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A Mixed-Methods Study on the Implementation and Perceptions of Grading for Equity Practices in a Sixth Grade Science Midwest Middle School

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by

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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.

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Abstract

Equitable grading practices were a focal point in present-day educational discussions and gained increasing attention in recent years due to concerns regarding fairness, inclusivity, and student success. This research study examined the principles and implementation of equitable grading practices within a sixth-grade science classroom. The researcher synthesized existing literature, examined case studies, and considered the perceptions of students, teachers, and the researcher study in order to contribute to the ongoing discussion on creating more equitable grading systems.

Key areas of focus included the history and development of the education system, the purpose and significance of grades, the examination of traditional grading methods and the challenges and inequities the traditional grading systems carry, inconsistencies in grading policies amongst teachers, and recommended for adjustment to ensure the utilization of more equitable and fair assessment practices.

The research methodology involved a systematic review of grading practices and equity in education. Qualitative data was collected through participating teacher interviews, student surveys, and the researcher journal to gather insights into the experiences, perceptions, and suggestions regarding the implementation of equitable grading practices. Quantitative data was collected and analyzed to determine a difference, if any, on the academic grades of students prior to the implementation of equitable grading practices and after the implementation of equitable grading practices.

The findings of the research informed recommendations for developing and implementing equitable grading practices in the educational setting. By addressing disparities in grading practices, the researcher fostered a more inclusive learning

environment where all students had the opportunity to be assessed fairly and thrive academically. Ultimately, equitable grading practices were crucial for creating inclusive learning environments which support the academic success and development of all students.

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Chapter One: Introduction

Common considerations amongst educators were what student grades represented to students and educators and what elements were included when calculating students' quarterly grades. According to Gunn, many traditional teacher gradebooks, categories existed assessing student classwork, projects, homework, exams, participation, or organization. Although the utilization of categories were insightful if well organized, the grades ultimately were a hodgepodge or random collection of points which presented an average to inaccurately represent a student's performance in class. There were too many factors included in this type of measurement system and it made the grade muddy and unclear as to what was being assessed (Gunn n.d.). The grade should not represent more than one purpose embedded within the percentage which left the meaning behind the grade unclear (Feldman, 2019a). In the researcher's experience as a classroom teacher, if a student received an 85% in a class using the traditional grading system, it was unclear what the 85% reflected with multiple variables included in the grading system. Did the 85% represent student knowledge on the material, student ability to turn work in on time, or student participation in class? The grade included too many variables, which made the grade less meaningful. A transparent and meaningful grading system included one specific purpose as to what it was representing (Gunn, n.d.). Leading researcher on grading for equity practices, Feldman (2019a), argued the sole purpose of grading systems should be reflective of a student's mastery of skills and content. To achieve Feldman's (2019a) focus, all other external factors, such as punctuality and effort, must be removed from the grade calculation.

Many teachers had the positive intention of including external factors, such as timeliness and effort into the grading system in order to motivate students. In the researcher's experience as a classroom teacher, a common practice was to deduct points from a student's grade if the assignment was turned in late in hopes of motivating students to turn work in on time or include the category of effort into a project rubric to encourage students to take the project seriously. Researchers suggested including external factors into the grade calculation was not proven to increase student motivation and in turn devalues student performance and work (Feldman, 2019a; Gunn, n.d.). Furthermore, including such subjective external factors into the grade calculation intensified the achievement gap which already existed between different races and socioeconomic statuses of students because teachers interpreted the external factors differently based on teachers' biases or perceptions of the student (Feldman, 2019a; National School Boards Association [NSBA], 2020). Educators were implementing subjective opinions on the amount of student effort which were included in the measurement of student performance. Feldman (2019a) argued if a grade represented students' understanding of the material, the date in which the assessments were completed did not matter. In addition, the process of determining how much participation was satisfactory in order to earn the full amount of participation points added to the subjectivity and inconsistency in student grades (Feldman, 2019a). Allowing external factors into the grade calculation left room for teachers to make judgements about students and allowed teachers to influence a student's grade based on an individual's bias (NSBA, 2020). In order to provide meaningful grades equitable to students, the grade calculation must be solely focused on

a student's mastery on specific learning objectives, consistent amongst educators, and allow for improvement and revision (Gunn, n.d.).

The reevaluation of the traditional grading system of accumulation of points influenced by external factors in our education system was necessary. An equitable grading system focused on student mastery and free from bias and judgement was a more accurate representation of student performance and was best for students (Feldman, 2019a). The transition from a traditional grading system to a more equitable grading system was difficult for educators because many educators were reluctant to make the change (NSBA, 2020). Researcher Gunn (n.d.) explained, "Grading is one of the most challenging and emotionally charged conversations in today's schools," (para. 4). The topic of grading resulted in passionately charged viewpoints, because grading was an aspect of the teaching profession which teachers were able to control and was one of the last components of autonomy in the education world which was filling up with mandates and requirements (Hough, 2019). When development or discussions on the improvements of grading techniques arose, teachers often responded with suspicion and defended traditional grading practices. Many teachers, like Nick Sigmon (as cited in Schwartz, 2019) evaluated traditional grading practices and because the grading practices were methodical and calculated, the teachers believed the grading system was fair. When teachers were challenged to look at the grading practices in terms of equity and a system based solely on student mastery, teachers felt accused or attacked on professionalism (Schwartz, 2019). To initiate real change, educational leaders must support teachers with development and training allowing teachers to learn about grading inequities embedded

within traditional systems and provide support in order for transitions to occur (Feldman, 2019a).

Background of the Study

Educational assessment systems have evolved throughout history. In the early 21st century, the focus of education was to increase student performance with an emphasis on standardized test scores. According to Hokanson and Karlson (2013), student scores were used as a measurement to determine the success of a school district through programs such as No Child Left Behind in 2002 in enhancing student performance and closing the achievement gap. School districts began examining student performance of subgroups based on race, low socioeconomic groups, and special education on standardized tests and were held accountable for the growth and performance of the entire student population. The accountability put pressure on school districts to raise the standardized test scores and teachers began to teach to the test and deliver surface-based content based on recollection (Hokanson & Karlson, 2013). The emphasis on student performance on standardized test scores was further inflamed in 2009 with the Race to the Top initiative as part of the American Recovery and Reinvestment Act. The Race to the Top initiative emphasized state performance on standardized test scores through competition and aimed at creating more rigorous assessments and learning standards, supporting failing schools, providing teachers with resources, and creating better methods of tracking student and teacher progress (Chen, 2022). The federal education initiative of improving student performance on standardized test scores continued in 2015 with the Every Student Succeeds Act. Every Student Succeeds Act continued holding districts accountable through student performance of

standardized tests, but shifted the accountability power to the state rather than the federal level (Every Student Succeeds Act, n.d.).

Many recent educational reform efforts focused on critical thinking in an attempt to increase student skills and achievement. According to the Common Core State Standards Initiative (n.d.), the focus of the initiative was to provide students with the opportunity to use critical thinking skills and obtain a deeper understanding of the curriculum rather than surface level memorization of remote facts. The Common Core State Standards were developed in 2009 in an attempt to provide a universal set of standards amongst states focused on critical thinking, problem solving, and analytical skills to empower students to be college and career ready (Common Core State Standards Initiative, n.d.). The purpose of the educational reform was to provide students with a range of skills beyond numeracy and literacy which enabled students to engage in independent lifelong learning (Brookings, 2021). The focus of teaching cognitive skills embedded in the curriculum changed instruction and pedagogy in the classroom and contributed to the ever changing state and evolution of educational reform. Teachers' evaluation standards in Missouri updated to include the new focus and a teaching standard on critical thinking in which teachers were evaluated on the ability to teach critical thinking skills in the classroom (Missouri Department of Elementary and Secondary Education, n.d.). The state driven educational reform contributed to the background of this research study. With the shift in focus to deliver critical thinking and lifelong learning skills, the way in which teachers assessed students also needed to transform to match the new skill-based focus.

While many recent educational reform efforts focused on using standardized testing to track student progress and provide accountability in efforts to close the achievement gap and transform student learning from content knowledge to skill based, there was minimal widespread focus or accountability on reforming grading practices in the classroom. Prior to the implementation of equitable grading practices in the 2021-2022 school year, the researcher was provided with professional development sponsored from the researched school district on the inequities of traditional grading systems. In the researcher's experience traditional grading systems were not aligned or compatible with the current educational reform in recent history and unfairly represented student achievement based on the inclusion of external factors unrelated to the learning achievement or progress. After discussions with district and faculty members, the professional learning community (PLC) of the researcher decided to implement more equitable grading practices into science classrooms in order to achieve more meaningful, transparent, and fair methods of student assessment.

Rationale of the Study

The negatives and inequities of current, traditional grading systems and practices were widely researched. Feldman (2019b) claimed the traditional grading systems in today's classrooms were "outdated, inaccurate, and harmful to student success" (p.1). The inequities and inaccurate measurement of achievement from current grading practices unfairly excluded or even prohibited students from opportunities or achievements (Feldman, 2018; Gunn, n.d.). The unintentional harm created from inequitable grading systems weighed heavily on students. The inconsistency of grading systems amongst teachers and the external factors beyond students' control included in

the traditional grade calculation created stress, anxiety, and demotivation amongst our student population (O'Connor & Wormeli, 2011).

To create a more accurate representation of student understanding and achievement on learning objectives which drove educator instruction, progressive district leaders and teachers reinvented the way student mastery was measured in the classroom. The goal of the new system was to report fair, accurate, specific, and timely grades abbreviated as FAST (Feldman, 2019a; O'Connor et al., 2018). To achieve FAST grading methods, teachers removed all external factors from the grade calculation such as timeliness, compliance, and behavior. Grades reflected mastery on specific and clear objectives. The grading scale was redesigned to remove the power of zero. Zero on a traditional 0-100 scale inaccurately skewed a student's performance (O'Connor et al., 2018).

The researcher studied the implementation of equitable grading practices into a sixth-grade science classroom at the researched school district, a suburban Midwest middle school, focused on the foundations of equitable grading practices proposed by mentioned researchers including; the removal of the power of zero, assessment of student performance solely on learning targets, the removal of external factors from the academic grade, providing feedback and not grades to learning material, and providing multiple opportunities to demonstrate achievement and improvement (Feldman, 2019a; O'Connor et al., 2018). The researcher hoped to contribute to the existing research on equitable grading practices by analyzing differences, if any, pre/post implementation of equitable grading practices focused on student quarterly academic scores. Furthermore, the

researcher examined the perceptions of the students and teachers who experienced the transition to provide insight for best practice in the classroom.

Purpose of Study

The purpose of the mixed methods research study was to investigate the differences, if any, in pre and post student achievement scores on quarterly academic grades during the implementation of equitable grading practices in sixth-grade science classrooms, as well as measure the perceptions of students and teachers experiencing the transition to equitable grading procedures.

The researcher completed a quantitative analysis to determine possible differences in final grades of students assessed in a traditional grading system versus students assessed in an equitable grading system. The researcher compared a stratified random sample of students' quarterly pre-equitable academic scores of a like group of students in the 2020-2021 school year versus the post-equitable academic scores of students in the 2021-2022 school year. The researcher also performed a qualitative examination to determine the student and teacher perceptions about the implementation of equitable grading practices. To examine the perceptions of students, the researcher analyzed the secondary data results of an open-ended survey given to the population of sixth grade students who experienced the implementation of equitable grading practices for instructional purposes in their sixth-grade science classroom at the researched school district during the 2021-2022 school year.

In addition to student surveys, the researcher also investigated the perceptions of teachers who implemented equitable grading practices in the classroom during the 2021-2022 school year. The researcher interviewed two sixth-grade science teachers at the

same middle school who implemented equitable grading practices in the classroom to gain teacher perceptions of the equitable grading practices. In addition to teacher interviews, the researcher also kept a personal journal during the implementation year to record the researcher's experiences and enable the researcher to reflect on the implementation process for instructional purposes which was used as secondary data for analysis. Teacher interviews and the researcher's personal journal helped the researcher triangulate data on teacher and student experiences and perceptions of equitable grading practices.

Quantitative and qualitative results were analyzed separately, with a culminative integration of the results to determine emergence of themes throughout the analyses. By completing the mixed methods research study, the researcher accomplished the following: highlighted achievement differences, if any, in traditional grading practices versus equitable grading practices; identified student perceptions and experience of equitable grading practices, and investigated teacher and researcher perceptions regarding their experience during the transition from traditional grading practices to equitable grading practices.

Questions and Hypotheses

Research Question 1: How do students perceive grading for equity procedures implemented in a sixth-grade science classroom?

Research Question 2: How do teachers perceive grading for equity procedures implemented in a sixth-grade science classroom?

Research Question 3: How does the researcher perceive grading for equity procedures implemented in a sixth-grade science classroom?

Hypothesis 1: There is no difference in pre/post student academic scores when incorporating grading for equity procedures.

Hypothesis 1a: There is no difference in pre/post student academic scores among student genders when incorporating grading for equity procedures.

Hypothesis 1b: There is no difference in pre/post student academic scores among student races when incorporating grading for equity procedures.

Study Limitations

One limitation in the research study was the inability of the results of the study to be generalized. The study was only about the perceptions and experiences of the teachers and students who experienced the implementation of equitable grading practices in a sixth-grade science classroom at the researched school district in the 2021-2022 school year. The research study occurred in one subject content in one grade level at one school district. Due the specifics of the study, the results cannot be generalized to a larger population, only suggested (Simon, 2011).

Another limitation in the research study was the small number of teacher participants. The small sample size was a result of the implementation of equitable grading practices being conducted in one subject content in grade level at one school district and was used out of convenience.

A final limitation in the research study was the unavoidable occurrence of a global pandemic. The researcher analyzed the implementation of equitable grading practices in 2021-2022 school year. During the school year a worldwide pandemic and health crisis from the virus COVID-19 created unique teaching restrictions and unavoidably affected the emotional and social health of the participants of the study. The

global pandemic was an uncontrollable variable in the research study and therefore served as a limitation (Laerd Dissertation, 2012).

Definition of Terms

Academic Scores: The research site is on a quarter (nine week) grading system. Grades are posted on a regular basis in Infinite Campus Parent Portal. Parents/guardians should monitor a child's grades frequently in order to stay informed of academic progress. Quarter grades are recorded on the permanent record and shared approximately one week after the end of the quarter or distributed at parent/teacher conferences (Research Site, 2021).

Achievement Expectations: "beliefs teachers hold about their students' academic capabilities and subsequent levels of achievement" (Peterson et al., 2016, p.123).

*Achievement Gap: "*The achievement gap is the persistent disparity in academic achievement between minority and disadvantaged students and their white counterparts" (Porter, n.d., para. 3).

Checkpoints: For the purpose of the study, checkpoints referred to the student assessment which occurred after the instruction of a learning objective.

Data Sources: For the purpose of the study, data sources referred to the types of data the researcher used to develop a case study and derived key understandings to develop findings and conclusions.

Equitable Grading:

> Equitable grading has three pillars: accuracy, bias-resistance, and intrinsic motivation. Grades must accurately reflect only a student's academic level of performance, exclude nonacademic criteria (such as behavior), and use

> mathematically sound calculations and scales, such as the 0–4 instead of the 0–100 scale. (Hough, 2019, para. 5)

Extra Credit: For the purpose of the study, extra credit referred to optional points offered to students in a class for performing extra tasks or assignments which could potentially raise their grade.

Formative Assessment: "A way for the teacher to check what skills students learned from the day's lesson and what they haven't yet learned" (Feldman, 2019a, p. 129).

Implicit Bias: "A form of bias that occurs automatically and unintentionally, that nevertheless affects judgments, decisions, and behaviors" (National Institute of Health, 2022, para. 2).

Learning Materials: For the purpose of the study, learning materials referred to academic materials used in the classroom which contribute to the learning process. Students completed the materials in class or as independent work to help the students learn the curriculum. Learning materials included laboratory investigation sheets, notes, graphic organizers, and reflection questions.

Like Group: For the purpose of the study, a like group of students referred to the comparable group of sixth grade students in the 2020-2021 and 2021-2022 school year (i.e., diversity, race, gender, individualized education plans).

Likert Scale:

> A Likert scale, or rating system, is a measurement method used in research to evaluate attitudes, opinions and perceptions. Likert scale questions are highly adaptable and can be used across a range of topics, from a customer satisfaction survey, to employment engagement surveys, to market research. For each

> question or statement, subjects choose from a range of answer options. For example: strongly agree, agree, neutral, disagree, strongly disagree. (Qualtrics, n.d.-b, para. 1)

Minimum grading: A practice "focused on particular subgroups of students who are unfairly failed due to intermittent performance failures that current grading systems average out (in one way or another) to a failing grade or grades" (Carifio & Carey, 2013, p. 19).

Primary Sources: "primary research involves creating data first-hand by directly working with interviewees, target users, or a target market" (Qualtrics, n.d.-a, para. 21).

Professional Learning Community: "A professional learning community, or *PLC,* is a group of educators which meets regularly, shares expertise, and works collaboratively to improve teaching skills and the academic performance of students" (Great Schools Partnership, 2014, para. 1).

Pre and Post Academic Scores: For the purpose of the study, the pre academic scores referred to the quarterly grades of students who did not experience equitable grading practices. Post academic scores referred to the quarterly grades of students who experienced equitable grading practices.

Secondary Sources: "Secondary research, also known as desk research, is a research method that involves compiling existing data sourced from a variety of channels" (Qualtrics, n.d.-a, para. 3).

Summative Assessment: "The test or final task used to evaluate student's content master" (Feldman, 2019a, p. 129).

Teacher Feedback Instrument: For the purpose of the study, the teacher feedback instrument, or *TFI,* is a tool utilized by educators and given to students in order to gain insight and feedback on instructional practices and curriculum to be utilized for teacher development and improvement.

Traditional Grading: The system of using points to calculate an average and include both achievement and behavior (O'Connor et al., 2018).

Summary

The purpose of the study was to investigate the difference, if any, on the implementation of equitable grading practices on student quarterly academic grades in a sixth-grade science classroom, gather the perceptions of the students who experienced the implementation of equitable grading practices, and evaluate the perceptions of the teachers who implemented equitable grading practices.

In Chapter Two, the researcher provided a literature review of the history and development of grading in the American education system, the purpose and significance of grades, the inequities and biases in traditional grading systems, inconsistencies in grading policies amongst teachers, and recommended equitable grading practices and their benefits.

Chapter Two: Review of Literature

In Chapter One, key concepts and background information were provided to understand the issues and inequalities regarding the traditional grading system in the United States and the reasons grading reform was essential to the future of education. The traditional grading systems utilized in most schools created inequities amongst the students and further separated the advantaged and disadvantaged student population. To rectify the inequity and provide all students with a fair and unbiased student evaluation system, grading was a primary area of focus schools needed to address. Grading reform was essential to provide equity in student evaluation to ensure all students were given equal opportunities within the school system and society (Feldman, 2019a). In the literature review, the researcher provided the history and development of grading in the American education system, purpose and significance of grades, inequities and biases in traditional grading systems, inconsistencies in grading policies amongst teachers, and recommended equitable grading practices and their benefits.

History and Development of the American Grading System

The purpose of grading systems in education was to evaluate student performance, improve student learning, and provide communication between the instructor and student to inform future teaching and learning (Lee, 2020). Yet, grading was not always part of the education system in the United States and not always served the same purpose or looked the same (Schneider & Hutt, 2014). Feldman (2019a) explained grading and education evolved throughout history to meet the needs and changes of society. To understand the evolution and history of grading, the needs and problems of the time must be examined and how education and particularly grading were

intended to solve specific problems and support society. The researcher believed by understanding the progression of grading, educational stakeholders were able to evaluate current grading practices and challenged the relevance and appropriateness of traditional grading methods. Educational stakeholders also reviewed the elements of grading needed to be updated to meet the current needs and problems of society and education (Feldman, 2019a).

