Basic	2.0
	1.5
Below Basic	1.0
	0.5
	0.0

Note. Used with permission. From *Formative Assessment & Standards-Based Grading* by Robert J.

Marzano. Copyright 2010 by Marzano Research, 555 North Morton Street, Bloomington, IN 47404,

800.733.6786, <http://www.marzanoresearch.com>. All rights reserved.

The last column was omitted from the original table. It provided a definition of the descriptors, which was not relevant to this study's use of the translation table.

References

- Abbott, S. (Ed.). (2014). Hidden curriculum. In *The glossary of education reform*. Retrieved from <http://edglossary.org/hidden-curriculum>
- Allen, J. D. (2005). Grades as valid measures of academic achievement of classroom learning. *The Clearing House*, 78(5), 218-223.
- Belolan, C. (2013, January 3). Pre-assessment: A key to the ZPD [Web log post]. Retrieved from <http://www.competencyworks.org/2013/01/pre-assessment-a-key-to-the-zpd/>
- Bieber, A. (2011, September 16). From traditional grading to standards based assessment [Web log post]. Retrieved from <http://school21c.org/2011/09/16/from-traditional-grading-to-standards-based-assessment>
- Bluman, A. G. (2014). *Elementary statistics: A step by step approach* (9th ed.). New York, NY: McGraw-Hill.
- Brookhart, S. M. (2011a). *Grading and learning: Practices that support student achievement*. Bloomington, IN: Solution Tree Press.
- Brookhart, S. M. (2011b). Starting the conversation about grading. *Educational Leadership*, 69(3), 10-14.
- Campbell, C. (2012). Learning-centered grading practices. *Leadership*, 41(5), 30-33.
- Coffey, H. (2014). Scaffolding. *K-12 teaching and learning from the UNC School of Education*. Retrieved from <http://www.learnnc.org/lp/pages/5074>
- Common Core State Standards Initiative (2015). *About the standards*. Retrieved from <http://www.corestandards.org/about-the-standards/>

- Cox, K. B. (2011). Putting classroom grading on the table: A reform in progress. *American Secondary Education*, 40(1), 67-87.
- Creswell, J. W. (2012). *Planning, conducting, and evaluating quantitative and qualitative research* (4th ed.). Boston, MA: Pearson Education.
- Curve. (2014) In *Merriam-Webster's online dictionary*. Retrieved from <http://i.word.com/dictionary/curve>
- Deddeh, H., Main E., & Fulkerson, S. R. (2010). Eight steps to meaningful grading. *Kappan*, 91(7), 53-58.
- Dodson, A. (2010). Q&A: Standards-based grading expert Robert Marzano talks about Bangor Township Schools new grading system. *The Bay City Times*. Retrieved from http://www.mlive.com/news/bay-city/index.ssf/2010/11/qa_standards-based_grading_exp.html
- Editorial Projects in Education Research Center. (2011). *Adequate yearly progress*. Retrieved from <http://www.edweek.org/ew/issues/adequate-yearly-progress/>
- Erickson, J. A. (2010). Grading practices: The third rail. *Principal Leadership*, 10(7), 22-26.
- Erickson, J. A. (2011). How grading reform changed. *Educational Leadership*, 69(3), 66-70.
- Erzen, T. (2014, April 17). Ankeny teachers sound off on standards-based grading. *Des Moines Register*. Retrieved from <http://www.desmoinesregister.com/story/news/local/ankeny/2014/04/17/ankeny-teachers-standards-based-grading-survey/7845549/>

- Fisher, D., Frey, N., & Pumpian, I. (2011). No penalties for practice. *Educational Leadership*, 69(3), 46-51.
- Fraenkel, J. R., Wallen N. E., & Hyun H. H. (2012). *How to design and evaluate research in education* (8th ed.). New York, NY: McGraw-Hill.
- Goodwin, B. (2011). Grade inflation: Killing with kindness? *Educational Leadership*, 69(3), 80-81.
- Gordon, M. (2010). Are traditional grades a thing of the past? Retrieved from <http://www.education.com/magazine/article/traditional-grades/>
- Guskey, T. R. (2001). Fixing grading policies that undermine standards. *Education Digest*, 66(7), 16-21.
- Guskey, T. R. (2011). Five obstacles to grading reform. *Educational Leadership*, 69(3), 16-21.
- Guskey, T. R., & Jung, L. A. (2012). Four steps in grading reform. *Principal Leadership*, 13(4), 23-28.
- Guskey, T. R., Swan, G. M., & Jung, L. A. (2011). Grades that mean something. *Phi Delta Kappan*, 93(2), 52-57.
- Hanover Research. (2011). *Effective grading practices in the middle school and high school environments*. Washington, DC. Retrieved from http://www.apsva.us/cms/lib2/VA01000586/Centricity/Domain/63/Hanover_Research_--_Effective_Grading_Practices_in_the_Middle_School_and_High_School_Environments.pdf