The earliest forms of education were free from a grading system and derived from a mentor/mentee apprentice where students learned skills and knowledge through experience. Hartmann (2000) explained the teachers gave the students personalized feedback about student learning throughout the experience to develop skills. The personalized feedback led to intimate and close relationships between the teacher and student because of the ongoing interaction throughout the day as each worked closely with one another. Some of the earliest examples of the experience-based form of education were children learning hunting and gathering techniques from elders 100,000 years ago (Hartmann, 2000). Ancient Greeks used feedback and assessment as a formative measure rather than an evaluative tool with a system free from ratings or scales. The education system was based on communication for development of student performance (Lee, 2020). Feldman (2019a) also discussed the earliest forms of education took place in the home within families when most children did not attend a formal school setting. Formative education was suitable based on the needs of society by accommodating the nation which was organized around agriculture, independent land and business ownership, and rural communities (Tyack, 1974).

Prior to the turn of the 19th century the education system saw the first advancements of ranking systems. According to Lee (2020), as migration from Britain to the United States increased, American education evolved to reflect more European education elements such as grading systems to rank and sort students and quantify student performance. Colleges such as Cambridge, Harvard, and Yale began to use the first grading systems to sort and rank students to motivate by competition amongst peers (Lee, 2020). Harvard implemented an early version of a grading system which required exit exams to obtain a degree and in 1785, Yale president Ezra Stiles developed the first grading system which ranked students into four descriptors: Optimi, Second Optimi, Inferiores, and Perjores (Gaff & Ratcliff, 1996; Lee, 2020). Similarly, William Farish was noted for developing one of the earliest grading systems at Cambridge University which he adopted from an industrial factory line (as cited in Hartmann, 2000). The first grading systems were developed to rank students and promote peer competition to increase motivation. Some critics argued the implementation of ranking systems achieved the opposite by discouraging the development of critical thinking and insight skills while labeling and disheartening students (Hartmann, 2000).

As the nation approached the 20th century, the needs and problems of the country evolved and changed and therefore so did the education and grading system. In addition to the European influence on ranking and sorting students, American education was affected by the rise in manufacturing, migration and immigration surge, progressive educators, and intelligence testing and categorization (Feldman, 2019a). The American workforce drastically increased its manufacturing and production and increased the population in urban areas as people moved into cities in search of jobs. A massive

increase in immigration also contributed to a growing urban population (McNutt, 2022). Society was changing in the 1900s and there was pressure on schools to prepare students for the shift from agriculture and small manufacturing to industrialization focused on efficiency, specialization, and timed routines. The shift in focus was to prepare students to become future employees in the workforce (Feldman, 2019a; McNutt, 2022). The student body was no longer made up from a small, intimate, one room school house with a homogeneous student population. The population in elementary and high schools grew rapidly. According to Vatterott (2015) in which Kirschenbaum et al. (1971) was cited, from 1870 to 1910 the number of high schools in the United States grew from 500 to 10,000 and drastically increased the number of students in the public education system. Additionally, owners of factories contributed to the increase in student population, because individuals relied on the educational system to Americanize a diverse urban population and prepare students to become future workers (Feldman, 2019a; Encyclopedia.com., n.d.). The increase of the number of students put a high and overwhelming demand on educators to communicate student performance on a large student population and forced teacher assessments to become less personalized and more efficient and standardized (Vatterott, 2015). The more personalized reporting of student performance from teachers to families through home visits or written narratives came to an end and student progress monitoring became focused on efficient communication and an emphasis on punctuality, attendance, and obedience was established (Encyclopedia.com., n.d.). Teachers began utilizing methods used in colleges to efficiently communicate student achievement and ranked students. According to Lee (2020), classroom management also took a less personal approach as teachers began to

rely on reinforcement and consequences to achieve desired student behaviors rather than intimate relationships between student, teacher, and family (Lee, 2020). The behaviorism and management approach was developed and supported by the studies and works of researchers like Watson and Pavlov (as cited in Feldman, 2019a). As educational systems reformed tracking student abilities and skills increased to prepare students for the industrialized workforce or further education. According to Truong (2022), due to the diverse student population, students of different backgrounds and ability levels were being educated in the same classroom. To provide a rigorous experience for students with higher intellectual ability and prepare students for higher education, students were given intellectual tests and provided with curriculum which matched the student's ability level. The process of desegregation allowed for college bound students to study more demanding material and skillsets while providing lower achieving groups, usually consisting of immigrants and minorities, with a curriculum which prepared students for the workforce (Truong, 2022). The reform in the American education system to meet the needs of society subsequently changed grading practices.

The educational shift to a diverse, specialized, and tracked educational system to meet the needs of society changed the way students were assessed and graded. The personalized student progress report given from teachers to families in a tight knit community shifted to a more efficient and simplified communication system using letter grades A-F (Hartmann, 2000). The practice was already utilized in colleges and higher education settings and was adopted in elementary and secondary schools to standardize reporting for tracking purposes within the school as well as outside audiences like employers and colleges (Lee, 2020). Moving through the 20th century, grades became

streamlined, universal, and consequential. Grades were able to communicate information about student performance in an efficient way as teacher caseloads continued to increase. Grades were standardized, universal, and understandable by external audiences who used grades to make decisions regarding acceptance or placement of students for jobs or higher education purposes (Schneider & Hutt, 2014).

Educational practices and technology continued to transition in the 21st century. According to Feldman (2019a), educational practices shifted from standardized to student centered with a focus on student choice, inquiry, and project-based learning. Students were in the driver seat of the education and obtained the ability to solve problems and explore as opposed to teacher centered methodologies and remote memorization and recall (Feldman, 2019a). Although the 21st century classrooms looked vastly different than the classrooms in the 20th century, the century old classroom beliefs were still the foundation of grading policies. Classrooms and practices progressed while the grades and assessments had not (Schneider & Hutt, 2014). Grading practices were not in line with teaching and instructional methodologies; yet, grades continued to carry weight for decision making and performance communication for students in the 21st century (Feldman, 2019a). The need for evolution and change on educator assessments was imperative to align with the progression educators experienced in instruction, technology, and curriculum.

The Purpose and Significance of Grades

The main purposes and reasons for assigned grades was to provide information for teachers to modify and improve instruction based on student performance and communicate student progression to stakeholders (Anderson, 2018). The University of

South Carolina (n.d.) classified six purposes for assigning grades: (a) an evaluation of student work, mastery of learning goals, and progress: (b) a source of motivation for students to perform and earn good scores; (c) communication to students on academic performance; (d) communication to students and other stakeholders about a student's potential and predictor for success; (e) organization of curriculum and learning material; and (f) a method to provide feedback to students on strengths and areas of improvement and teachers to help inform teaching decisions. The purposes of grading were widely accepted among top researchers Feldman (2019a) and Guskey (2022), but the criteria which was included in the overall grade report remained under debate. Recent grading reforms expressed the importance of eliminating external factors, such as behavior, effort, timeliness, or responsibility from the traditional grading report and focused solely on the performance or achievement of learning targets (Feldman, 2019a; Hough, 2019).

Although agreement existed between the educational community which stated grades represented the achievement of learning goals and the communication of student achievement, debate ensued over whether behavior and other soft skills such as homework completion and work ethic should be included in final grades, completely removed from final grades, or communicated in a separate grading category. One solution presented by Guskey (2020) was the recommendation of separate grading categories. Guskey recommended all classroom goals be categorized into three categories: (a) product - "describe students' academic achievements, what they have learned and are able to do as a result of their experiences in school" (p. 3); (b) progress - "show how much students have gained or improved in their learning" (p. 3); and (c) process - "describe student behaviors that facilitate, broaden, or extend learning" (p. 3), such as homework

completion, citizenship, collaboration, or work habits. The separation of grading categories allowed for grade reports to communicate performance on specific skills or goals and allowed for a clear communication of performance in each area. Without the separation, the final grade report was unclear, due to the inclusion of too many factors. Guskey (2020) explained how the combination of the categories can lead to a very confusing communication about student performance:

> An A, for example, might mean the student knew all the concepts before instruction began (product), that she didn't achieve the grade-level or course learning goals but made significant improvement (progress), or that she put forth extraordinary effort (process). (p. 5)

Researchers agreed the purpose of grades must reflect an accurate indication of solely student achievement on learning standards or goals (Feldman, 2019a; Guskey, 2020; Hough, 2019).

To students, grades represented a student's ability in school or student performance in the classroom and students reported grades as a source of stress and anxiety. Feldman (2020) reported on Stanford University's Challenge Success program which surveyed 54,000 high school students related to feelings towards grades. The results reported:

> 76 percent of students reported that they always or often worry about the possibility of not doing well in school; 75 percent of students reported that they always or often feel stressed by their schoolwork; 72 percent of students reported that they always or often worry about taking assessments. (p. 15)

The results showed doing well in school and assessments were a stressors for students. A student's grade summary had the potential to alter participation in extracurricular activities, college admissions, financial aid, work permits and capabilities, and insurance rates (Feldman, 2020; Hochbein & Pollio, 2016). According to Feldman (2020), grades negatively impacted students' lives and produced the opposite effect than grades were intended to. Students used grades as a reflection on ability level and capacity to succeed. When grades had inaccurately reflected a student's performance due to including external factors such as behavior, attendance, or timeliness, it had negative consequences on a student's self-efficacy, motivation, and confidence, and caused psychological harm (Hochbein & Pollio, 2016). Additionally, traditional grading practices often left students unsure or confused on what material was included in the grade and how students were assessed. The stress and confusion students felt surrounding grades interfered with students' abilities to learn and process new information (Feldman, 2020).

Inequities and Biases in Traditional Grading Practices

The power student grades had over the opportunities students received and the negative relationship grades had on student motivation provided important reasons to examine grading practices to ensure grades gave an accurate representation of student performance. The way students were assessed on performance and learning in traditional grading systems was used as a ranking and sorting scale and determined what opportunities, classes, extracurricular activities, colleges, and jobs students attended and participated in, and other future opportunities (Gunn, n.d.; Ntuli & Lin, 2020). Students' grades held a tremendous weight on the lives and opportunities of students, therefore a fair and equitable way to measure student growth and progress was crucial. Traditional

grading practices were outdated and did not align with current advances in technology, instruction, and curriculum. Educators instructed students in a 21st century classroom and assessed students in an outdated, traditional grading method dated back to the origins of a standardized grading scale which met the societal needs of the late 19th century (Feldman, 2019a; Schneider & Hutt, 2014). The traditional grading systems provided inequity amongst diverse student populations and provided an inaccurate view of student performance on learning goals.

Subjectivity and Inconsistencies

Traditional grading promoted inequities amongst students. Traditional grading practices communicated a variety of blended information beyond student performance on learning goals and therefore invited teacher subjectivity and inconsistencies (Feldman, 2019a). Feldman (2019a) and Anderson (2018) reported educators who used a traditional grading method included a variety of factors into a grade report which went beyond performance on a learning standard. Feldman (2019a) provided an example of categories which a teacher used to organize the gradebook. The categories included: (a) Homework – "performance on worksheets, end-of-chapter questions, problem sets, and test review sheets. Includes extra credit assignments and returning parent-signed syllabus or other paperwork" (p. 40); (b) Tests and Projects – "performance on mid-terms, group presentations or performances, chapter or unit tests, and research papers" (p. 41); (c) Classwork and Class Activities- "performance on in-class assignments, labs, discussions, peer editing, group work, and whole class activities" (p. 41); and (d) Participation and Effort – "performance on weekly notebook checks, preparation, engagement, asking questions, showing proper conduct, demonstrating respect for classmates or for teacher,

following classroom rules, punctuality to class, showing positive attitude, and responding appropriately to feedback" (p. 41). Although the criteria seemed organized and methodical, the categories of homework, classwork and class activities, participation and effort all contained assessment and evaluation on non-academic criteria. Tests and projects category was the most informative when focused on student achievement in regards to learning standards because there were no external skills or non-academic learning materials included (Feldman, 2019a). Gradebooks including external skills and non-academic evaluation left room for teachers to subjectively assess students' performance on criteria which were undefined in terms of what academic achievement looked like and how students were expected to demonstrate achievement in specific areas. A teacher was not able to fairly evaluate a student on proper conduct or amount of participation because no standard existed for proper conduct or the amount of participation (Hough, 2019). The above-mentioned categories left a large amount of room for teachers to subjectively assess students on non-academic factors leading to inequities in the grading system (NSBA, 2020). Also, the inclusion of non-academic factors into the grading system created a very unclear and muddy representation of student performance which included too many variables. The results remained unclear if a student earned a grade of a C because the student demonstrated that level of knowledge on the subject matter or if the grade was affected by external factors, such as participation or proper conduct. The evaluation of these skills was measured through the teacher's observations which did not lead to an equitable measurement tool (Hough, 2019). Furthermore, no universal measurement tool to make the assessment of the wide variety of skills clear existed, so the interpretation of these skills varied from teacher to teacher which provided

more room for inconsistences and inequities (Hough, 2019). To create a clear and understandable student grading system, grading criteria needed to be focused solely on the achievement of learning standards and elimination of common practices which compromised the accuracy including the removal of penalties for late work, academic dishonesty, attendance, and conduct (O'Connor et al., 2018).

In addition to the inequities created by teacher subjectivity, the traditional grading systems were also unfair and inequitable due to the inconsistencies (Feldman, 2019a). The grading inconsistencies led to large inequities amongst students based upon the teacher and the grading practices. The inconsistencies had the potential to unfairly limit certain students or groups of students from opportunities or placements which were determined based on student grades (Schneider & Hutt, 2014). According to Feldman (2019a) and Hough (2019), grading was an incredibly challenging and passion provoking aspect of teaching. Teachers were left with little to no guidance or regulation on grading practices and made decisions about grading on their own. Grading was one of the last aspects of teaching where teachers were left with some autonomy in an educational world controlled by mandates and regulations. With this autonomy came great passion where teachers were hesitant to evaluate or critique grading practices in fear of professionalism or judgement being questioned. The lack of structure in grading practices led to inconsistencies students faced when student performance was evaluated (Feldman, 2019a). A grade earned in one classroom could be completely different from another student's grade in a different classroom based upon what categories the teacher had designed and the external factors included in the grade calculation (Feldman, 2019a; Hough, 2019). A review of traditional grade reporting was imperative in order to provide

students with consistent, equitable, and fair assessment practices to ensure equal opportunities for career and higher education placements.

Implicit Bias

Traditional grading practices relied heavily on teacher observation which promoted inequities amongst students because traditional grading practices included a variety of criteria in the grading report beyond student performance on learning goals and therefore invited teacher judgements and bias (Feldman, 2019a). Additionally, Feldman (2019a) provided an example categorization of a traditional grading outline with categories which went beyond assessment on learning standards. The categories included homework, classwork and class activities, and participation and effort; and the types of information used to assess a student in each category included non-academic factors, such as participation, conduct, and attendance. The open-ended evaluation included non-academic skills which left room for teachers to impose biases and personal beliefs into what the teachers expected a student to do or how the teachers expected a student to behave (Feldman, 2019a; Hough, 2019; Schneider & Hutt, 2014). A teacher was able to make judgements of a student's behavior and more than likely was influenced by a student's race, gender, socioeconomic status (Gunn, n.d.). Although teachers had the best intentions to treat students fairly, traditional grading practices included a teacher's implicit bias which possibly altered a student's grade or assessment, because traditional grading systems encouraged teachers to make subjective judgements which factor into a student's grade. The National Institute of Health (2022) defined Implicit Bias as "a form of bias that occurs automatically and unintentionally, that nevertheless affects judgments, decisions, and behaviors" (para. 2). Implicit bias occurred outside of teacher's conscious

awareness and was often developed due to a person's naivety or lack of awareness. Implicit bias was separate from a teacher's intentions to assess and grade students fairly and teachers made decisions and judgements which reflected an unknown implicit bias (Chin et al., 2020; Quinn, 2020; Starck et al., 2020).

Recent research out of Harvard University and University of Southern California provided some of the first quantitative evidence which suggested a teacher's implicit bias altered student outcomes (Chin et al., 2020). Using data from Project Implicit, the study found the implicit bias of teachers varied by the race of the teacher. More specifically, teachers with low anti-black bias worked in areas with a higher number of Black students (Boudreau, 2020). In addition, the study also determined areas of teachers who had stronger pro-white/anti-black bias showed larger achievement gaps on test scores and suspension rates between white and black students (Chin et al., 2020). The research provided insight and support into the importance of school districts emphasizing the importance of hiring practices which increase the diversity of teachers and school leaders (Boudreau, 2020). According to the National Center for Education Statistics (2020) in the 2017-2018 school year, 79% of public-school educators were White and non-Hispanic, 9% of educators were Hispanic, and 9% of educators were Black (para. 1). With a workforce in which most of the teachers were white, the importance of educational leaders to provide opportunities for professional development for teachers to recognize and manage implicit bias was crucial (Boudreau, 2020).

Recent research out of Princeton and Tuft Universities confirmed educators were just as likely to have racial biases as non-teachers in the general population in a paper titled, *Teachers are People Too* (Starck et al., 2020). The racial and implicit biases in

education were displayed in the classroom in many ways. An educator's day was filled with in the moment decision making in regards to behavior management and discipline which if included in the grading system, possibly could shift a student's grade (Starck et al., 2020). In the moments, teachers were entrusted with making quick, subjective, judgmental decisions to manage the classroom. The decisions were formed and shaped by personal experiences as a professional as well as inherent implicit bias which created discrepancies and inequities amongst students (Feldman, 2019a). Educators needed methods to create order and management in the classroom and a system which evaluated student progress, and within traditional assessment methods, the management system and assessment system blended and created a system in which student academic progress was changed by a teacher's implicit bias (Starck et al., 2020). Research showed inequities amongst races existed and found black students were less likely to be placed in gifted programs, were given lower expectations, and had higher disciplinary infractions such as detentions and suspensions when compared to white students (Will, 2020). Furthermore, another study showed black students were more likely to receive disciplinary action for subjective behaviors, such as noise level and disrespect. The behaviors were interpreted by the teacher, and the teacher's implicit bias, to be disruptive and warranted disciplinary action. The discipline referrals of the black students were far more subjective when compared to the disciplinary referrals of white students (Skiba et al., 2002). The discipline referrals of white students were more objective and left less room for interpretation, such as vandalism or smoking (Skiba et al., 2002; Will,2020). The inequities of discipline created from implicit bias influenced the grades and opportunities the students had in the future such as graduation and college-enrollment.

Implicit bias also was found in teacher grading and reporting on student achievement and progress in subjective, traditional grading practices. In traditional grading practices, teachers categorized grading criteria in which some of the categories included behaviors or non-academic habits, such as participation, timeliness, conduct, and attendance. The grading criteria were subjective and left room for teachers to make judgements and assessments towards groups of students (Downey & Pribesh, 2004; Quinn, 2020; Ready & Wright, 2011). Research performed by Quinn (2020) suggested subjective grading practices resulted in an increase in the level of bias from teachers than grading practices which utilized clear and specific grading criteria, such as rubrics. Therefore, when subjective grading procedures were utilized in the classroom, the opportunity existed for the grades to be unfairly given to students due to the personal, often unintentional, biases teachers unconsciously held. For example, research conducted by Ready and Wright (2011) determined the Black and Latino students were graded more harshly or unfairly on performance assessments where subjective grading practices were utilized compared to White or Asian counterparts. The results occurred because of the subconscious bias Latino and Black students did not perform as well and therefore the biases manifested in the subjective grading practices performed by teachers. Another example was the research performed by Downey and Pribesh (2004) which concluded White teachers rated Black students with lower scores in relation to citizenship in the classroom. When the conclusion was generalized to academic performance, students of color were more likely to receive lower grades when the students were evaluated with subjective grading practices.

Finally, implicit bias also altered teacher achievement expectations and student performance (Hattie, 2012; Peterson et al., 2016; Rubie-Davis, 2015; Strand, 2014). Achievement expectations were defined as "beliefs teachers hold about their students' academic capabilities and subsequent levels of achievement" (Peterson et al., 2016, p.123). Teacher expectations had been largely influenced by not only the student's diagnostic labeling and achievements, but also by ethnicity, socioeconomic status, and gender. Teacher expectations of students influenced student achievement incredibly. Hattie's (2012) research incorporated the results of 1,200 meta-analyses and determined the teacher efficacy and expectations were the top influences on student achievement. Teacher expectations were dramatic influencers on student achievement and performance because expectations included a teacher's judgements and beliefs about the abilities of students. When teachers viewed groups of students in a different way, the teaching style and level of support would also be different based on the implicit biases teachers held for the groups of students. More support or higher levels of teaching produced better performance and achievement from the students who teachers believed were more capable or had higher expectations (Feldman, 2019a; Hattie, 2012). Research confirmed the theory higher teacher expectations resulted in higher levels of student achievement when 38 teachers from New Zealand participated in a research study which examined the relationship between expectation and teacher biases on student achievement (Peterson et al., 2016). The results found teachers who held higher expectations for students treated the students differently and therefore the students performed better on reading scores. The differential treatment included making more eye contact with students, more time to respond to questions, higher levels of compassion and kindness, and more

encouragement. A teacher's unconscious implicit bias unintentionally resulted in disparities amongst students by showing "discriminatory behaviors by encouraging some children to take home schoolwork and library books, but not others" (Peterson et al., 2016, p. 127). Another example of research which supported the theory teacher expectations made a difference in student achievement was conducted by Rubie-Davis (2015) in which the researcher found the level of expectations teachers set altered the difficulty of the learning task which was asked of the student. The research concluded when teachers held high expectations, the teachers set high-level learning tasks; similarly, teachers with low expectations resulted in teachers setting low-level learning tasks. Teacher expectations of the learning and achievement of students was dependent on what learning opportunities were provided to them (Rubie-Davis, 2015; Strand, 2014).

Inconsistencies in Grading Policies Amongst Teachers

Traditional grading practices in the educational system were inequitable amongst our student population. One reason the traditional grading practices were inequitable was because there was no consistency in grading practices amongst teachers (Feldman, 2019a). Often times, teachers in the same building and even the same grade level were operating with grading practices which were different from fellow teachers leaving students to be assessed and evaluated differently from teacher to teacher (Hough, 2019).

Grading had been a difficult conversation to address with teachers. In an ever-evolving education system influenced by many external factors such as politics and society, grading was the one aspect of the profession which was not controlled by administration and policymakers (Feldman, 2019a; Schneider & Hutt, 2014). Feldmann (2019a) referred to grading practices as the "one remaining island of autonomy" for

educators (p. 4). In fact, many states had legislation in order to protect teachers' grading practices which created a climate in which teachers felt very passionate about grading practices (Feldman, 2019a; Hough, 2019). Teachers were able to implement unique and individualized grading practices which were not aligned with other teachers and therefore contributed to the inconsistencies in the educational grading systems.

Lack of Teacher Training

One reason grading practices were so unaligned amongst teachers was because of the lack of preparation and training in preservice teachers. Stiggins (2002) suggested the lack of uniformity and disparity which existed between grading was due to the lack of formal teacher training. Preservice teachers were trained on many aspects of teaching including climate and culture, special education, instructional strategies, content, relationship building, and inclusive classrooms but classes and training on fair equitable grading procedures of student progress and achievement was not included (Feldman, 2019a). As previously discussed in the literature review, researchers showed grades made a difference in student opportunities and career paths for the future and equitable grading policies should be more prioritized by including appropriate training for teachers on how to fairly assess students without bias (Stiggins, 2002). Without formal training, novice teachers entered the classroom for the first time and adopted outdated, traditional, and inequitable grading procedures which were in place for many years out of convenience and ignorance (Brookhart et al., 2016). Researchers agreed limited attention was given to teacher training and professional development which enabled teachers to design meaningful assessments and then react and modify instruction based on those results (Brookhart et al., 2016; Feldman, 2019a; Stiggins, 2002).

Unfortunately, researchers' concerns with the lack of teacher training in equitable grading practices was not reassured with the teacher shortage. A research study conducted by Link (2018) explored the inconsistences among teachers' grading practices. Link surveyed 2,996 K-12 teachers about teacher perceptions of the grading practices and the results revealed middle and high school teachers with less preservice training used more behavior-focused grading practices rather than grading practices focused on academic mastery. Additionally, Link (2018) concluded the rising concern of teacher shortage and the reduction of requirements for teacher certification contributed to the lack of training for preservice teachers. The lack of training for incoming teachers snowballed the utilization of inequitable grading practices because valuable professional development time and resources were utilized to provide basic teaching skills to underqualified teachers entering the profession such as behavior management and instructional strategies rather than improving grading procedures (Link, 2018). Without appropriate change in teacher training on equitable grading practices, the educational system continued to obtain inconsistencies and inequities within the grading system and impacted students negatively.

Teacher Perceptions Influence Grading

As discussed in previous sections of the literature review teacher perceptions, experiences, and beliefs about grading influenced an educator's professional judgement and grading practices. Teacher perceptions about grading were based on personal experiences and beliefs and were different from teacher knowledge. Content or instructional knowledge was free from judgement and was based on facts or supported research whereas teacher perceptions were influenced by past experiences and beliefs

(Feldman, 2019a; Gunn, n.d.). The perceptions about grading could change the way teachers developed the grading practice and because teachers all held different experiences and beliefs, a teacher's perception contributed another reason grading practices were inconsistent and inequitable (Feldman, 2019a; Hough, 2019). Educators made procedural and grading decisions in the classrooms based on personal experiences as a student. Research confirmed teacher grading practices were developed and influenced by an individual's personal experiences and beliefs about grading and assessment in the classroom (Guskey, 2009; Kunnath, 2017). Kunnath (2017) surveyed 251 high school teachers from the same district and conducted a focus group with 15 teachers. From the study, the researcher concluded the top three influences of grading practices were the teachers' personal philosophies of teaching and learning, concern of the perceptions of others such as parents, and pressure from administration on assigning low grades. Developing grading procedures on personal philosophy, external perceptions, and pressure from administration were subjective and enabled teachers to create varied and inconsistent grading practices which allowed the same student to receive two different scores from different teachers for the same work (Kunnath, 2017). Guskey (2009) conducted a study which gathered survey data from 556 K-12 teachers from a Midwest school district and concluded grading procedures varied based on teacher beliefs. Guskey found elementary school teachers viewed grading as a means of communication with parents on student learning whereas secondary teachers used grading and to communicate student learning as well as other factors such as behavior and effort. Elementary teachers' grades did not include homework and classwork completion because of the teachers' beliefs, which stated grades should reflect student

mastery and should not include factors influenced by behavior. Secondary teachers included homework and classwork completion in the grades as well as other behavior factors such as timeliness and participation because of the belief student mastery should not be the only component of the grade report (Guskey, 2009). In Guskey's (2009) study, teacher beliefs about grading influenced grading procedures and led to inconsistency in the district. The inconsistency in grading practices occurred because grades were influenced by teacher beliefs and experiences and was another reason why grading practices were inequitable and did not fairly report a student's performance and learning in the classroom (Guskey, 2009; Kunnath, 2017).

Equitable Grading Practices

Fair and equitable grading practices was a relevant topic in recent educational research. Current research suggested traditional grading practices were outdated, inaccurate, and inconsistent (Feldman, 2019a). Traditional grading practices reflected a combination of factors including effort, behavior, work habits, and ability and was dependent on the teacher's personal beliefs about grading and reporting (Brookhart et al., 2016). The variability of all of the factors led to inconsistencies and inequities in grading practices which created a system where a student's grade was different based on which teacher was assessing the student. Research showed many opportunities where grades made a difference in a student's life such as course assignment, academic awards, scholarships, college admission, extracurricular activities, and graduation and therefore needed to be an accurate representation of what a student was capable of and what knowledge, content, and skills the student mastered (Feldman, 2019a). In the following sections of the literature review, the researcher outlined several factors in traditional

grading practices which were misleading and led to inequities, and provided alternative grading practices which provided equity in grading and helped eliminate bias, subjectivity, and inconsistencies.

Eliminate External Factors

Current researchers and grading experts agreed accurate and equitable grading practices reflected student achievement and mastery of specific learning goals. Traditional grading practices were seen to be inaccurate and confusing because traditional grading practices included external factors, such as behavior, work habits, effort, and participation (Guskey, 2022). A grading report which included external factors did not communicate how a student performed on a learning standard but rather the grade was influenced by other factors, such as if the student turned the work in on time or if the student was present for class. Researchers agreed grades should eliminate external factors and provide a more simple and clear representation of how students performed on learning standards (Feldman, 2019a; Guskey, 2022; Hough, 2019). Including external factors in the grading report was problematic because external factors invited subjectivity and bias into the assessment (Chin et al., 2020; Quinn, 2020; Starck et al., 2020). Researchers agreed equitable grading practices should be based solely on student performance on summative assessments to accurately communicate student achievement on the learning standards (Feldman, 2019a).

An external factor commonly included in traditional grading reports was the completion and performance of homework, behavior, and work habits (Calarco et al., 2020). Homework completion grades were not an accurate representation of student performance of the learning goal because the completion grades were not reporting how a

student performed on the learning goal but rather the grades solely communicated the student completed the task (Feldman, 2019a). A completion grade for homework or classwork did not communicate what the student mastered on the learning goal or in what areas the student needed additional support. Furthermore, the evaluation of homework for accuracy was an unfair representation of student mastery of the learning goal because of numerous factors, which altered student performance on homework which were inequitable among students, such as family and peer support, time to complete the work outside of the classroom, and an environment to work on the assignment conducive to concentration (Calarco et al., 2020). Additionally, researchers Calarco et al. (2020) studied stakeholders in a suburban, Midwest school district and concluded families from a higher socioeconomic background came to school with a higher homework completion rate and the homework was more accurate than provided by students from a lower socioeconomic background. Students from the lower socioeconomic background came to class less often with homework complete and when the homework was complete the quality of work was lower. The trend negatively altered the students' academic grades leading to a gap between students from different socioeconomic backgrounds. Including homework into the academic grade was inequitable amongst students because students had varying amounts of time and support to complete assignments at home (Calarco et al., 2020). Many additional researchers agreed and stated homework and classwork should not be used as an assessment of student knowledge, but rather as an instructional and formative tool to give students and teachers feedback on the learning process (Feldman, 2019a; O'Connor et al., 2018). Formative assessments were "a way for teachers to check what skills students learned from the day's lesson and what they

haven't yet learned" (Feldman, 2019a, p. 129). Researchers agreed the communication of homework completion and performance on formative assessments was valuable for students, teachers, and parents in the learning process to follow student progress, but the completion and performance should not alter the student grade (O'Connor et al., 2018). Student grades should be calculated solely on student performance on the summative assessment. Summative assessments were "the test or final task used to evaluate student's content mastery" (Feldman, 2019a, p. 129).

Homework completion was a reflection of a student's work habits and behavior and should not be included in the academic grade report, but rather should be used to help students through the learning process and to assist as teachers develop instruction. Additional behavioral, external factors which were commonly included in traditional grading reports were participation and effort. The use of academic grading reports as a tool to communicate behavior and work habits in the classroom violated the equitable grading principle which stated academic grades should solely represent students' content mastery (Feldman, 2019a). A student's work habits and behavior in the classroom were separate from a student's knowledge and mastery of learning objectives and should not increase or decrease a student's academic grade (Feldman, 2019a; Guskey, 2022, Hough, 2019). Teachers who included behavioral factors into the academic score were inaccurately communicating student performance and changing student grades based on bias and subjectivity (Gunn, n.d.). As discussed in the literature review, teachers who used participation and effort to reward or penalize student assessment, the teachers were inaccurately, subjectively, and biasedly assessing students. Students who were deemed well-behaved and participatory by the teacher's subjective judgement had grades inflated

for good behavior scores in the academic report. Teachers who deemed students to be poorly behaved and did not participate as much had their grades deflated for poor behavior scores in their academic report (Feldman, 2019a). Behavioral factors should not be included in the academic grade and needed to be communicated separately. Educational researcher Reeves (2008) explained when grading policies were improved by separating grades from behavior, the result was an increase in student achievement and behavior.

An additional external factor, commonly included in traditional grading reports, was timeliness. A common practice in traditional grading systems included penalizing students' grades on assignments which were not turned in by the deadline with a point or percentage deduction (Feldman, 2019a). The practice did not accurately reflect a student's academic performance on an assessment, but rather reflected external factors whether the assessment was turned in on time. The practice made the grading report confusing because it was unclear whether the reported grade was a reflection of the learned skills or was a reflection of a penalty (Feldman, 2019a; Reeves, 2008). To accurately communicate student academic performance, the external factors needed to be removed from the grading system (O'Connor et al., 2018). Reducing grades for late work created inaccurate grade reports and violated the bias-resistant principle, grades were solely reflective of content mastery (Feldman, 2019a). Many factors contributed to the reasons students' work was not completed on time, such as participation in extracurricular activities or lack of support in the home to complete homework. The most vulnerable students were faced with poverty, violence in the home, utility disconnection, or negative views on school passed on from parents; all factors which attributed to

homework completion (Dueck, 2014). Students faced with the situations had difficulty completing assignments on time and reducing the grade was an unfair and inequitable practice which did not accurately represent what the student learned. Alternatively, teachers who accepted late work without a grade penalty reported a more accurate reflection of student academic performance and emphasized the importance of the learning rather than the timeline (Feldman, 2019a). Research studies concluded when teachers stopped reducing grades on late assignments, the teachers received more completed work and the quality of the work increased (Dueck, 2014; Feldman, 2019a). The omission of timeliness in the grade report allowed for students to demonstrate mastery of the learning goals without the pressure of a due date. The recommended, more equitable practices regarding homework or assignment assessment were to exclude assessment of homework in the final grade report or to assess the assignments without penalty for timeliness. Often times, the work on the homework assignment was practice and supportive material of the learning target or goal (Calarco et al., 2020; Dueck, 2014; Feldman, 2019a). How a student performed on the practice or support material should not change the final grade report due to the many factors which made homework completion inequitable (Calarco et al., 2020). Grading homework assignments also did not encourage students to take risks and make mistakes. If the homework assignment was considered valuable, the recommended, equitable practice was to encourage completion of the assignment and use the assignment as a formative tool to guide discussion and learning around the learning standard (Dueck, 2014). The feedback from the assignment was used to reflect on the learning process and progress before the assessment of the learning standard (Feldman, 2019a). If the assignment needed to be assessed, the researchers

recommended the work should be accepted without penalty to more accurately and equitably report on mastery of the learning standard (Calarco et al., 2020; Feldman, 2019a; Guskey. 2020).

According to the principles of equitable grading practices, work habits and behavior should relate to a student's academic grade but were an important aspect of a student's experience and skills in the classroom and needed to be communicated to parents and families without altering the grading report on the performance and mastery of content standards (Feldman, 2019a). To communicate student performance and completion of homework, work habits, and behavior in the classroom without making a difference in a student's summative academic scores, Guskey (2020) recommended the use of separate grading categories, such as product, process, and progress. With the separation of communication of summative academic scores (product), the growth a student achieved through formatives (progress), and the behaviors and work habits during the learning process (process), teachers were able to communicate student behavior and work habits in a more equitable way without affecting summative assessment scores (Feldman, 2019a; Guskey, 2020).

Adjust the Grading Scale

Traditional grading scales were first used among universities in the 1800s as a way to divide and rank students (Lee, 2020). The traditional grading scale described student performance as a percentage on a 100 percent scale. The percentages earned on various assessments correlated to a disproportional grading scale (Feldman, 2019a).

Table 1

Traditional Grading Scale

Points	Letter Grade
90-100	A
80 – 89	B
70 – 79	C
60 – 69	D
0 – 59	F

As observed in Table 1, the traditional scale divided 100 points into five letter grades. The letter grade A included a range of 11 points, the letter grades B, C, and D included a range of 10 points, and the letter grade F included a range of 60 points. The traditional scale unproportionally allocated the majority of the numbers to failure (F) and only 40 of the 100 numbers were allocated to a passing score (A-D). The traditional grading scale sent a message to students which stated student had a better chance of failing than succeeding, and also created a hole which students had a hard time recovering from (Carifio & Carey, 2013). When a student earned a zero due to missing work or a low failing score due to not understanding the material, the total average decreased and made a student recovery almost impossible to achieve. The practice was not a fair or accurate representation of a student's performance and was incredibly demotivating (Feldman, 2019a). The final grade report was not reflective of how the student performed on the majority of the assignments and decreased student motivation because one poor performance in the learning process put the students in such a deep hole, unable to recover; the traditional scale was unfairly skewed toward failing (Long, 2017). The

recommended, more equitable practice to rectify the unproportioned, traditional grading scale was to implement minimum grading. Minimum grading "focused on particular subgroups of students who are unfairly failed due to intermittent performance failures that current grading systems average out (in one way or another) to a failing grade or grades" (Carifio & Carey, 2013, p. 19). Minimum grading was introduced as a strategy to fix the issues with students who performed poorly on a small portion of the assignments or learning material and were unable to improve due to the failing grade and overall course average. A common practice in minimum grading was to redesign the inequitable, traditional grading scale to allow the lowest possible score to 50 on a 100-point grading scale (Feldman, 2019a) as illustrated in Table 2.

Table 2

Minimum Grading Scale

Points	Letter Grade
90-100	A
80 – 89	B
70 – 79	C
60 – 69	D
50 - 59	F

In minimum grading, a student who did not complete the assessment, scored every question incorrectly, or scored below a 50% on the traditional grading scale received a score of 50% on the minimum grading scale. Setting the new minimum at 50% allowed for students who performed poorly to recover and made the chunks of points in each letter grade more proportional (Carifio & Carey, 2013; Feldman, 2019a). Minimum

grading assigned an equal number of points per letter grade and allocated a value to failure which was more mathematically reasonable than the traditional grading scale (Feldman, 2019a). Researchers supported the implementation of the minimum grading scale in a qualitative study where 42 students, 19 teachers, and two administrators were surveyed on the implementation of the minimum grading scale in a Nevada high school (Long, 2017). The study revealed an improvement in credit deficiency, improvement in standardized testing scores and academic performance, and key stakeholders had positive perceptions of the implementation (Long, 2017).

Eliminate Extra Credit

A recommendation to create an equitable grading system was the removal of awarding extra credit. Extra credit was often offered as motivation for students, but did not reflect mastery of learning material (Shevrin, 2014). The principle of giving extra credit to students violated the belief a grade should reflect a student's knowledge and was inequitable and invited bias (Feldman, 2019a). Offering extra credit to students communicated the purpose of the class was not to master standards, but rather to acquire as many points as possible to achieve a certain grade. The practice reinforced the idea points determined a student's grade, not the mastery of the content (Feldman, 2019a; Shevrin, 2014). Extra credit undermined the importance of the standards and promoted the learning material in the classroom was not important; an inequitable teaching strategy. The practice reflected a student's environment over which the student had no control (Feldman, 2019a). Although extra credit was an optional practice for students, extra credit was inequitable because work completed outside of class often times required

resources beyond the classroom creating a further gap between students who had access and support to resources and students who did not (Shevrin, 2014).

Retakes and Redoes

A recommendation to create an equitable grading system was to encourage continuous learning and mistakes by offering opportunities for students to make improvements to assessments and performance. To grow and continue the learning process, students needed to be given the opportunity to correct mistakes and fix their errors to demonstrate growth (Wormeli, 2011). Researchers stated many teachers believed denying students the opportunity to retake assessments or make corrections taught the students responsibility and prepared individuals for the real world when in reality homework created an environment of finality and stifled growth and progression (Feldman, 2019a). Allowing retakes and redoes in the classroom encouraged a classroom culture in which students were motivated to keep learning if given the opportunity. People learn by repeated practice and should not be judged or graded during the learning process. (Feldman, 2019a; Wormeli, 2011). Guskey (2022) confirmed with the recommended practice of continued improvement on assessments by contributing the learning continued after the assessment when teachers and students reviewed and evaluated the results.