- Hardegree, A. (2012). *Standards-based assessment and high stakes testing: Accuracy of standards-based grading* (Doctoral dissertation). Retrieved from <http://digitalcommons.liberty.edu/cgi/viewcontent.cgi?article=1630&context=doctoral>
- Hatch, J. A. (2010). Rethinking the relationship between learning and development: Teaching for learning in early childhood classrooms. *The Educational Forum*, 74(3), 258-268.
- Hu, W. (2009, March 24). Report cards give up A's and B's for 4s and 3s. *The New York Times*. Retrieved from <http://www.nytimes.com/2009/03/25/education/25cards.html>
- Iamarino, D. L. (2014). The benefits of standards-based grading: A critical evaluation of modern grading practices. *Current Issues in Education*, 17(2), 1-11.
- Jung, L. A., & Guskey, T. H. (2011). Fair & accurate grading for exceptional learners. *Principal Leadership*, 12(3), 32-37.
- Keeney, M. (2000). Understanding grading procedures. *Principal Leadership*, 1(3), 68-72.
- Knaack, S., Kreuz, A., & Zawlocki, E. (2012). *Using standards-based grading to address students' strengths and weaknesses* (Master of Arts action research project). Available from ERIC. (ED531172)
- Koumpilova, M. (2013). Minnesota schools give standards-based grading system a closer look. *Pioneer Press*. Retrieved from http://www.twincities.com/ci_22915229/minnesota-schools-give-standards-based-grading-system-closer

- Marzano, R. (2000). *Transforming classroom grading*. Alexandria, VA: ASCD.
- Marzano, R. J. (2010). *Formative assessment and standards-based grading*.
Bloomington, IN: Marzano Research Laboratory.
- Marzano, R. J., & Heflebower, T. (2011). Grades that show what students know.
Educational Leadership, 69(3), 34-39.
- McLeod, S. (2014). *Zone of proximal development*. Retrieved from
<http://www.simplypsychology.org/Zone-of-Proximal-Development.html>
- Miller, J. J. (2013). A better grading system: Standards-based, student-centered
assessment. *English Journal*, 103(1), 111-118.
- Missouri Department of Elementary & Secondary Education. (2013). *Comprehensive
guide to the Missouri School Improvement Plan*. Retrieved from
http://dese.mo.gov/sites/default/files/MSIP-5-comprehensive-guide-3-13_1.pdf
- Missouri Department of Elementary & Secondary Education. (2014a). *College & career
readiness: Grade level assessment*. Retrieved from [http://dese.mo.gov/college-
career-readiness/assessment/grade-level](http://dese.mo.gov/college-career-readiness/assessment/grade-level)
- Missouri Department of Elementary & Secondary Education. (2014b). *Vision, mission, &
goals*. Retrieved from <http://dese.mo.gov/commissioner/vision-mission-goals>
- Missouri Learning Standards. (2014a). *About the Missouri Learning Standards*. Retrieved
from <http://www.missourilearningstandards.com/about/>
- Missouri Learning Standards. (2014b). *Missouri Assessment Program*. Retrieved from
<http://www.missourilearningstandards.com/missouri-assessment-program/>
- Moll, M. (1998). A brief history of grading. *Teacher Newsmagazine*, 11(3). Retrieved
from <http://www.bctf.ca/publications/NewsmagArticle.aspx?id=13110>

- Nesbit, J. (2014). *Standards-based grading: What parents need to know*. Retrieved from <http://www.schoolfamily.com/school-family-articles/article/10881-standards-based-grading-what-parents-need-to-know>
- O'Connor, K. (2010). *A repair kit for grading: 15 fixes for broken grades* (2nd ed.). Portland, OR: Pearson.
- O'Connor, K., & Wormeli, R. (2011). Reporting student learning. *Educational Leadership*, 69(3), 40-44. Retrieved from <http://ehsassessment.pbworks.com/w/file/fetch/47875377/Reporting%20Student%20Learning%20-%20O%27Connor%20%26%20Wormeli.pdf>
- Oliver, B. (2011, January). Making the case for standards-based grading. *Just for the ASKing* e-newsletter. Retrieved from http://www.justaskpublications.com/jfta/2011_1_jfta.htm
- Paepow, C. G. (2011). *Easy as 1, 2, 3: Exploring the implementation of standards-based grading in Wake County Elementary Schools* (Doctoral dissertation). Available from ProQuest. (ED539451)
- Peters, R., & Buckmiller, T. (2014). Our grades were broken: Overcoming barriers and challenges to implementing standards-based grading. *Journal of Educational Leadership in Action*, 2(2). Retrieved from <http://www.lindenwood.edu/ela/issue04/buckmiller.html>
- ProCon.org. (2014). Standardized tests. Retrieved from <http://standardizedtests.procon.org/>
- Proulx, C., Spencer-May, K., & Westerberg, T. (2012). Moving to standards-based grading: Lessons from Omaha. *Principal Leadership*, 13(4), 30-34.

- Reeves, D. (2008). Leading to change/Effective grading practices. *Educational Leadership* 65(5), 85-87. Retrieved from <http://www.leadandlearn.com/sites/default/files/articles/leading-to-change-effective-grading-practices.pdf>
- Reeves, D. B. (2011). Taking the grading conversation public. *Educational Leadership*, 69(3), 76-79.
- Sailor, W., Stowe, M. J., Turnbull, H. R., & Kleinhammer-Tramill, P. (2007). A case for adding a social-behavioral standard to standards-based education with schoolwide positive behavior support as its basis. *Remedial and Special Education*, 28(6), 366-376. Retrieved from <http://search.proquest.com/docview/236263410?accountid=12104>
- Schafer, W. D. (2002). *The Missouri Assessment Program (An independent evaluation)*. Retrieved from <http://www.mnea.org/Resource.ashx?sn=SchaferMAPassessmentfull>
- Scriffiny, P. L. (2008). Seven reasons for standards-based grading. *Educational Leadership*, 68(2), 70-74.
- Shippy, N., Washer, B. A., & Perrin, B. (2013). Teaching with the end in mind: The role of standards-based grading. *Journal of Family and Consumer Sciences*, 105(2). Retrieved from <http://www.questia.com/read/1P3-3048625101/teaching-with-the-end-in-mind-the-role-of-standards-based>
- Spencer, K. (2012). Standards-based grading. *Education Digest*, 78(3), 4-10.
- Stephens, S. (2010). *7th-12th grade English/language arts teachers and their classroom grading practices: Investigating the use of standards-based grading in Nebraska's*

rural classrooms (Doctoral dissertation). Retrieved from

<http://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=1041&context=cehsed>
addiss

Stiggins, R. J. (2002). Assessment crisis: The absence of assessment for learning. *Phi Delta Kappan*, 83(10), 758-765.

Stitt, J. L., & Pula, J. J. (2014). Voting for subjectivity: Adding some gray areas to black-and-white, objective grading practices. *Delta Kappa Gamma Bulletin*, 80(3), 24-27.

Townsley, M. (2013). Redesigning grading districtwide. *Educational Leadership*, 71(4), 68-71.

Tyre, P. (2010, November 27). A's for good behavior. *The New York Times*. Retrieved from
[http://www.nytimes.com/2010/11/28/weekinreview/28tyre.html?pagewanted=all](http://www.nytimes.com/2010/11/28/weekinreview/28tyre.html?pagewanted=all&_r=0)
&_r=0

Urich, L. J. (2012). *Implementation of standards-based grading at the middle school level* (Doctoral dissertation). Retrieved from

[http://www.proquest.com.gatekeeper2.lindenwood.edu/en-](http://www.proquest.com.gatekeeper2.lindenwood.edu/en-US/products/dissertations/individuals.shtml)
US/products/dissertations/individuals.shtml

U.S. Department of Education, Office of Elementary and Secondary Education. (2009). *Standards and assessments peer review guidance: Information and examples for meeting requirements of the No Child Left Behind Act of 2001*. Retrieved from
<http://www2.ed.gov/policy/elsec/guid/saaprguidance.pdf>

- U.S. Department of Education, Office of Elementary and Secondary Education. (2010). *Missouri consolidated state application accountability workbook*. Retrieved from <http://www2.ed.gov/admins/lead/account/stateplans03/mocsa.pdf>
- Varlas, L. (2013). How we got grading wrong, and what to do about it. *Education Update*, 55(10), 6-7. Retrieved from http://www.raymond12.org/resources-mainmenu-73/district-documents/doc_download/587-how-we-got-grading-wrong.html
- Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Cambridge, MA: Harvard University Press.
- Welsh, M. E., D'Agostino, J. V., & Kaniskan, B. (2013). Grading as a reform effort: Do standards-based grades converge with test scores? *Educational Measurement: Issues and Practice*, 32(2), 26-36.
- William, D. (2010). Standardized testing and school accountability. *Educational Psychologist*, 45(2), 107-122. doi: 10.1080/00461521003703060
- Wormeli, R. (2006). Accountability: Teaching through assessment and feedback, not grading. *American Secondary Education*, 34(3), 14-27.
- Wormeli, R. (2009, December). Leadership for grading practices in the differentiated classroom. *Middle Level Leader E-Newsletter*. Retrieved from <http://www.nassp.org/Content.aspx?topic=61180>
- Wormeli, R. (2011). Redos and retakes done right. *Educational Leadership*, 69(3), 22-26.

Vita

Gary L. Greene is currently the middle school principal for the Mansfield R-IV school district. Educational experiences cover the past 20 years and include teaching physical education, health, and science, as well as coaching baseball and basketball and serving as a building-level administrator. Educational pursuits have resulted in an education Specialist degree in the Superintendency from Southwest Baptist University, a Master's degree in Educational Administration from Southwest Missouri State University, and a Bachelor's of Science degree in Secondary Education from the University of Missouri-Columbia.