Summary

The traditional grading systems utilized in schools created inequities amongst the students served and further separated the advantaged and disadvantaged student population (Feldman, 2019a). To rectify the inequity and provide all students with a fair and unbiased student evaluation system, grading was a primary area of focus schools

needed to address. To equitably and fairly assess student performance, educators defined the meaning of grades and the information communicated through the academic grade was determined to be solely mastery of the learning material (Calarco et al., 2020; (Dueck, 2014; Feldman, 2019a). The establishment of a purpose behind the grades allowed teachers to take the first step in designing an equitable grading system. In a grading system which was not solely determined by student mastery on learning objectives, educators were given opportunity for personal perspectives and implicit bias to increase or decrease student grades and contributed to the issues of fairness and equity in the grading system (Kunnath, 2017; Guskey, 2009). Grades which included external factors, such as attendance and work habits in one final grade compromised the authenticity of academic performance and changed the opportunities for students within our school system and our society (Feldman, 2019a; Gunn, n.d.).

Chapter Three: Research Method and Design

Purpose

The purpose of the mixed methods research study was to investigate differences, if any, and perceptions of participants in the implementation of equitable grading practices in a suburban Midwest middle school classroom. The goal of a mixed method research study was to combine both quantitative and qualitative data in one study to expand and strengthen the study's conclusions and contribution to existing literature (Schoonenboom & Johnson, 2017). The quantitative aspect of the study enabled the researcher to measure the differences, if any, in the implementation of equitable grading practices by comparing pre and post student achievement scores on quarterly academic grades in sixth-grade science classrooms. The researcher completed a quantitative analysis to determine possible differences in final grades of students assessed in a traditional grading system versus students assessed in an equitable grading system. The researcher compared a stratified random sample of students' quarterly pre-equitable academic scores of a like group of students in the 2020-2021 school year versus the post-equitable academic scores of students in the 2021-2022 school year. The qualitative aspect of the study produced feedback from the students, teachers, and researcher who experienced the implementation of equitable grading practices during the 2021-2022 school year. The researcher measured the perceptions of students who experienced the transition to equitable grading procedures through surveys which consisted of Likert Scale questions asking participants to rate the opinions or perceptions of equitable grading practices as well as open ended survey questions which allowed participants to respond more specifically to the experiences. In addition to student surveys, the

researcher also investigated the perceptions of teachers who implemented equitable grading practices in the classroom during the 2021-2022 school year. The researcher interviewed two sixth-grade science teachers at the same researched middle school who implemented equitable grading practices in the classroom to gain teacher perceptions of the equitable grading practices. In addition to teacher interviews, the researcher also kept a personal journal during the implementation year to record the researcher's experiences and enable the researcher to reflect on the implementation process for instructional purposes. Teacher interviews and the researcher's personal journal helped the researcher triangulate data on teacher and student experiences and perceptions of equitable grading practices.

Quantitative and qualitative results were analyzed separately, with a culminative integration of the results to determine emergence of themes throughout the analyses. By completing the mixed methods research study, the researcher accomplished the following: highlighted achievement differences, if any, in traditional grading practices versus equitable grading practices; identified student perceptions and experience of equitable grading practices, and collected teacher and researcher perceptions regarding the experiences in the transition from traditional grading practices to equitable grading practices.

Questions and Null Hypotheses

Research Question 1: How do students perceive grading for equity procedures implemented in a sixth-grade science classroom?

Research Question 2: How do teachers perceive grading for equity procedures implemented in a sixth-grade science classroom?

Research Question 3: How does the researcher perceive grading for equity procedures implemented in a sixth-grade science classroom?

Null Hypothesis 1: There is no difference in pre/post student academic scores when incorporating grading for equity procedures.

Null Hypothesis 1a: There is no difference in pre/post student academic scores among student genders when incorporating grading for equity procedures.

Null Hypothesis 1b: There is no difference in pre/post student academic scores among student races when incorporating grading for equity procedures.

Methodology

Once the researcher received approval from the Institutional Review Board of the study university, as well as permission to use the school district as a study site (see Appendix A) the researcher obtained secondary quantitative data on a like group of sixth-grade student science academic grades from the 2020-2021 and 2021-2022 school years. The data was deidentified from a district technology specialist to protect student identity. The researcher pulled a stratified random sample of 100 students in each group for descriptive statistical analysis. A *z*-test was conducted to analyze a significant difference between the two like group of students' academic achievement scores. "A z-test is a statistical test for the mean of a population. It can be used…when the sample size is greater than 30" (Bluman, 2018, p. 427). The researcher analyzed secondary student survey data obtained from a teacher feedback instrument (see Appendix B) which was utilized for instructional purposes from this 2021-2022 stratified random sample to gain the perception of students during the experience of the implementation of equitable grading practices. Teachers who participated in the implementation of

equitable grading practices were interviewed after consent was given on the perceptions of equitable grading practices implemented in the science classroom. The results and recordings for the interview were kept secured by password protection on a computer device for only the researcher to access. The researcher analyzed and examined secondary data from self-journal entries which were collected during the implementation of equitable grading practices during the 2021-2022 school year. Additionally, the researcher analyzed qualitative results to determine emergence of themes between the researcher, teacher, and student perspectives.

The Research Site and Participants

The researcher selected to study a public middle school located in the suburban Midwest region of the United States in this research on the implementation of equitable grading practices. The research site consisted of grades six through eight among a diverse group of students (see Table 3).

Table 3

Demographic Data of General Student Population in Grades 6-8

Total Enrollment	995
American Indian/Alaska Native (%)	*
Asian (%)	14.9
Black (%)	16.1
Hawaiian/Pacific Islander (%)	*
Hispanic (%)	4.6
Multi-race (%)	8.2
White (%)	56.2

Free and reduced lunch (FTE) (%)	8.3

Note. *Indicates the number/percent has been suppressed due to a potential small sample size. Data was collected from the Missouri Department of Secondary and Elementary Education in the year 2021 (2022).

The researcher used the demographic data from the researched school to create samples from the general population of 350 sixth-grade students in the 2020-2021 school year and 341 sixth-grade students in the 2021-2022 school year and then used a stratified random sampling method to create the samples. A stratified sample was "a sample obtained by dividing the population into subgroups or strata according to some characteristic relevant to the study" (Bluman, 2018, p. 13). The researcher divided the population of students from the pre-equitable implementation of grading practices group from the 2020-2021 school year and the post equitable implementation of grading practices group from the 2021-2022 school year into subgroups based on the student's race to create like groups of students to compare quarterly academic science grades. After the populations from each school year were stratified, the researcher used a random sampling method to select a total of 100 student quarterly grades from each school year. The sample was created by randomly selecting the number of quarterly grades from each subgroup which matched the percentages of the general population of the middle school. A random sample was "a sample in which all members of the population have an equal chance of being selected" (Bluman, 2018, p. 12). The stratified random sampling method enabled the researcher to compare 100 quarterly science academic grades of two like groups of sixth-grade students from the 2020-2021school year and the post equitable implementation of grading practices group from the 2021-2022 school year.

Data Collection

The researcher used multiple forms of data to gather the necessary information to analyze the difference, if any, in pre/post student academic scores when incorporating grading for equity procedures and analyzed the perceptions of students, teachers, and the researcher during and after the implementation of equitable grading practices. The researcher used quantitative secondary data source of academic quarterly scores from the 2020-2021 and 2021-2022 school years obtained from the researched school district to analyze the difference, if any, in pre/post student academic scores when incorporating grading for equity procedures. The researcher used a combination of qualitative secondary and primary data sources to analyze the perceptions of students, teachers, and the researcher during and after the implementation of equitable grading practices. The researcher used teacher interviews as primary qualitative data and student surveys and researcher journal as qualitative secondary data. Table 4 provided a detailed description of various data sources as each data source related to each research question and hypothesis.

Table 4

Data Collection Sources

Research Questions/Null Hypotheses	Data Sources
RQ1: How do students perceive grading for equity procedures implemented in a sixth-grade science classroom?	Student surveys; researcher journal

RQ2: How do teachers perceive grading for equity procedures implemented in a sixth-grade science classroom?	Teacher interview; researcher journal
RQ3: How does the researcher perceive grading for equity procedures implemented in a sixth-grade science classroom?	Researcher journal
Null H1: There is no difference in pre/post student academic scores when incorporating grading for equity procedures.	Z-test analysis on student quarterly academic grades
Null H1a: There is no difference in pre/post student academic scores among student genders when incorporating grading for equity procedures.	Z-test analysis on student quarterly academic grades
Null H1b: There is no difference in pre/post student academic scores among student races when incorporating grading for equity procedures.	Z-test analysis on student quarterly academic grades

Academic Quarterly Scores

Students enrolled at the researched school district received academic quarterly grades in the sixth-grade science class. The researched school was on a quarter, 9-week, grading system with grades posted in Infinite Campus Parent Portal (Researched Site, 2021). Once the researcher received approval from the Institutional Review Board of the study university, as well as permission to conduct the research study at the researched school district (see Appendix A), the researcher obtained and compared secondary quantitative data on student science academic quarterly grades from the 2020-2021 and

2021-2022 school years to analyze whether a difference existed in student academic scores after the implementation of equitable grading practices. The academic scores from the 2021-2021 school year were calculated using traditional grading practices prior to the implementation of equitable grading practices followed by the calculation of academic scores from the 2021-2022 school year post implementation of equitable grading practices. The researcher pulled a stratified random sample of 100 students in each group. The stratified random sample from each academic school year was a like group comparable in size and demographics. A *z*-test was conducted to analyze a significant difference between the two like group of students' academic achievement scores.

Surveys

Students enrolled in sixth-grade science at the researched school district during the 2021-2022 school year experienced the implementation of equitable grading practices. The entire population of students were given the opportunity to complete a student survey (see Appendix B). The survey was available to every student in sixth-grade science consisting of a population of 341 students. The student survey data was collected using a Teacher Feedback Instrument the researcher used for instructional purposes which guided instruction, provided feedback for the study, and helped the researcher along with two additional sixth-grade science teachers make improvements to the equitable grading practices for upcoming years. The researcher developed the survey from an original survey designed by Kenny Vexler with permission and made adjustments and modifications (see Appendix C). The surveys consisted of 11 Likert Scale questions and asked participants to rate the opinion or perceptions of equitable grading practices as well as nine open ended survey questions which allowed participants

to respond more specifically to the experiences. The researcher used the students' responses from a stratified random sample consisting of 100 students to analyze the emergence of themes in regards to student perceptions in the experience of the implementation of equitable grading practices.

Teacher Interviews

Once the researcher received approval from the Institutional Review Board of the study university, as well as permission to use the school district as a study site (see Appendix A), the researcher used a convenience sample to recruit two teachers within the researcher's sixth-grade science professional learning community (PLC) to participate in the research study by providing consent to be interviewed on the experiences and perceptions of the implementation of equitable grading practices in the sixth-grade science classroom at the researched school district. The researcher utilized a convenience sample "a sample of subjects used because they are convenient and available" (Bluman, 2018, A-34) for the study. The participants were recruited through email and the participants provided consent prior to the interview (see Appendix E). The researcher conducted and recorded the interview using questions developed by the researcher (see Appendix D). The results and recordings for the interview were kept secured by password protection on a computer device for only the researcher to access.

Researcher Journal

During the implementation year of equitable grading practices, the researcher kept a personal journal of the researcher's experiences and perceptions throughout the process. The purpose of the journal was for the researcher to take notes on the experiences of the process, the challenges and successes of the process, conversations had with district staff

and students during the process to be able to reference notes for instructional purposes. The researcher reflected on the journal as a reference to the researcher's experience and perceptions of the implementation of equitable grading practices.

Data Analysis

The purpose of the mixed methods research study was to investigate the differences, if any, in pre and post student achievement scores on quarterly academic grades during the implementation of equitable grading practices in sixth-grade science classrooms as well as measure the perceptions of students, teachers, and the researcher experiencing the transition to equitable grading procedures. To investigate the case, the researcher completed a quantitative analysis to determine possible differences in final grades of students assessed in a traditional grading system versus students assessed in an equitable grading system. The researcher compared a stratified random sample of students' quarterly pre-equitable academic scores of a like group of students in the 2020-2021 school year versus the post-equitable academic scores of students in the 2021-2022 school year and conducted a *z*-test to identify differences, if any, in the quarterly academic grades.

The researcher also performed a qualitative examination to determine the student, teacher, and researcher perceptions about the implementation of equitable grading practices. To examine the perceptions of students, the researcher examined the results of a survey used for instructional purposes given to the population of sixth-grade students who experienced the implementation of equitable grading practices for instructional purposes in their sixth-grade science classroom at the researched school district during the 2021-2022 school year. The surveys consisted of eleven Likert Scale statements

asking participants to rate their opinion or perceptions of equitable grading practices as well as nine open ended survey questions which allowed participants to respond more specifically to their experiences. The researcher utilized in vivo coding to analyze student responses from the open-ended response survey questions twelve to nineteen on the Student Survey. In vivo codes capture the actual language used by the students. The words or phrases the researcher selected from the survey responses of the students as codes were significant or summarized the perceptions of the students (Saldana, 2011). In vivo coding allowed the researcher to analyze the exact language from the students and keep the researcher's analysis authentic. After reviewing the student responses in a spreadsheet, the researcher was able to determine an in vivo code to represent the significant words or phrases the students used. The researcher also utilized descriptive coding to analyze student responses from the open-ended response survey questions twelve to nineteen on the Student Survey. Descriptive coding utilized "primary nouns that simply summarize the topic of a datum" (Saldana, 2011, p. 104). The researcher categorized the in vivo and descriptive codes in order to determine themes of student perceptions of equitable grading practices. Figures 1-8 illustrate descriptive and in vivo coding from student responses.

In addition to student surveys, the researcher also investigated the perceptions of teachers who implemented equitable grading practices in the classroom during the 2021-2022 school year. The researcher interviewed two sixth-grade science teachers at the same middle school who implemented equitable grading practices. The researcher also kept a personal journal during the implementation year to record the researcher's experiences and enable the researcher to reflect on the implementation process for

instructional purposes and used as secondary data for analysis. The researcher utilized in vivo coding to analyze teacher responses from the interview questions. After transcribing the interviews and reviewing the teacher responses in a spreadsheet, the researcher was able to determine an in vivo code to represent the significant words or phrases the teachers used. The researcher also utilized descriptive coding to analyze teacher responses. The researcher categorized the in vivo and descriptive codes in order to determine themes of teacher perceptions of equitable grading practices. The researcher used the same coding methods to look for patterns and themes existing in the researcher's journal. Student surveys, teacher interviews, and the researcher's personal journal helped the researcher triangulate data on student, teacher and researcher experiences and perceptions of equitable grading practices.

Quantitative and qualitative results were analyzed separately, with a culminative integration of the results to determine emergence of themes throughout the analyses. By completing the mixed methods research study, the researcher accomplished the following: highlighted achievement differences, if any, in traditional grading practices versus equitable grading practices; identified student perceptions and experiences of equitable grading practices, and investigated teacher and researcher perceptions regarding the experiences in the transition from traditional grading practices to equitable grading practices.

Limitations

Educational research and experiments were a means for settling disputes regarding educational practice and verifying educational improvements (Campbell & Stanley, 1959). Educational research and experimental professionals had a responsibility

to design experiments and research studies to ensure the results can be trusted and appreciated by the educational community with the least number of limitations and threats to validity as possible.

One limitation in the research study was the inability of the results of the study to be generalized. The study focused only on the perceptions and experiences of the teachers and students who experienced the implementation of equitable grading practices in a sixth-grade science classroom at the researched school district in the 2021-2022 school year. The research study occurred in one subject content in one grade level at one school district. Due the specifics of the study, the results cannot be generalized and only transferred to like settings.

Another limitation in the research study was the small number of teacher participants. The small sample size was a result of the implementation of equitable grading practices being conducted in one subject content in one grade level at one school district.

A final limitation in the research study was the unavoidable occurrence of a global pandemic. The research study analyzed the implementation of equitable grading practices in 2021-2022 school year. During the researched school year, a worldwide pandemic and health crisis from the virus COVID-19 created unique teaching restrictions and unavoidably could have changed the emotional and social health of the participants of the study.

Summary

The researcher in Chapter Three outlined the purpose, research questions, null hypotheses of the research study, explained the research site, participants, data collection

sources, data analysis methods, and the limitations beyond the researcher's control. Within the chapter, there was guidance to refer to the appendices section for a description of permission to use research site and existing student survey, Teacher Feedback Instrument, participant interview questions, and consent forms. The next chapter consisted of the study findings.

Chapter Four: Analysis

Overview

The purpose of the research study was to investigate the differences, if any, in pre and post student achievement scores on quarterly academic grades during the implementation of equitable grading practices in sixth-grade science classrooms as well as measure the perceptions of students, teachers, and the researcher who experienced the transition to equitable grading procedures. To investigate the case, the researcher completed a quantitative analysis to determine possible differences in final grades of students assessed in a traditional grading system versus students assessed in an equitable grading system. The researcher compared a stratified random sample of students' quarterly pre-equitable academic scores of a like group of students in the 2020-2021 school year versus the post-equitable academic scores of students in the 2021-2022 school year and conducted a *z*-test to identify differences, if any, in the quarterly academic grades. The researcher also performed a qualitative examination to determine the student, teacher, and researcher perceptions about the implementation of equitable grading practices. To examine the perceptions of students, the researcher examined the results of a survey used for instructional purposes given to the population of sixth-grade students who experienced the implementation of equitable grading practices for instructional purposes in the sixth-grade science classroom at the researched school district during the 2021-2022 school year. In addition to student surveys, the researcher also investigated the perceptions of teachers who implemented equitable grading practices in the classroom during the 2021-2022 school year. The researcher interviewed two sixth-grade science teachers at the same middle school who implemented equitable

grading practices. The researcher also kept a personal journal during the implementation year to record the researcher's experiences and enable the researcher to reflect on the implementation process for instructional purposes used as secondary data for analysis. Teacher interviews and the researcher's personal journal helped the researcher triangulate data on teacher and student experiences and perceptions of equitable grading practices. Quantitative and qualitative results were analyzed separately, with a culminative integration of the results to determine emergence of themes throughout the analyses. By completing the mixed methods research study, the researcher accomplished the following: highlighted achievement differences, if any, in traditional grading practices versus equitable grading practices; identified student perceptions and experiences of equitable grading practices, and investigated teacher and researcher perceptions regarding the experiences in the transition from traditional grading practices to equitable grading practices.

Null Hypothesis 1

There is no difference in pre/post student academic scores when incorporating grading for equity procedures.

The researcher completed a quantitative analysis to determine possible differences in quarterly grades of students assessed in a traditional grading system versus students assessed in an equitable grading system. The researcher compared a stratified random sample of students' quarterly pre-equitable academic scores of a like group of students in the 2020-2021 school year versus the post-equitable academic scores of students in the 2021-2022 school year and conducted a *z*-test to identify differences, if any, in the quarterly academic grades. The quarterly average score for each year and the results of

the *z*-tests were displayed in Table 5 and displayed no significant difference between 2020-2021 quarterly scores and 2021-2022 quarterly scores. The *z*-scores did not fall above or below the significance level of 1.96. The researcher accepted the null hypothesis.

Table 5

Comparison of 2020-2021 and 2021-2022 Quarterly Grades

Year	#	Q1 %	Q2 %	Q3 %	Q4 %
2020-2021	100	88.52	87.29	81.45	81.66
2021-2022	100	86.76	87.25	80.89	82.94
z-scores		0.377	0.008	0.101	0.237

Null Hypothesis 1a

There is no difference in pre/post student academic scores among student genders when incorporating grading for equity procedures.

The researcher completed a quantitative analysis to determine possible differences in quarterly grades of students assessed in a traditional grading system versus students assessed in an equitable grading system. The researcher compared the genders consisting of male and female students from a stratified random sample of students' quarterly pre-equitable academic scores of a like group of students in the 2020-2021 school year versus the post-equitable academic scores of students in the 2021-2022 school year and conducted a *z*-test to identify differences, if any, in the quarterly academic grades. The quarterly average score for each year and the results of the *z*-tests were displayed in Table 6 and Table 7. Table 6 showed the comparison of quarter-to-quarter for females in years 2020-2021 and 2021-2022. There was no significant difference in percentage for each

quarter. The *z*-scores did not fall above or below the significance level of 1.96. The researcher accepted the null hypothesis.

Table 6

Comparison of 2020-2021 and 2021-2022 Quarterly Grades for Females

Year	#	Q1 %	Q2 %	Q3 %	Q4 %
2020-2021	49	88.52	87.29	81.45	81.66
2021-2022	49	87.37	86.30	89.60	87.08
z- scores		0.023	0.012	1.147	0.739

Table 7 showed the comparison of quarter-to-quarter for males in years 2020-2021 and 2021-2022. There was no significant difference in percentage for each quarter. The researcher accepted the null hypothesis.

Table 7

Comparison of 2020-2021 and 2021-2022 Quarterly Grades for Males

Year	#	Q1 %	Q2 %	Q3 %	Q4 %
2020-2021	51	86.76	87.25	80.89	82.94
2021-2022	51	91.07	89.93	90.68	90.41
z- scores		0.680	0.417	1.388	1.088

Null Hypothesis 1b

There is no difference in pre/post student academic scores among student races when incorporating grading for equity procedures.

The researcher completed a quantitative analysis to determine possible differences in quarterly grades of students assessed in a traditional grading system versus students

assessed in an equitable grading system. The researcher compared the races of students from a stratified random sample of students' quarterly pre-equitable academic scores of a like group of students in the 2020-2021 school year versus the post-equitable academic scores of students in the 2021-2022 school year and conducted a *z*-test to identify differences, if any, in the quarterly academic grades. The quarterly average score for each year and the results of the *z*-tests were displayed in Table 8. Table 8 showed the comparison of quarter-to-quarter for each race in years 2020-2021 and 2021-2022. There was no significant difference in percentage for each quarter. The *z*-scores did not fall above or below the significance level of 1.96. The researcher accepted the null hypothesis.

Table 8

Comparison of 2020-2021 and 2021-2022 Quarterly Grades by Race

Race	Year	#	Q1 %	Q2 %	Q3 %	Q4 %
Asian	2020-2021	15	91.57	90.05	86.71	86.26
Asian	2021-2022	15	93.40	87.86	89.64	86.97
	z- scores		0.206	0.206	0.269	0.062
Black	2020-2021	16	81.25	80.92	71.33	67.67
Black	2021-2022	16	81.04	86.69	86.42	88.13
	z- scores		0.016	0.462	1.089	1.451
Hispanic	2020-2021	5	94.14	93.57	70.94	87.99
Hispanic	2021-2022	5	85.38	81.70	83.46	82.53
	z- scores		0.457	0.576	0.472	0.244
Multiracial	2020-2021	8	94.60	93.23	90.05	90.59

Multiracial	2021-2022	8	90.24	86.43	88.60	88.09
	z- scores		0.260	0.356	0.074	0.128
White	2020-2021	56	86.68	86.91	82.22	84.14
White	2021-2022	56	90.73	87.91	90.64	88.45
	z- scores		0.202	0.048	0.389	0.198

Research Question 1

How do students perceive grading for equity procedures implemented in a sixth-grade science classroom?

Student Survey

Students enrolled in sixth-grade science at the researched school district during the 2021-2022 school year experienced the implementation of equitable grading practices. The entire population of students were given the opportunity to complete a Teacher Feedback Instrument survey for instructional purposes (see Appendix B). The survey was available to every student in sixth-grade science consisting of a population of 336 students and a total of 299 students completed the survey. The data was used for instructional purposes to help guide instruction, provide feedback, and help the researcher along with two additional sixth-grade science teachers make improvements to the equitable grading practices for upcoming years. The researcher developed the survey from an original survey designed by Kenny Vexler with permission to make adjustments and modifications (see Appendix C). The survey consisted of eleven Likert Scale statements and asked participants to rate the opinion or perceptions of equitable grading practices as well as nine open ended survey questions which allowed participants to respond more specifically to the experiences. Once the researcher received approval from

the Institutional Review Board of the study university, as well as permission to conduct the research study at the researched school district (see Appendix A), the survey was used as secondary data for this research study. The researcher used the students' responses from a stratified random sample consisting of 100 students to analyze the emergence of themes in regards to student perceptions.

Table 9

Statement 1: I understand what is graded and included in my grade in science class.

Statement	Answer Options	Number of Participant Responses
I understand what is graded and included in my grade in science class.	Strongly Agree	56
	Agree	40
	Neutral	3
	Disagree	1
	Strongly Disagree	0

Note. Portions of Table 9 from Vexler, K. (2019). *Student perceptions of grading, and implementation of standards based grading in one middle school dual language classroom* [Master's Thesis]. California State University San Marcos. Sample consisted of 100 participant responses.

The results in Table 9 showed how participants responded to statement one. Statement one gauged student perception of the general understanding of what materials and activities were included in the science teachers' grade calculation.

Table 10

Statement 2: My grade in science class accurately reflects what I know.

Statement	Answer Options	Number of Participant Responses
My grade in science class accurately reflects what I know.	Strongly Agree	32
	Agree	55
	Neutral	10
	Disagree	2
	Strongly Disagree	1

Note. Portions of Table 10 from Vexler, K. (2019). *Student perceptions of grading, and implementation of standards based grading in one middle school dual language classroom* [Master's Thesis]. California State University San Marcos. Sample consisted of 100 participant responses.

The results in Table 10 showed how participants responded to statement two. Statement two gauged student perception of how accurate students felt the science grade was.

Table 11

Statement 3: My science grade keeps me informed about my understanding of the material.

Statement	Answer Options	Number of Participant Responses
My science grade keeps me informed about my understanding of the material.	Strongly Agree	25
	Agree	52
	Neutral	20
	Disagree	3
	Strongly Disagree	0

Note. Portions of Table 11 from Vexler, K. (2019). *Student perceptions of grading, and implementation of standards based grading in one middle school dual language*

classroom [Master's Thesis]. California State University San Marcos. Sample consisted of 100 participant responses.

The results in Table 11 showed how participants responded to statement three. Statement three gauged student perception of how their science grade informed and reflected on how students were understanding the learning concepts.

Table 12

Statement 4: The learning material in class should be graded.

Statement	Answer Options	Number of Participant Responses
The learning material in class should be graded.	Strongly Agree	7
	Agree	4
	Neutral	20
	Disagree	35
	Strongly Disagree	34

Note. Portions of Table 12 from Vexler, K. (2019). *Student perceptions of grading, and implementation of standards based grading in one middle school dual language classroom* [Master's Thesis]. California State University San Marcos. Sample consisted of 100 participant responses.

The results in Table 12 showed how participants responded to statement four. Statement four gauged student perception of whether learning materials should be included in student grade calculation.

Table 13

Statement 5: My science grade is higher than my understanding of the material.

Statement	Answer Options	Number of Participant Responses
My science grade is higher than my understanding of the material.	Strongly Agree	2
	Agree	11

	Neutral	27
	Disagree	45
	Strongly Disagree	15

Note. Portions of Table 13 from Vexler, K. (2019). *Student perceptions of grading, and implementation of standards based grading in one middle school dual language classroom* [Master's Thesis]. California State University San Marcos. Sample consisted of 100 participant responses.

The results in Table 13 showed how participants responded to statement five. Statement five gauged student perception of whether their science grade was inflated and higher than the student's understanding of the learning concepts.

Table 14

Statement 6: My science grade is lower than my understanding of the material.

Statement	Answer Options	Number of Participant Responses
My science grade is lower than my understanding of the material.	Strongly Agree	4
	Agree	13
	Neutral	29
	Disagree	38
	Strongly Disagree	16

Note. Portions of Table 14 from Vexler, K. (2019). *Student perceptions of grading, and implementation of standards based grading in one middle school dual language classroom* [Master's Thesis]. California State University San Marcos. Sample consisted of 100 participant responses.

The results in Table 14 showed how participants responded to statement six. Statement six gauged student perception of whether their science grade was deflated and lower than the student's understanding of the learning concepts.

Table 15

Statement 7: Grades should be based on my understanding and mastery of the material taught in class.

Statement	Answer Options	Number of Participant Responses
Grades should be based on my understanding and mastery of the material taught in class.	Strongly Agree	26
	Agree	51
	Neutral	15
	Disagree	6
	Strongly Disagree	2

Note. Portions of Table 15 from Vexler, K. (2019). *Student perceptions of grading, and implementation of standards based grading in one middle school dual language classroom* [Master's Thesis]. California State University San Marcos. Sample consisted of 100 participant responses.

The results in Table 15 showed how participants responded to statement seven. Statement seven gauged student perception of whether their science grade calculation should be based on the student's understanding and mastery of the learning concepts.

Table 16

Statement 8: Grades should be determined on the amount of effort that I put into class.

Statement	Answer Options	Number of Participant Responses
Grades should be determined on the amount of effort that I put into class.	Strongly Agree	13
	Agree	30
	Neutral	17
	Disagree	26
	Strongly Disagree	14

Note. Portions of Table 16 from Vexler, K. (2019). *Student perceptions of grading, and implementation of standards based grading in one middle school dual language classroom* [Master's Thesis]. California State University San Marcos. Sample consisted of 100 participant responses.

The results in Table 16 showed how participants responded to statement eight. Statement eight gauged student perception of whether their science grade should be determined by the student's effort in class.

Table 17

Statement 9: Grades should be penalized if the work is turned in late.

Statement	Answer Options	Number of Participant Responses
Grades should be penalized if the work is turned in late.	Strongly Agree	3
	Agree	7
	Neutral	24
	Disagree	36
	Strongly Disagree	30

Note. Portions of Table 17 from Vexler, K. (2019). *Student perceptions of grading, and implementation of standards based grading in one middle school dual language classroom* [Master's Thesis]. California State University San Marcos. Sample consisted of 100 participant responses.

The results in Table 17 showed how participants responded to statement nine. Statement nine gauged student perception of whether a student's science grades should be penalized if their assignments were turned in late.

Table 18

Statement 10: I put less effort into assignments that are used as learning material and are not graded.

Statement	Answer Options	Number of Participant Responses
I put less effort into assignments that are used as learning material and are not graded.	Strongly Agree	3
	Agree	12
	Neutral	26
	Disagree	45
	Strongly Disagree	14

Note. Portions of Table 18 from Vexler, K. (2019). *Student perceptions of grading, and implementation of standards based grading in one middle school dual language classroom* [Master's Thesis]. California State University San Marcos. Sample consisted of 100 participant responses.

The results in Table 18 showed how participants responded to statement 10. Statement ten gauged student perception of whether the student put less effort into assignments or activities which were used as learning material and were not included in the science grade calculation.

Table 19

Statement 11: I think it is fair that the lowest grade in science class is a 50%.

Statement	Answer Options	Number of Participant Responses
I think it is fair that the lowest grade in science class is a 50%.	Strongly Agree	30
	Agree	41
	Neutral	21
	Disagree	4

	Strongly Disagree	4

Note. Portions of Table 19 from Vexler, K. (2019). *Student perceptions of grading, and implementation of standards based grading in one middle school dual language classroom* [Master's Thesis]. California State University San Marcos. Sample consisted of 100 participant responses.

The results in Table 19 showed how participants responded to statement 11. Statement eleven gauged student perception of setting the minimum grade in science to 50%.

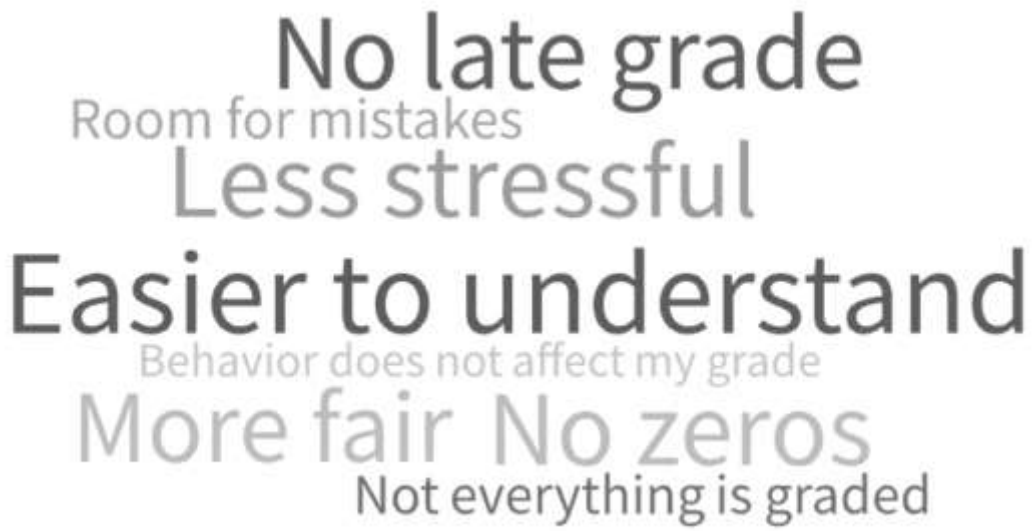
Coding Methods

The researcher utilized in vivo coding to analyze student responses from the open-ended response survey questions 12 through 19 on the student survey. The open-ended questions on the student survey were developed to allow students to share perceptions of the implementation of equitable grading practices in the sixth-grade science classroom. In vivo codes captured the actual language used by the students. The words or phrases the researcher selected from the survey responses of the students as codes were significant or summarized the perceptions of the students (Saldana, 2011). In vivo coding allowed the researcher to analyze the exact language from the students and kept the researcher's analysis authentic. After reviewing the student responses in a spreadsheet, the researcher was able to determine an in vivo code to represent the significant words or phrases the students used. The researcher also utilized descriptive coding to analyze student responses from the open-ended response survey questions twelve though nineteen on the student survey. Descriptive coding utilized "primary nouns that simply summarize the topic of a datum" (Saldana, 2011, p. 104). The researcher categorized the in vivo and descriptive codes to determine themes of student perceptions of equitable grading practices. The researcher decided to use a word cloud generator to display student responses and common themes observed within the student surveys. The researcher

created three Word Clouds to represent the themes from each survey question illustrated in figures 1-8.

Figure 1

Question 12: How do science grading practices this year compare to previous years?

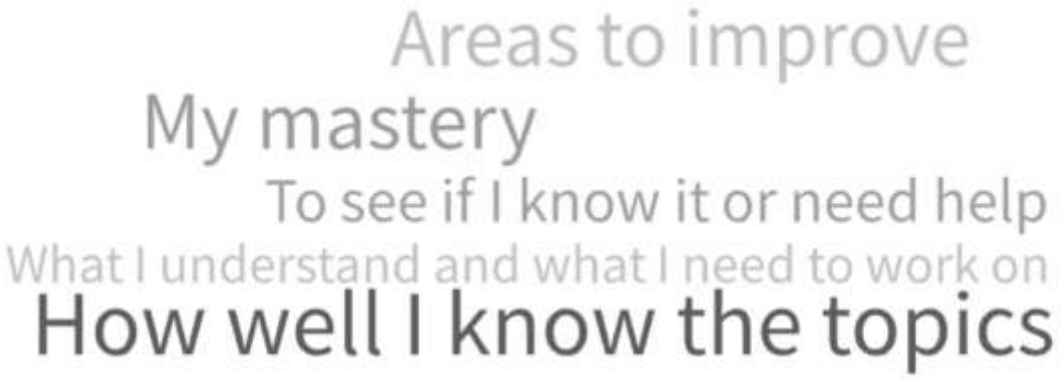


Note. Responses to Question 12 from open-ended survey were compiled to form the word cloud. The researcher used Word Art to create this word cloud.

Figure 1 illustrated how participants responded to question 12. Question 12 gauged student perception of how science grading practices compared to previous years.

Figure 2

Question 13: What information does a grade tell you?

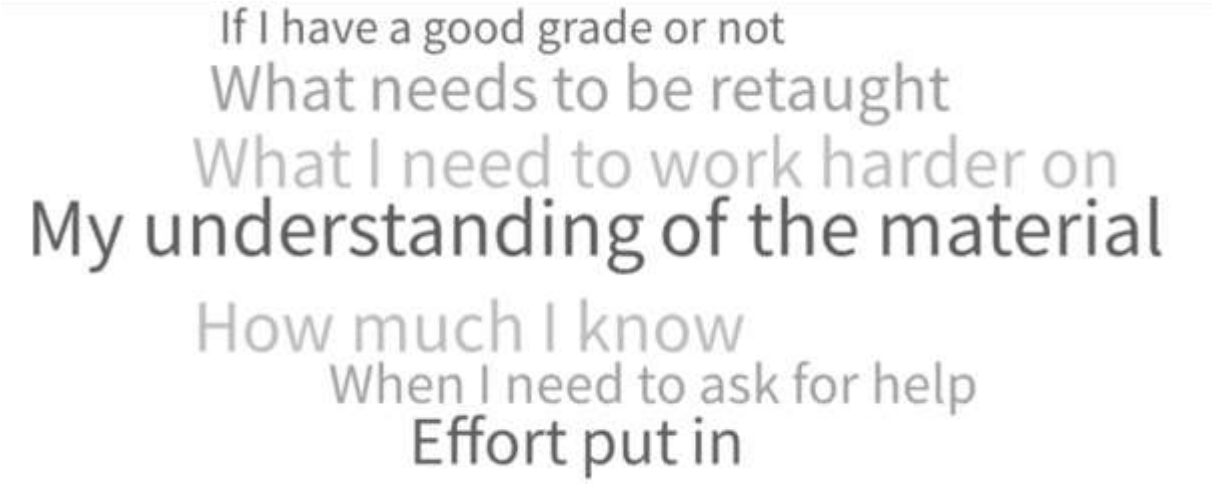


Note. Responses to Question 13 from open-ended survey were compiled to form the word cloud. The researcher used Word Art to create this word cloud.

Figure 2 illustrated how participants responded to question 13. Question 13 gauged student perception of what the science grade told the students.

Figure 3

Question 14: What do you think your science grade reflects?



Note. Responses to Question 14 from open-ended survey were compiled to form the word cloud. The researcher used Word Art to create this word cloud.

Figure 3 illustrated how participants responded to question 14. Question 14 gauged student perception of what the science grade reflected.

Figure 4

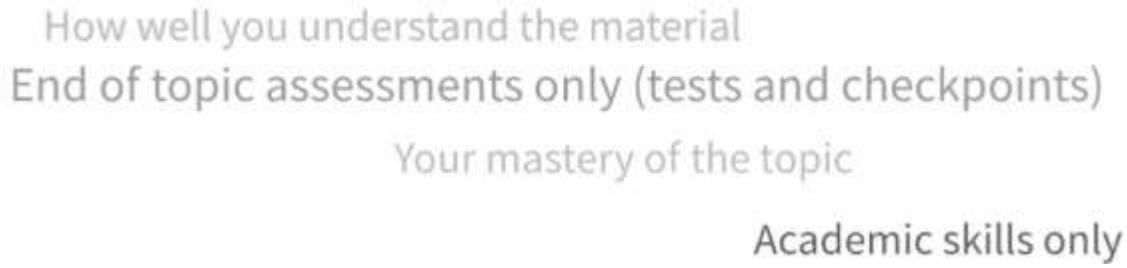
Question 15: Describe the reason(s) that you think your grade is accurate or inaccurate of your learning.

Note. Responses to Question 15 from open-ended survey were compiled to form the word cloud. The researcher used Word Art to create this word cloud.

Figure 4 illustrated how participants responded to question 15. Question 15 gauged student perception of the accuracy of the science grade.

Figure 5

Question 16: What do you think your science grade should include?



Note. Responses to Question 16 from open-ended survey were compiled to form the word cloud. The researcher used Word Art to create this word cloud.

Figure 5 illustrated how participants responded to question 16. Question 16 gauged student perception of what should be included in a science grade.

Figure 6

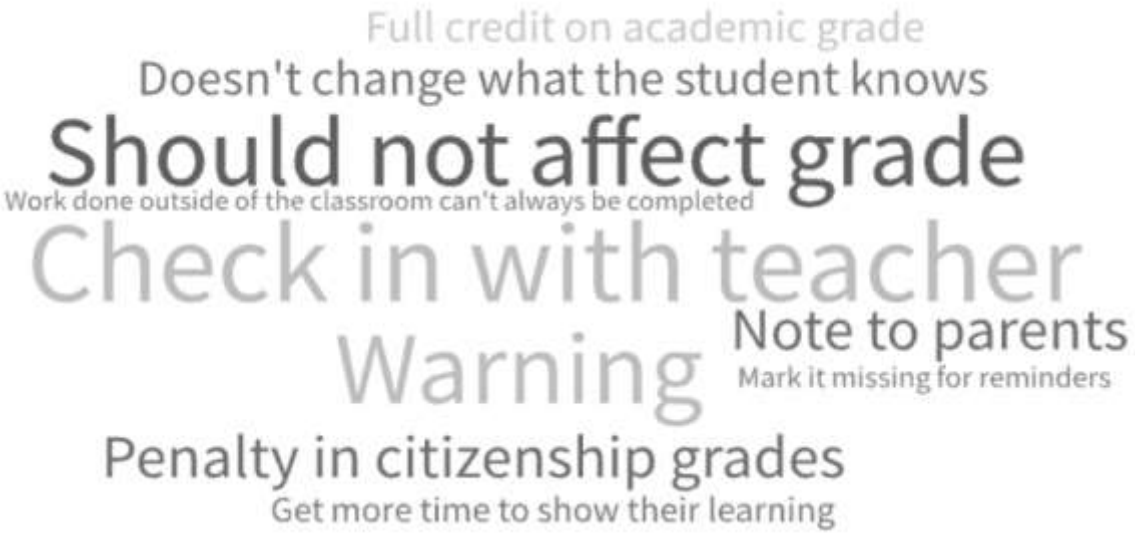
Question 17: Describe your learning experience this year specifically related to items that were previously graded now used as learning material and not graded.

Note. Responses to Question 17 from open-ended survey were compiled to form the word cloud. The researcher used Word Art to create this word cloud.

Figure 6 illustrated how participants responded to question 17. Question 17 gauged student perception of the new grading policy where learning material was not included in the grade calculation.

Figure 7

Question 18: What should happen when a student submits a late assignment

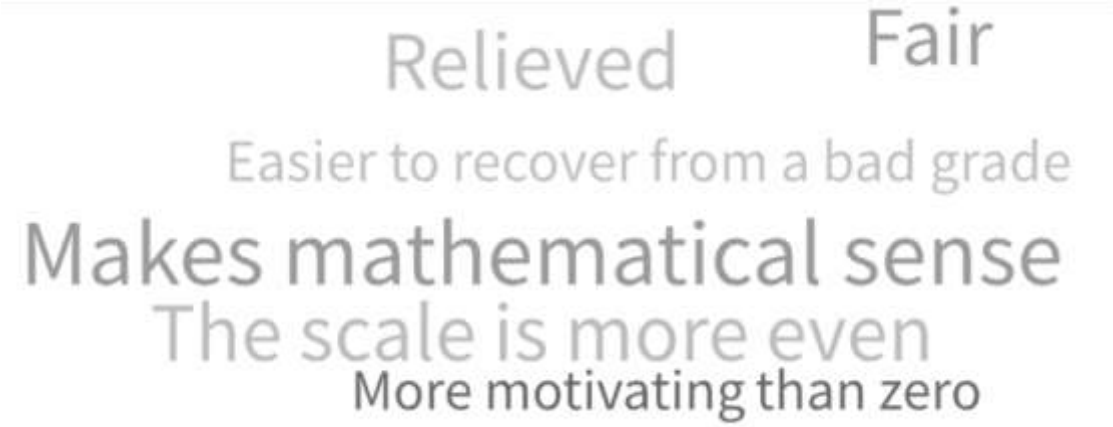


Note. Responses to Question 18 from open-ended survey were compiled to form the word cloud. The researcher used Word Art to create this word cloud.

Figure 7 illustrated how participants responded to question 18. Question 18 gauged student perception of what should happen if a student turned in a late assignment.

Figure 8

Question 19: Describe how you feel about the 50% being the lowest grade in science.



Note. Responses to Question 19 from open-ended survey were compiled to form the word cloud. The researcher used Word Art to create this word cloud.

Figure 8 illustrated how participants responded to question 19. Question 19 gauged student perception of the minimum grading policy.

Less Stressful

A recurring theme the researcher noted in the student survey results was students felt less stress in regards to equitable grading practices. The researcher noticed many students responded to multiple survey questions indicating the new, equitable grading procedures were less stressful than traditional grading procedures. Table 20 showed the statements related to the practices which were implemented and the percentage of students believed the grading practices were less stressful. The data informed the researcher the students believed equitable grading practices were a less stressful way to assess student learning.

Table 20

Student Responses to Survey Statements in the Theme of Less Stressful

Statement	Theme	Percentage of Students
Statement 1: I understand what is graded and included in my grade in science class.	Less Stressful	96% of students agreed or strongly agreed with this statement.
Statement 2: My grade in science accurately reflects what I know.	Less Stressful	87% of students agreed or strongly agreed with this statement.

As the researcher referenced in Chapter Two, grades were a stressor for students if the grades were high stakes or if the students were not certain what was included in the grade calculation (Feldman, 2020). Students in the research study indicated an understanding of what was included in the grade during the implementation of equitable grading practices, which resulted in less stress for students in the grading process. Additionally, students

explained relief was felt with the equitable grading practice of every assignment from class was not graded, but was used as learning material in class. Eliminating learning material from the grade calculation allowed students to treat classwork as something to learn from rather than something which was going to change the grade and allowed students to focus on learning rather than stressing about the grade. The utilization of assignments as learning material rather than an assessment grade, removed the high stakes from the assignment and students were less stressed about the learning process. Table 21 showed student responses to the open-ended survey questions which revealed the theme of less stressful in student perceptions of equitable grading practices.

Table 21

Student Responses to Open-Ended Survey Questions in the Theme of Less Stressful

Question	Theme	Student Responses
Question 12: How do science grading practices this year compare to previous years?	Less Stressful	• 'Grading this year is not as stressful because I know what is for a grade and what isn't.' • 'Science grades make sense and do not stress me out. Some classes have grades and you don't know how you are going to be graded and its hard to learn that way' • 'I really like science grades, I can enjoy class and not stress like I use to.' • 'It is a lot less stressful.' • 'Well I like this year how my learning material is not graded because I used to stress so about being graded on those kinds of assignments.'

Question 17: Describe your learning experience this year specifically related to items that were previously graded now used as learning material and not graded.	Less Stressful	• 'Now that every little thing I do in class isn't graded, I do not have to stress out about everything. I can just try my best and prepare for the summatives.' • 'I like how I use the learning material to learn from and work off of and use it to get ready for the things that are graded, like tests and Checkpoints. It makes everything more manageable.' • 'When everything was graded, it was stressful. I was always worried or felt like I had to do perfect.' • 'I think it doesn't put as much stress on me, so I can learn at my own pace and not get stressed out to the point where I can't focus.' • 'I appreciate that labs aren't graded because I feel it allows me to truly learn without the pressure of getting the right answer all the time.'

Accurate

A recurring theme the researcher noted in the student survey results was students felt the equitable grading practices were accurate. The researcher noticed many students responded to multiple survey questions indicating the new, equitable grading procedures accurately represented the student's learning and mastery of the learning goals in science class. Table 22 showed the statements related to the practices which were implemented and the percentage of students believed the grading practices were accurate This data informed the researcher the students believed equitable grading practices were an accurate way to assess student learning.

Table 22

Student Responses to Survey Statements in the Theme of Accurate

Statement	Theme	Percentage of Students
Statement 2: My grade in science accurately reflects what I know.	Accurate	87% of students agreed or strongly agreed with this statement.
Statement 5: My science grade is higher than my understanding of the material.	Accurate	60% of students disagreed or strongly disagreed with this statement.
Statement 6: My science grade is lower than my understanding of the material.	Accurate	54% of students disagreed or strongly disagreed with this statement.

The data informed the researcher the majority of students in science class believed the equitable grading practices which determined the science grade was accurately representing the learning or mastery of the content. As the researcher referenced in Chapter Two, equitable grading systems aimed to report student progress in a fair, accurate, specific, and timely manner (O'Connor et al., 2018). The elimination of external factors from the grade calculation, such as timeliness, compliance, and behavior allowed for the grade calculation to solely reflect student mastery and therefore created an accurate grade calculation. Table 23 showed student responses to the open-ended survey questions which revealed the theme of accuracy in student perceptions of equitable grading practices.

Table 23

Student Responses to Open-Ended Survey Questions in the Theme of Accurate

Question	Theme	Student Responses
Question 13: What information does a grade tell you?	Accuracy	• 'My science grade tells me how I am doing in science class and what I need to work on.' • 'The grade tells me if I need to work harder on certain topics.' • 'The grade is determined by how much I know, not how much homework I did or how many points the teacher took off for the work being late. I can tell what I understand and what I need to work on because the grade tells me that.'
Question 14: What do you think your science grade reflects?	Accuracy	• 'My grade reflects what I understand from class and what I do not understand.' • 'My grade reflects my understanding because it does not change based on how many of my assignments are late or not finished. I like how my grade comes from my understanding and not what I do in class or how much work I turn in.' • 'My grade reflects how I did on tests, not how I did as I was still learning.'
Question 15: Describe the reason(s) that you think your grade is accurate or inaccurate of your learning.	Accuracy	• 'I think my science grade is more accurate than some of my other classes because my grade is not affected by my study habits. Sometimes I do not need to do the extra homework because I already get it. So if I don't do the homework, I can still get a good grade because I did good on the test.' • 'My grade is accurate because it is determined by how I did on

	Checkpoints and tests, not based on other things.' • 'The grade is accurate because it shows my performance and leaves out all the other stuff that the other teachers use.'

Fair

A recurring theme the researcher noted in the student survey results was students felt the equitable grading practices were fair. The researcher noticed many students responded to multiple survey questions indicating the new, equitable grading procedures were fair because they measured student progress and understanding of the learning material and were not influenced by external factors, such as participation, timeliness, and behavior. Furthermore, the equitable grading practices adapted the traditional grading scale to become balanced with 50% being the lowest failing grade rather than 0%. The researcher noted from the student survey the majority of students agreed or strongly agreed with the equitable grading practices which were implemented and determined the science grade. Table 24 showed the statements related to the practices which were implemented and the percentage of students who believed the grading practices were fair. The data informed the researcher the students believed equitable grading practices were a fair way to assess student learning.

Table 24

Student Responses to Survey Statements in the Theme of Fair

Statement	Theme	Percentage of Students
Statement 7: Grades should be based on my understanding and mastery	Fair	77% of students agreed or strongly agreed with this statement.

of the material taught in class.		
Statement 9: Grades should be penalized if the work is turned in late.	Fair	66% of students disagreed or strongly disagreed with this statement.
Statement 11: I think it is fair that the lowest grade in science class is a 50%.	Fair	71% of students agreed or strongly agreed with this statement.

Table 25 showed student responses to the open-ended survey questions which revealed the theme of fairness in student perceptions of equitable grading practices: the removal of external factors in grade calculation, the removal of the power of zero and utilization of the minimum grading scale, and the opportunity for students to make corrections to show improvement.

Table 25

Student Responses to Open-Ended Survey Questions in the Theme of Fair

Question	Theme	Student Responses
Question 12: How do science grading practices this year compare to previous years?	Fair	• 'I like that I'm only graded on the projects, Checkpoints, and test. In previous years I was graded on everything and some time it was hard to finish all my homework because I do gymnastics and I'm in the gym 16 hour a school week so I wouldn't finish my work and because of that my grade was really low even though I understood everything in class. The old grading wasn't fair.' • 'I like the science grading this year more than any other year. I think that it is fair to only grade the tests, Checkpoints, and

		projects because maybe some kids have trouble at home where they are not able to get help on homework or get assignments done.' • 'They compare because in my previous years of education if someone got an F on a science quiz or test it would have a massive impact on their grade. However, this year the lowest grade you can earn on assessments is 50%. You can get out of a hole, last year it was harder to bring your grade up.' • 'I like that its more balanced with the F and it seems more fair than any other years.' • 'I did not understand my grades in previous years, but this year I do and they are fair.' • 'I think the grading practices are far more fair than previous years. In the past, getting a C (MAXIMUM) for being late is absolutely outrageous and idiotic. You may have had mastery of the material, but only get a C for your efforts because you missed the date.' • 'I think it's a bit better because the notes are for practice and stuff so I feel better that it isn't graded. If we are still learning the lesson, we shouldn't get a bad grade.'
Question 16: What do you think your science grade should include?	Fair	• 'Just tests and quizzes, not learning material because why go over stuff you are learning? Are you supposed to know it as you learn?' • 'My grade should show what I learned at the end. The grade should not include every little thing we did in class because that is not fair. Sometimes it

		takes me some time to learn so I don't want to be graded on everything.' • 'My grade should include my how I did on tests or quizzes, not how I behave in class. I like to talk to my friends, but that doesn't mean I am not learning.' • 'I think my science grade should include how I perform on the tests and quizzes. In the past, I felt like if teachers didn't like me, they would give me a lower grade. I feel like my science grades are fair because I have more control over my grade.'
Question 17: Describe your learning experience this year specifically related to items that were previously graded now used as learning material and not graded.	Fair	• 'I like that my home work is not graded because now if I forget my homework, I don't have to worry about my grade going down and it's not the end of the world. I know the next day I will continue to learn without the unfairness of a late grade. As long as I learn, does it matter if I did it on a Monday night or Tuesday night?' • 'I think that the learning material is now not graded is fair. I'm getting the same out of it as I did in the past except now I can learn in class without the pressure of worrying about every grade. It is unfair to grade someone on something that they are still learning.' • 'I think that it made a significant difference because personally I think that the learning material shouldn't be graded since you are starting to learn new topics and won't know everything. It's unfair to grade me on that.'
Question 19: Describe how you feel about 50%	Fair	• 'I feel very grateful and happy that teachers can understand that a student could be perfect and

being the lowest grade in science	get a 100% on every assignment but then maybe have some problems as home or with mental health and miss one checkpoint which then turns into a 0 which could lower your grade down so much and make you have to work harder and make up way more. It may hurt you so much that your grade can not get better.' • 'I feel like it's fair because lower F's like 10% affect your grade even more even though it's the same grade. The 50% allows students to recover.' • 'The new grades are more fair. After looking at the 2 scales I think getting a grade below a 50% is so unfair. The scale that goes to 0 is so unfair. Half of the grades are an F! The new grades are even and more fair.' • 'An F is an F. If I score a 50%, it is telling me the same information if I score a 0%. At least one grade does not destroy your grade when I have done well on the other Checkpoints.'

Motivational

A recurring theme the researcher noted in the student survey results was students felt the equitable grading practices were motivational. The researcher noticed many students responded to multiple survey questions indicating the new, equitable grading procedures were motivational because the practices focused on the learning process rather than the end result by eliminating late penalties on assignments and removed the assessment of classwork and homework. The procedure allowed for students to focus on the learning process and take risks rather than fixate on every point in the gradebook. The

researcher noted many students responded with a sense of ownership over the grades because equitable grading practices were more objective and less subjective. Table 26 showed the statements related to the practices which were implemented and the percentage of students who believed the grading practices were understandable and did not encourage students to put less effort into the learning material. The data informed the researcher the students believed equitable grading practices were a motivational way to assess student learning.

Table 26

Student Responses to Survey Statements in the Theme of Motivational

Statement	Theme	Percentage of Students
Statement 1: I understand what is graded and included in my grade in science class.	Motivational	96% of students agreed or strongly agreed with this statement.
Statement 9: Grades should be penalized if the work is turned in late.	Motivational	66% of students disagreed or strongly disagreed with this statement.
Statement 10: I put less effort into assignments that are used as learning material and are not graded.	Motivational	59% of students disagreed or strongly disagreed with this statement.

Some of the new equitable practices included: the removal of external factors in grade calculation, the removal of learning material from the academic grade, and providing opportunities for students to show growth and improvement. Table 27 showed student responses to the open-ended survey questions which revealed the theme of motivation in student perceptions of equitable grading practices.

Table 27

Student Responses to Open-Ended Survey Questions in the Theme of Motivational

Question	Theme	Student Responses
Question 12: How do science grading practices this year compare to previous years?	Motivational	• 'I like how we are only graded on Checkpoints and tests. It makes me feel bad when I am not getting good grades on things because I didn't turn it in on time. When I don't do my homework, it's because I need more help and don't understand it. Now I feel like we can get that help without it hurting our grade.' • 'I like how we can now make corrections on Checkpoints. That way I can always work to get better.' • 'I like how the lowest grade is a 50%. Even if I do really bad on something, my grade is not ruined from one thing. It gives me motivation to not give up.'
Question 14: What do you think your science grade reflects?	Motivational	• 'My science grade shows what I know because that is the only thing included in the grade. That makes me feel like I can do well.'
Question 17: Describe your learning experience this year specifically related to items that were previously graded now used as learning material and not graded.	Motivational	• 'I do like how this year they grade the stuff after you've learned it. It is really frustrating to be graded on something that you are still learning and may not understand.' • 'Knowing that I can work in class on labs without worrying about what the right answer is makes me enjoy class more.'

Research Question 2 and Research Question 3

How do teachers perceive grading for equity procedures implemented in a sixth-grade science classroom?

How does the researcher perceive grading for equity procedures implemented in a sixth-grade science classroom?

Teacher Interview

Two teachers within the researcher's professional learning community (PLC) at the researched school district during the 2021-2022 school year participated in the implementation of equitable grading practices in sixth-grade science classes. The researcher used a convenience sample to recruit two teachers within the researcher's sixth-grade science professional learning community (PLC) to participate in the research study by providing consent to be interviewed on the experiences and perceptions of the implementation of equitable grading practices in the sixth-grade science classroom at the researched school district. The researcher conducted and recorded the interview using questions developed by the researcher (see Appendix D). The researcher used the teachers' responses to analyze the emergence of themes in regards to teacher perceptions.

Researcher Journal

During the implementation year of equitable grading practices, the researcher kept a personal journal of the researcher's experiences and perceptions throughout the process. The purpose of the journal was for the researcher to take notes on the experiences of the process, the challenges and successes of the process, conversations with district staff and students during the process to be able to reference notes for instructional purposes. The researcher reflected on the journal as a reference to the researcher's experience and

perceptions of the implementation of equitable grading practices. The researcher was open to emerging themes as the journal was analyzed and coded for trends, but nothing new emerged. Since themes and trends were consistent amongst the teacher interviews and researcher's journal, the researcher combined Research Question 3 and Research Question 4.

Coding Methods

The researcher utilized in vivo coding to analyze teacher responses from the interview questions and experiences from the researcher's journal. The interview questions and researcher's journal were developed to allow the participants and the researcher to share the perceptions of the implementation of equitable grading practices in the sixth-grade science classrooms. In vivo codes captured the actual language used by the teachers and researcher. The words or phrases the researcher selected from the teacher responses or researcher's journal entries were significant or summarized the perceptions of the teachers and researcher (Saldana, 2011). In vivo coding allowed the researcher to analyze the exact language from the teachers and researcher and kept the researcher's analysis authentic. After reviewing the transcribed teacher responses and the researcher's journal entries, the researcher was able to determine an in vivo code to represent the significant words or phrases. The researcher also utilized descriptive coding. Descriptive coding utilized "primary nouns that simply summarize the topic of a datum" (Saldana, 2011, p. 104). The researcher categorized the in vivo and descriptive codes to determine themes of teacher and researcher perceptions of equitable grading practices. The teacher interview questions and researcher's journal were analyzed separately, but since the themes and trends were consistent amongst the teacher interviews and researcher's

journal, the researcher combined the themes of Research Question 3 and Research Question 4. Figure 9 illustrated descriptive and in vivo coding from teacher responses and conversation in the interview process and the researcher's journal entries.

Figure 9

Teacher Interview Responses and Researcher Journal Entries

Note. Responses from interview questions and the researcher's journal were compiled to form this word cloud. The researcher used Word Art to create the word cloud.

Nonbiased

After reviewing the interview transcripts and researcher's journal, the researcher noted a recurring theme of nonbiased. Participating teachers and the researcher felt the equitable grading practices were not biased and were objective when assessing student performance. The researcher analyzed the participating teachers' responses to multiple interview questions which indicated the new, equitable grading procedures were unbiased because the grades were focused solely on academic performance on checkpoints and tests. The grades were not influenced by external factors such as behavior or work habits.

Table 28 showed teacher responses from the teacher interviews which revealed the theme of nonbiased in teacher perceptions of equitable grading practices.

Table 28

Participating Teacher Responses to Interview Questions in the Theme of Nonbiased

Question	Theme	Teacher Responses
Question 1: Describe the process of grading during the current year. How is this different than previous grading practices?	Nonbiased	• 'The science grade is determined by student performance on Checkpoints and tests, the grades are not affected or influenced by any other factors. It's very clear. This makes me feel good because I can confidently say that my opinion, judgement, or feelings of or towards a student or their effort is not affecting their grade.' • 'In the past I have questioned the accuracy and fairness of my (traditional) grading practices. I never felt like they were truly representing student knowledge or performance. The grades were influenced by too many things. Losing points for turning it in late, losing points for not being organized, or gaining points for extra credit were affecting the grades of certain groups of students unfairly. Equitable grading removes all of those unfair practices and all students are assessed the same regardless of other circumstances.' • 'It is my job to adjust my teaching instruction and interventions for what my student needs, but I should not be grading students differently. I love how there is now a differentiation between

		instruction and grades. I felt as though they were too closely related with traditional grading practices. Students who need more support or intervention were getting penalized on their grades. That's not fair or accurate if grades are meant to show what a student has mastered.'
Question 3: What do you perceive grades reflect?	Nonbiased	• 'Our grades reflect what our students understand. That's the goal. It's very clear, we have eliminated all the mud. After all of the instruction, learning material, and non-graded feedback the students take a checkpoint and that tells us and them if they have mastered the material. The academic grades do not communicate all the other soft skills such as timeliness, organization, and effort. We communicate that in their citizenship grades. This is important because if you include those factors in the academic grade, your grades can become subjective and judgmental.'
Question 4: Describe what happens when a student submits late work related to your grading practices.	Nonbiased	• 'Students do not get penalized if their Checkpoints are not turned in on time. Our traditional grading practices did penalize students for late work which didn't make sense to me. I understand why we did it at the time, we thought we were holding them accountable but in reality, we are just penalizing a certain group of students who need more support.'
Question 5: Describe your experience with student completion of independent work on learning material.	Nonbiased	• 'We do not grade learning material currently, in the past with (traditional) grading practices we did. One worry I had as we made the transition

	was that students would complete or take the assignments seriously since we were not grading them. I have found that to be not true. The same number of students complete the work. Even though we are not grading it, we are still using it as feedback and using it in class to help us learn. So, students still find value in completing it because they have discovered it is part of the learning process. There will always be students who do not complete their work, and instead of penalizing them on their grades like we did in the past, we have conversations with them and communicate our concerns home. This is a group of students who need more support, so we do not want to communicate that they are not learning by penalizing their academic grade, we want to communicate with them and their family and support them.'

Unambiguous

After reviewing the interview transcripts and researcher's journal, the researcher noted a recurring theme of unambiguous. Participating teachers and the researcher felt the equitable grading practices were understandable when assessing and communicating student performance. The researcher analyzed the participating teachers' responses to multiple interview questions which indicated the new, equitable grading procedures were unambiguous because the grades were calculated on academic performance on end of the learning goal checkpoints and end of the unit tests. The learning material and resources used in class and assigned for homework were not included in the academic grade

calculation. The grades were not influenced by external factors, such as behavior or work habits. Table 29 showed teacher responses from the teacher interviews which revealed the theme of unambiguous in teacher perceptions of equitable grading practices.

Table 29

Participating Teacher Responses to Interview Questions in the Theme of Unambiguous

Question	Theme	Teacher Responses
Question 1: Describe the process of grading during the current year. How is this different than previous grading practices?	Unambiguous	• 'The science grade is determined by student performance on Checkpoints and tests, the grades are not affected or influenced by any other factors. It's very clear.' • 'This (Equitable grading) is so much more obvious. There is one checkpoint for each learning goal and that is all that the grade is determined by.'
Question 2: Describe your experience with implementing equitable grading practices.	Unambiguous	• 'I am able to pick out the students who need more support learning the material by looking at my grades now than I could before the implementation. This data provides is much clearer for which students are mastering the standards and which students are not.'
Question 3: What do you perceive grades reflect?	Unambiguous	• 'Our grades reflect what our students understand. That's the goal. It's very clear, we have eliminated all the mud. After all of the instruction, learning material, and non-graded feedback the students take a checkpoint and that tells us and them if they have mastered the material. The academic grades do not communicate all the other soft skills such as timeliness, organization, and

		effort. We communicate that in their citizenship grades.' • 'My gradebook in the past (with traditional grading) was very confusing. There was so much information that made it unclear how or why the student was receiving the grade that they were receiving. Did a student earn a 75% on the assignment because it was late, because it was not finished, or because they didn't understand. Not only was it confusing but it was trying to communicate too many things. With equitable grading practices our grades are reflecting academic performance and all of the other skills are communicated in another way so teachers, families, and the student can clearly see how they are performing on the learning targets.'
Question 4: Describe what happens when a student submits late work related to your grading practices.	Unambiguous	• 'Students do not get penalized if their Checkpoints are not turned in on time. Our traditional grading practices did penalize students for late work which didn't make sense to me. I understand why we did it at the time, we thought we were holding them accountable but in reality, we are just penalizing a certain group of students who need more support. Also, it was confusing and overwhelming in the gradebook. Keeping track and being consistent of late penalties was overwhelming. It was also unclear, is this a low grade because the student didn't understand or is it a low grade because it was turned in late. Families were confused too; I

	was answering a lot of emails explaining the grades in the gradebook.'

Less Stressful

After reviewing the interview transcripts and researcher's journal, the researcher noted a recurring theme of a decrease in the amount of stress on the teachers and researcher. Participating teachers and the researcher felt the equitable grading practices were less stressful when assessing student performance. The researcher analyzed the participating teachers' responses to multiple interview questions which indicated the new, equitable grading procedures were less stressful because the grades were calculated on academic performance on end of the learning goal Checkpoints and end of the unit tests. The learning material and resources used in class and assigned for homework were not included in the academic grade calculation. The grades were not altered by external factors such as behavior or work habits. Table 30 showed teacher responses from the teacher interviews which revealed the theme of less stressful in teacher perceptions of equitable grading practices.

Table 30

Participating Teacher Responses to Interview Questions in the Theme of Less Stressful

Question	Theme	Teacher Responses
Question 1: Describe the process of grading during the current year. How is this different than previous grading practices?	Less Stressful	• 'This (equitable grading) is so much more obvious. There is one checkpoint for each learning goal and that is all that the grade is determined by. That makes life so much easier and less stressful. All of the students' learning material is not factored into the academic grade, so we provide feedback

		in a less formal way and it frees up a lot of our time since we do not have to grade everything we do in class.'
Question 2: Describe your experience with implementing equitable grading practices.	Less Stressful	• 'It has made my teaching experience more manageable and less stressful. The grades are more clear and understandable because they are focused on academic performance only so I am spending less time grading and communicating about the grades.'
Question 3: What do you perceive grades reflect?	Less Stressful	• 'The academic grades do not communicate all the other soft skills such as timeliness, organization, and effort. We communicate that in their citizenship grades. The separation of academic scores and citizenship scores makes communicating grades so much less stressful because I feel like I am being more efficient.' • 'My gradebook in the past (with traditional grading) was very confusing. There was so much information that made it unclear how or why the student was receiving the grade that they were receiving. Did a student earn a 75% on the assignment because it was late, because it was not finished, or because they didn't understand. Not only was it confusing but it was trying to communicate too many things. With equitable grading practices our grades are reflecting academic performance and all of the other skills are communicated in another way so teachers, families, and the student can clearly see how they are

		performing on the learning targets.'
Question 4: Describe what happens when a student submits late work related to your grading practices.	Less Stressful	• 'Keeping track and being consistent of late penalties was overwhelming. It was also unclear, is this a low grade because the student didn't understand or is it a low grade because it was turned in late. Families were confused too; I was answering a lot of emails explaining the grades in the gradebook. Since the grades in the gradebook are determined only by student performance and the there are no late grades or other external factors, I do not have to explain the grades as much which is so much less stressful.'

Summary

The quantitative portion of the study showed no significant differences between quarterly grades of students assessed in a traditional grading system in the 2020-2021 school year versus students assessed in an equitable grading system in the 2021-2022 school year. The researcher also performed a qualitative examination to determine the students,' teachers,' and the researcher's perception about the implementation of equitable grading practices. To examine the perceptions of students, the researcher analyzed the secondary data results of an open-ended survey given to the population of sixth-grade students who experienced the implementation of equitable grading practices for instructional purposes in the sixth-grade science classroom at the researched school district during the 2021-2022 school year. The researcher interviewed two sixth-grade science teachers at the same middle school who implemented equitable grading practices in the classroom to gain teacher perceptions of the equitable grading practices. In addition

to teacher interviews, the researcher also kept a personal journal during the implementation year to record the researcher's experiences and enable the researcher to reflect on the implementation process for instructional purposes. Teacher interviews and the researcher's personal journal allowed the researcher to triangulate data on teacher, researcher, and student experiences and perceptions of equitable grading practices to find themes which suggested the benefits and improvements of the implementation of equitable grading practices. Although the sample size was small and therefore incapable of producing generalizations, the researcher felt confident in the implementation of equitable grading practices. The next chapter provided further analysis, discussion, and suggestions for further research in regards to the implementation of equitable grading practices.

Chapter Five: Discussion, Reflection, and Recommendations

Overview

The purpose of the research study was to investigate the differences, if any, in pre and post student achievement scores on quarterly academic grades during the implementation of equitable grading practices in sixth-grade science classrooms as well as measure the perceptions of students, teachers, and the researcher experiencing the transition to equitable grading procedures. To investigate the case, the researcher completed a quantitative analysis to determine possible differences in final grades of students assessed in a traditional grading system versus students assessed in an equitable grading system. The researcher compared a stratified random sample of students' quarterly pre-equitable academic scores of a like group of students in the 2020-2021 school year versus the post-equitable academic scores of students in the 2021-2022 school year and conducted a *z*-test to identify differences, if any, in the quarterly academic grades. The researcher also performed a qualitative examination to determine the student, teacher, and researcher perceptions about the implementation of equitable grading practices. To examine the perceptions of students, the researcher examined the results of a survey used for instructional purposes given to the population of sixth-grade students who experienced the implementation of equitable grading practices for instructional purposes in the sixth-grade science classroom at the researched school district during the 2021-2022 school year. In addition to student surveys, the researcher also investigated the perceptions of teachers who implemented equitable grading practices in the classroom during the 2021-2022 school year. The researcher interviewed two sixth-grade science teachers at the same middle school who implemented equitable

grading practices. The researcher also kept a personal journal during the implementation year to record the researcher's experiences and enable the researcher to reflect on the implementation process for instructional purposes used as secondary data for analysis. Teacher interviews and the researcher's personal journal helped the researcher triangulate data on teacher and student experiences and perceptions of equitable grading practices. Quantitative and qualitative results were analyzed separately, with a culminative integration of the results to determine emergence of themes throughout the analyses. By completing the mixed methods research study, the researcher accomplished the following: highlighted achievement differences, if any, in traditional grading practices versus equitable grading practices; identified student perceptions and experiences of equitable grading practices, and investigated teacher and researcher perceptions regarding the experiences in the transition from traditional grading practices to equitable grading practices.

Discussion

Null Hypothesis 1

Hypothesis 1 investigated whether the implementation of equitable grading practices influenced the overall quarterly grade calculation for sixth-grade science students. There was no significant change from pre-equitable grading academic scores compared to post-equitable grading scores and showed the researcher the equitable grading practices did not inflate or deflate the student sample of academic scores. The outcome did not surprise the researcher because the purpose of equitable grading practices was to remove the bias and inequity between how students are assessed and remove situations related to grading which were out of the students' control (Feldman,

2019a). The researcher implemented grading practices considered equitable because the practices were fair, accurate, specific, and timely (O'Connor et al., 2018). The equitable grading practices were implemented to address bias and fairness, but did not directly increase or decrease the students' mastery of the material. The equitable grading practices created a fairer playing field for students to demonstrate the knowledge learned, but the equitable grading practices did not enhance the student learning outcomes. The results instead manifested in other ways such as increased student motivation, engagement, and satisfaction with the learning experience as discussed in Chapter 4.

Null Hypothesis 1a

The researcher compared quarterly pre-equitable academic scores of a like group of students in the 2020-2021 school year versus the post-equitable academic scores of students in the 2021-2022 school year and conducted a *z*-test to identify differences, if any, in the quarterly academic grades of the sample of student participants among genders. Analysis of the *z*-test was used to determine a possible difference in final grades of students assessed in a traditional grading system versus students assessed in an equitable grading system and showed no significant difference in quarterly academic grades.

Hypothesis 1a investigated whether the implementation of equitable grading practices influenced the overall quarterly grade calculation among genders for sixth-grade science students. There was no significant change from pre-equitable grading academic scores compared to post-equitable grading scores and showed the researcher the equitable grading practices did not inflate or deflate the student sample of academic scores among genders. Similarly to Hypothesis 1, the outcome did not surprise the researcher because

the purpose of implementing equitable grading practices was not to inflate or deflate student performance, but instead to remove the inequities and bias which existed in traditional grading practices and provide all students with a fair and equitable assessment tool.

Null Hypothesis 1b

The researcher compared quarterly pre-equitable academic scores of a like group of students in the 2020-2021 school year versus the post-equitable academic scores of students in the 2021-2022 school year and conducted a *z*-test to identify differences, if any, in the quarterly academic grades of the sample of student participants among races. Analysis of the *z*-test was used to determine a possible difference in final grades of students assessed in a traditional grading system versus students assessed in an equitable grading system and showed no significant difference in quarterly academic grades.

Hypothesis 1b investigated whether the implementation of equitable grading practices influenced the overall quarterly grade calculation among races for sixth-grade science students. There was no significant change from pre-equitable grading academic scores compared to post-equitable grading scores and showed the researcher the equitable grading practices did not inflate or deflate the student sample of academic scores among races. Similarly to Hypothesis 1 and 1a, the outcome did not surprise the researcher because the purpose of implementing equitable grading practices was not to inflate or deflate student performance, but instead to remove the inequities and bias which existed in traditional grading practices and provide all students with a fair and equitable assessment tool.

Research Question 1

The researcher performed a qualitative examination to determine the student perceptions about the implementation of equitable grading practices. To examine the perceptions of students, the researcher examined the results of a survey used for instructional purposes given to the population of sixth-grade students who experienced the implementation of equitable grading practices for instructional purposes in the sixth-grade science classroom at the researched school district during the 2021-2022 school year. The survey consisted of eleven Likert Scale statements and asked participants to rate the opinion or perceptions of equitable grading practices as well as nine open ended survey questions which allowed participants to respond more specifically to the experiences. The researcher also kept a personal journal during the implementation year to record the researcher's observations and conversations with students during the implementation process. The researcher analyzed and coded the survey results, reviewed the researcher's journal, and observed the themes of less stressful, accurate, fair, and motivational within student perceptions of the equitable grading practices.

A common theme the researcher observed with student survey responses was less stressful. Chapter Four included many of the student responses from the survey which led the researcher to the theme of less stressful. Students perceived equitable grading practices were less stressful because the implementation of equitable grading practices made it clear what was assessed in science class and students were knowledgeable about what was included in the academic grade. The researcher noted in the journal students did not stress about what assignments were graded because of the consistency which was

developed due to the equitable grading practices. The researcher wrote as a journal entry after the first month of implementation:

> Students are not asking what is for a grade anymore. They know that only checkpoints and tests are included in the grade. I used to always get asked if the assignment was for a grade. Our assessments are consistent every learning goal and students know what is coming and what they will be graded on. At the end of the learning target, there will be a checkpoint and those checkpoints will make up a test. It is nice to have a system that students understand and do not have to stress about what is graded and what is not.

Chapter Four included the student responses from the Survey Statement 1 which stated 96% of students agreed or strongly agreed to the statement ‘I understand what is graded and included in my grade in science class.’ Students also responded to Survey Question 17 which asked students to describe the learning experience this year specifically related to items which were now used as learning material and not graded. Student responses informed the researcher students felt the assessed checkpoints and tests made the workload and class more manageable and removed the stress of ‘every point matters’ as one student stated. A student responded to Survey Question 12, which asked how grading practices compared to previous years by stating, ‘Science grades make sense and do no stress me out. Some classes have grades and you don’t know how you are going to be graded and its hard to learn that way.’ Another student stated, ‘I can just concentrate on learning the material and doing the best I can on the learning material. It helps to know that I don’t have to be perfect. I can talk to the teacher about it if I don’t understand and I can work towards the checkpoint.’ The researcher observed a decrease in student stress

level during the implementation year and journaled, ‘The new grading procedure of assessing only at the end of a learning target seems to be a big relief to students. Students seem to be having more fun in class and engaging with the work, rather than worrying about every point.’ The decrease in stress load was important for students. Chapter Two discussed the weight and significance grades carry on the lives of students. A student’s grade summary affected the participation in extracurricular activities, college admissions, financial aid, work permits and capabilities, and insurance rates (Feldman, 2020; Hochbein & Pollio, 2016). If students felt stress or confusion surrounding grades, the process of earning points interfered with students’ abilities to learn and process new information (Feldman, 2020). Equitable grading practices allowed for students to be knowledgeable and informed about what the science grade was comprised of and allowed students to learn without the overbearing weight of worrying about every grade. The researcher was thankful of the students’ belief the equitable grading practices were less stressful. The researcher witnessed the increasing demands of students’ lives and wanted to help provide students with a grading system which helped relieve some of the stress which accompanied being a student in the 21st century.

A common theme the researcher observed with student survey responses was accuracy. Students perceived equitable grading practices to be an accurate representation of the mastery of the content and perceived equitable grading practices as accurate because the implementation of equitable grading practices included the removal of external factors not related to mastery of the content. Chapter Two reviewed the inaccuracy of including external factors, such as timeliness, behavior, work habits, effort, and participation (Guskey, 2022). Instead, accurate and equitable grading practices

reflected student achievement and mastery of specific learning goals. A grading report which included external factors was not communicating how a student performed on a learning standard but rather the grade was influenced by other factors such as if the student turned the work in on time or if the student was present for class. Researchers agreed grades should eliminate external factors and provide a more simple and clear representation of how students performed on learning standards (Feldman, 2019a; Guskey, 2022; Hough, 2019). Chapter Four included many of the student responses from the survey which led the researcher to the theme of accurate. According to Survey Statement 2, 87% of students agreed or strongly agreed the science grade accurately reflected what the students knew. Survey Question 13 asked students what information the science grade provided to students. A student responded:

> The grade is determined by how much I know, not how much homework I did or how many points the teacher took off for the work being late. I can tell what I understand and what I need to work on because the grade tells me that.

Survey Question 15 asked students to describe the reason(s) the student felt the grade was inaccurate or accurate. A student responded:

> I think my science grade is more accurate than some of my other classes because my grade is not affected by my study habits. Sometimes I do not need to do the extra homework because I already get it. So, if I don't do the homework, I can still get a good grade because I did good on the test.

The researcher noted in the journal, 'Students do not get frustrated with the grades. The grading procedure is so clear that they do not ask me to explain why they received a grade. They know the grade represents how much they understand the learning goal.' The

clarity of the grade and all external factors were removed from the grades improved the meaning and accuracy of the grade. Students were not trying to earn back points if the assignment was turned in late or if the assignment was not as organized as a teacher would like. The grade was simply a representation of how the student performed on a specific learning goal which made the students understand the strengths and areas for growth in the learning. The researcher was relieved of the students' belief the equitable grading practices were accurate and wanted to use a grading system as a way to communicate progress to students and stakeholders in clear cut and precise method. The researcher wanted to remove the external factors from the traditional grading system which created a method in which the grade was debatable.

A common theme the researcher observed with student survey responses was fair. Students perceived equitable grading practices to be fair. Chapter Four included many of the student responses from the survey which led the researcher to the theme of fair. Students perceived equitable grading practices were fair because the implementation of equitable grading practices included the removal of assessment over learning materials. Students expressed the implemented equitable grading practice of not assessing learning material was fair because students were still learning the topic and believed they should not be assessed or graded on something which the student was still learning or mastering. The researcher noted in the journal: 'students keep asking if learning material assignments are for a grade. It's like breaking a habit, they are used to being graded on everything. We need to reteach them that the learning material is to help them learn, not to assess them.' Students perceived the learning material used as feedback for progress and not assessed was a fair equitable grading practice which aligns with the equitable

grading principle which stated grades must reflect only a student's academic level of performance, exclude nonacademic criteria, and use mathematically sound calculations and scales as discussed in Chapter Two (Feldman, 2019a). According to the principle of equitable grading practices, a student's grade should reflect the mastery of the learning content and if learning material were included in the assessment, students would be assessed on material which were not expected to be mastered yet as learning and activities on the topics were ongoing. The grading of learning material violated the key principle of equitable grading practices. Additionally, students perceived equitable grading practices were fair because the implementation of equitable grading practices included the adjustment of the grading scale. The minimum grade on the equitable grading scale was 50% which created a more balanced grading scale as discussed in Chapter Two. Students expressed the implemented equitable grading practice of a balanced grading scale was fair because in the traditional scale, if students performed poorly on one assessment or did not complete one assessment, the grade was unfairly skewed and was not a fair representation of the overall performance. Chapter Four included the student responses from Survey Statement 11 which stated 71% of students agreed or strongly agreed it was fair the lowest grade in science class was a 50%. Students also responded to Survey Question 19, which asked students to describe student feelings about the new minimum grading scale. Student responses showed the researcher the students thought the minimum score of 50% was fair because the traditional scale was unbalanced and one grade dramatically negatively changed a student's grade in a way which was difficult to recover from (Long, 2017). A student pointed out, 'An F is an F. If I score a 50%, it is telling me the same information if I score a 0%. At least one grade

does not destroy your grade when I have done well on the other Checkpoints.' The implementation of the minimum grading scale was an essential part of incorporating equitable grading practices in the researcher's sixth-grade science classroom because the process fixed the issues with students who performed poorly on a small portion of the assignments and were unable to improve because of the failing grade on the average. The researcher noted in the journal:

> A student who typically scores in the ninety percentile on checkpoints did very poorly on today's checkpoint and scored a 24%. If I had entered the grade as a 24%, their average dropped to a B- which is not reflective of their overall performance. Instead, I used the new minimum grading scale and entered a 50% and their average dropped to a B+ which is more reflective of how they normally perform.

A common practice in minimum grading was to redesign the inequitable, traditional grading scale to allow the lowest possible score to fifty on a one-hundred-point grading scale (Feldman, 2019a). The researcher was proud of the students' belief the equitable grading practices were fair. The researcher wanted to use a grading system as a way to communicate progress to students and stakeholders in a just and honorable method. Ultimately, the researcher wanted to implement equitable grading practices to fairly assess students and remove all the subjectivity from the grading process. The researcher valued the student perception the grading practices were fair and reassured the researcher the assessments and grades were a beneficial communication method of progress and performance.

A common theme the researcher observed with student survey responses was motivational. Students perceived equitable grading practices to be motivational in the learning because the implementation of equitable grading practices included the opportunity for students to make corrections to the learning material as well as to the assessments. Chapter Two reviewed the recommendation in an equitable grading system to encourage continuous learning and mistakes by offering opportunities for students to make improvements to assessments and performance. In order to grow and continue the learning process, students needed to be given the opportunity to correct mistakes and fix errors to demonstrate growth (Wormeli, 2011). People learn by repeated practice and should not be judged or graded during the learning process (Feldman, 2019a; Wormeli, 2011). Chapter Four included many of the student responses from the survey which led the researcher to the theme of motivational. According to Survey Question 12, which asked how grading practices compared to previous years, students felt the opportunity to make corrections to the learning material and checkpoints was encouraging. A student responded to Question 12, 'Being able to make corrections and redo the Checkpoints makes me feel that I am able to do well.' The researcher noted in the journal:

> The students take advantage of the opportunity to retake the checkpoints. If they make a mistake, they take the time to look over the material, review the information, or ask me for help before submitting their retake. There is a feeling that every student can succeed, it just doesn't always happen the first time and it looks like they are grateful and confident in their ability to learn from their mistakes. They do not take it lightly.

Along with the opportunity to make corrections to learning material and retake checkpoints, the students' assessment without a late work penalty was also motivational for the students. Reducing grades for late work created inaccurate grade reports and violated the bias-resistant principle, grades were solely reflective of content mastery (Feldman, 2019a). Survey Statement 9 revealed 66% of students disagreed or strongly disagreed grades should be penalized if the work is turned in late. According to Survey Question 12, which asked how grading practices compared to previous years, students felt the reduction in grade due to the work being turned in late was discouraging. One student shared, 'There are a lot of reasons I like that I don't lose points if my checkpoint is late. I am very busy and I can't always get it done on someone else's timeline. That doesn't mean that I don't get it. Why should I lose points for that?' The researcher noted in the journal the removal of late penalties created a classroom environment focused on learning instead of students fixating on every last point in the gradebook. Lastly, students felt the science grade solely reflected performance on checkpoints and tests as motivational. The evaluation of homework for accuracy was an unfair representation of student mastery of the learning goal because many factors made a difference in student performance on homework which were inequitable among students such as family and peer support, time to complete the work outside of the classroom, and an environment to work on the assignment conducive to concentration (Calarco et al., 2020). Even evaluation of classwork was inequitable because students were being evaluated in the middle of the process. Assessment of the learning target needed to take place after the conclusion of learning material, which should not be included in the academic grade (Feldman, 2019a). Survey Question 17 asked students to describe the learning experience

specifically related to items which were now used as learning material and not graded. Student responses indicated students felt the removal of assessment from the learning material was motivational and allowed them to enjoy the learning process. Students were able to retain more information and learn at a deeper level when students were motivated and engaged in the learning process (Feldman, 2020). The researcher was energized by the students' increase in intrinsic motivation due to the implementation of equitable grading practices. The goal of educators was to encourage students to want to learn and to believe each student was capable. By assessing students in a system which gave students motivation to do well, the new process allowed the researcher to help students reach their full potential.

Research Question 2 and Research Question 3

The researcher performed a qualitative examination to determine teacher and researcher perceptions about the implementation of equitable grading practices. To examine the perceptions of teachers, the researcher interviewed two sixth-grade science teachers at the same middle school who implemented equitable grading practices during the 2021-2022 school year in the classroom to gain teacher perceptions of the equitable grading practices. In addition to teacher interviews, the researcher also kept a personal journal during the implementation year to record the researcher's observations, conversations with participating teachers, and researcher's experiences and enabled the researcher to reflect on the implementation process and gain insight into the teachers' and researcher's perceptions. The teacher interview questions and researcher's journal were analyzed separately, but since the themes and trends were consistent amongst the teacher interviews and researcher's journal, the researcher combined the themes of Research

Question 3 and Research Question 4. The researcher analyzed and coded the interviews and reviewed the researcher's journal and observed the themes of nonbiased, unambiguous, and less stressful within teacher and researcher perceptions of the equitable grading practices.

A common theme the researcher observed within teacher interviews and the researcher's journal was nonbiased. Teachers and the researcher perceived equitable grading practices to be nonbiased. Chapter Four included many of the teacher responses from the interview and journal entries which led the researcher to the theme of nonbiased. Teachers and the researcher perceived equitable grading practices were not biased because the implementation of equitable grading practices removed the subjectivity of the grading system. The teachers and researcher felt the grades were a clear representation of student mastery and were free from any judgement. Chapter Two reviewed how implicit bias and teacher experiences promoted inequities amongst students in traditional grading practices. Traditional grading practices relied heavily on teacher observation which included a variety of criteria in the grading report beyond student performance on learning goals and therefore invited teacher judgements and bias (Feldman, 2019a). During the implementation of equitable grading practices, the researcher and teacher participants followed recommendations and removed all external factors from the grading system. The researcher and teacher participants equitably graded students based on the performance on checkpoints and tests only and all other assignments and work completion was used as learning material and did not alter the science grade. A student's timeliness, work habits, behavior, and attendance did not alter the academic grade and therefore the grade was not changed by external factors and allowed for the science grade

to be objective and nonbiased. Interview Question 1 asked the participating teachers to describe the process of grading during the current year and how the grading was different from previous grading practices. One response stated:

> It's my job to adjust my teaching instruction and interventions for what my student needs, nit I should not be grading students differently. I love how there is now a differentiation between instruction and grades. I felt as though they were too closely related with traditional grading practices. Students who need more support or intervention were getting penalized on their grades. That's not fair or accurate if grades are meant to show what a student has mastered.

Another response to Interview Question 1 discussed how equitable grading practices were not subjective:

> In the past I have questioned the accuracy and fairness of my (traditional) grading practices. I never felt like they were truly representing student knowledge or performance. The grades were influenced by too many things. Losing points for turning it in late, losing points for not being organized, or gaining points for extra credit were affecting the grades of certain groups of students unfairly. Equitable grading removes all of those unfair practices and all students are assessed the same regardless of other circumstances.

The researcher also noted in the journal:

> Students who may not complete some assignments or turn their work in late would normally have a failing grade in my class. But with the implementation of equitable grading practices, they have a grade they are proud of because their performance on the assessments at the end of the learning topic shows that they

understand the material. It feels good that my frustration or feelings about their lack of work completion are not hurting their grade.

The responses from the participants and researcher's journal showed how the removal of external factors allowed the teachers and researcher to feel more assured the grades were not biased and solely reflected student performance on learning standards. The teachers felt confident in the grading and assessments which took place during the implementation of equitable grading practices. The teachers and researcher felt positive about the grading practices even if the teachers and researcher were frustrated with work habits of the students because ultimately those work habits were communicated to families through citizenship grades. The teachers and researcher recognized the importance of communicating student behaviors and work habits to stakeholders, but used another avenue which did not increase or decrease the academic grade (Feldman, 2019a; Guskey, 2020). The judgments and opinions of teachers and the researcher did not alter the students' grades which were based solely on academic performance on checkpoints and tests which gave a clear snapshot of how the student was mastering the learning goals in class.

A common theme the researcher observed within teacher interviews and the researcher's journal was unambiguous. Teachers and the researcher perceived equitable grading practices to be unambiguous. Chapter Four included many of the teacher responses from the interview and journal entries which led the researcher to the theme of unambiguous. Teachers and the researcher perceived equitable grading practices were unambiguous because the implementation of equitable grading practices created a grading system which was transparent and was free from bias and subjectivity which

made the grade easy to understand. The implementation also created a grading system which removed grading procedures designed to inflate or deflate the grade such as extra credit or penalties for timeliness which contributed to the clarity of the academic grade. Chapter Two reviewed how external factors in the grading system and including grades outside of summative assessments promoted inequities amongst students in traditional grading practices (Feldman, 2019a). Gradebooks including external skills and non-academic evaluation left room for teachers to subjectively assess students' performance leading to inequities in the grading system and created a muddy and unclear representation of student performance which included too many variables leaving stakeholders confused on what the grade represented (NSBA, 2020). Including grading procedures designed to inflate or deflate the grade such as extra credit or penalties for timeliness undermined the importance of mastering the standards and encouraged students to acquire as many points as possible to achieve a certain grade (Feldman, 2019a; Shevrin, 2014). Interview Question 3 asked the participants what the grades reflected. One response stated:

> Our grades reflect what our students understand. That's the goal. It's very clear, we have eliminated all the mud. After all of the instruction, learning material, and non-graded feedback, the students take a checkpoint and that tells us and them if they have mastered the material. The academic grades do not communicate all the other soft skills such as timeliness, organization, and effort. We communicate that in their citizenship grades.

The researcher also noted in the journal:

> The old grading system was full of all different kinds of grades that were confusing and included too many items. I would receive parent emails frequently asking for clarification in the grade. Because our gradebook is so simple and clear now, I do not get as many emails from parents asking to an explanation.

The responses from the participants' interview and researcher's journal showed the researcher how the equitable grading practices created a grading system which was easy for stakeholders to understand. Each learning goal was assessed with a checkpoint and the checkpoints accumulated until a unit test. The work habits, learning skills, and behavior were all communicated to stakeholders in a different way which allowed for the academic grade to be very understandable and reflected the students' mastery and areas for growth. The process created a learning environment in and outside the classroom where students and stakeholders were able to easily follow student progress and were not left confused about what a grade represented. The removal of grading procedures designed to inflate or deflate the grade, such as extra credit or penalties for timeliness highlighted the importance of mastering the learning standards and eliminated unfair and inequitable opportunities for students to manipulate the grades by collecting as many points as possible. The researcher noticed if students were not performing or earning a grade which met expectations, the students worked harder at mastery and did not look another way to earn points, such as extra credit. Students also did not have to worry about making up points lost due to a penalty such a late grade. The equitable grading practices created a transparent and clear communication to stakeholders about student mastery on the learning objectives.

A common theme the researcher observed within teacher interviews and the researcher's journal was less stressful. Teachers and the researcher perceived equitable grading practices to be less stressful compared to traditional grading practices. Chapter Four included many of the teacher responses from the interview and researcher journal entries which led the researcher to the theme of less stressful. Teachers and the researcher perceived equitable grading practices were less stressful because the implementation of equitable grading practices created a grading system which allowed teachers and the researcher to provide feedback informally without the time-consuming responsibility of assigning a grade to every piece of student work. Students' grades included student performance on summative assessments which included checkpoints and tests. The learning material was used as informal formative feedback for the teacher and student to monitor progress but was not included in the grade. The equitable grading practices were less stressful to teachers and the researcher because students were able to perform all the planned activities and lessons before an assessment occurred which provided a clearer picture to students' areas of growth. Homework and classwork should not be used as an assessment of student knowledge, but rather as an instructional and formative tool to give students and teachers feedback on the learning process (O'Connor et al., 2018). The ability for students to practice and perform a variety of differentiated instructional strategies prior to taking the assessment allowed a diverse student population the opportunity to learn in multiple ways. Students learned in different ways and at different paces, assuming students mastered material at the same time after the same instruction was not meeting the needs of all students and the students should not be assessed after narrow instruction which did not reach all students (Feldman, 2019a). When students

were able to practice the learning objective after a series of instructional lessons and assessing the mastery once at the end was less stressful for teachers and the researcher because the variety of instruction prior to the assessment provided intervention to students who did not master the content after the first instructional activity. Additionally, the equitable grading practices were less stressful to teachers and the researcher because teachers did not need to spend as much time explaining and communicating grades to stakeholders. The equitable grading practices made the assessment grades more understandable and clearer, therefore teachers and the researcher had more time in the workday to focus on other responsibilities and created a better work life balance.

Interview Question 1 asked the participants to describe the process of grading in the current year compared to previous years. One response stated:

> This (equitable grading) is so much more obvious. There is one checkpoint for each learning goal and that is all that the grade is determined by. That makes life so much easier and less stressful. All of the students' learning material is not factored into the academic grade, so we provide feedback in a less formal way and it frees up a lot of our time since we do not have to grade everything we do in class.

Interview Question 4 asked the participants to describe what happens when a student submits late work related to your grading practices. One response stated:

> Keeping track and being consistent of late penalties was overwhelming. It was so unclear, is this a low grade because the student didn't understand or is it a low grade because it was turned in late. Families were confused too; I was answering a lot of emails explaining the grades in the gradebook. Since the grades in the

> gradebook are determined only by student performance and there are no late grades or external factors, I do not have to explain the grades as much which is so much less stressful.

The researcher also noted in the journal, “Grades are not something I stress over anymore. It is so clear and straightforward. This is better for everybody.” It is clear from the teacher interview responses and the researcher’s journal the equitable grading practices created a less stressful system of reporting student academic progress.

Reflection on Study

The implementation of equitable grading practices at the research site in a sixth-grade science classroom took place during the 2021-2022 school year. Prior to the implementation year, the researcher and participating teachers received professional development from the researched school district and gained insight into the benefits, challenges, and recommended practices to create equitable grading practices in the classroom. The researcher and participants were excited and eager to begin implementation of equitable grading practices to replace the traditional grading practices the researchers were using in the classroom. The researcher and teacher participants found the traditional grading practices which were used prior to the 2021-2022 school year overwhelming and misleading. The traditional grading system included too many variables to accurately and clearly communicate student performance.

The teacher participants and researcher began implementation in the 2021-2022 school year with support from the researched school district. The change in grading procedures required explanation and training of the students and the teachers to understand the new procedures which they had never experienced before. The researcher

and teacher participants also communicated with the families to explain the equitable grading procedures. The implementation addressed the inequities the teachers, researcher, and students dealt with due to traditional grading practices. The teachers and researcher sought feedback from the students on the experience and perception of the new grading system at the end of the school year in a Teacher Feedback Instrument used for instructional purposes. The researcher used the feedback in the research study as secondary data. The teacher and researcher used the feedback from students to help make adjustments and improvements for the following school year to strive for continued improvement. Due to the overwhelming positive experience from the students, teachers, and researcher the equitable grading procedures remained in the school years which followed.

The research study was a beneficial learning experience for the researcher. The research study allowed the researcher to look deeper at grading practices utilized in the classroom to best serve students. The implementation was easy with the support of administration, the district, families, and students. The experience improved and altered the grading practices of the researcher, teacher, and students.

Recommendations for Future Research

The researcher had recommendations for researchers interested in replicating parts or all the study. The study was limited to one grade level at one researched middle school. While the results showed an observable positive outcome in the perceptions of students, teachers, and the researcher, the researcher cannot make any generalizations based on the results. In a replication of the study, the researcher recommended

broadening the population of students to include multiple grade levels and multiple schools to increase and diversify student and teacher participants.

The researcher compared quarterly pre-equitable academic scores of a like group of students in the 2020-2021 school year versus the post-equitable academic scores of students in the 2021-2022 school year and conducted a *z*-test to identify differences, if any, in the quarterly academic grades of the sample of student participants. Analysis of the *z*-test was used to determine a possible difference in final grades of students among genders assessed in a traditional grading system versus students assessed in an equitable grading system and showed no significant difference in quarterly academic grades. There was no significant change from pre-equitable grading academic scores compared to post-equitable grading scores when the researcher compared the entire sample of students, genders, and races. The results showed the researcher the equitable grading practices did not inflate or deflate the student sample of academic scores. Although the results did not surprise the researcher because the purpose of equitable grading practices was to remove the bias and inequity between how students are assessed, a further examination of the timeframe over which the equitable grading practices were implemented should be conducted. Since the practices were new future results could be positive. Changes in teaching methods, curriculum, and student attitudes may all influence the outcomes of equitable grading practices and the changes may unfold gradually over time.

Conclusion

Equitable grading practices were crucial for ensuring fair opportunities and outcomes for all students, regardless of background or circumstances. The research study highlighted disparities in traditional grading practices which disproportionately affected

certain groups of students. The research revealed the presence of biases in traditional grading methods which unfairly gave advantages or disadvantages to certain students. Addressing the biases was essential to promote equity in education. The research study explored the implementation of equitable grading practices which prioritized fairness and equity and offered more accurate and unbiased evaluations of student learning. Providing teachers with tools and strategies to implement equitable grading practices led to more inclusive classrooms and better outcomes for all students and teachers.

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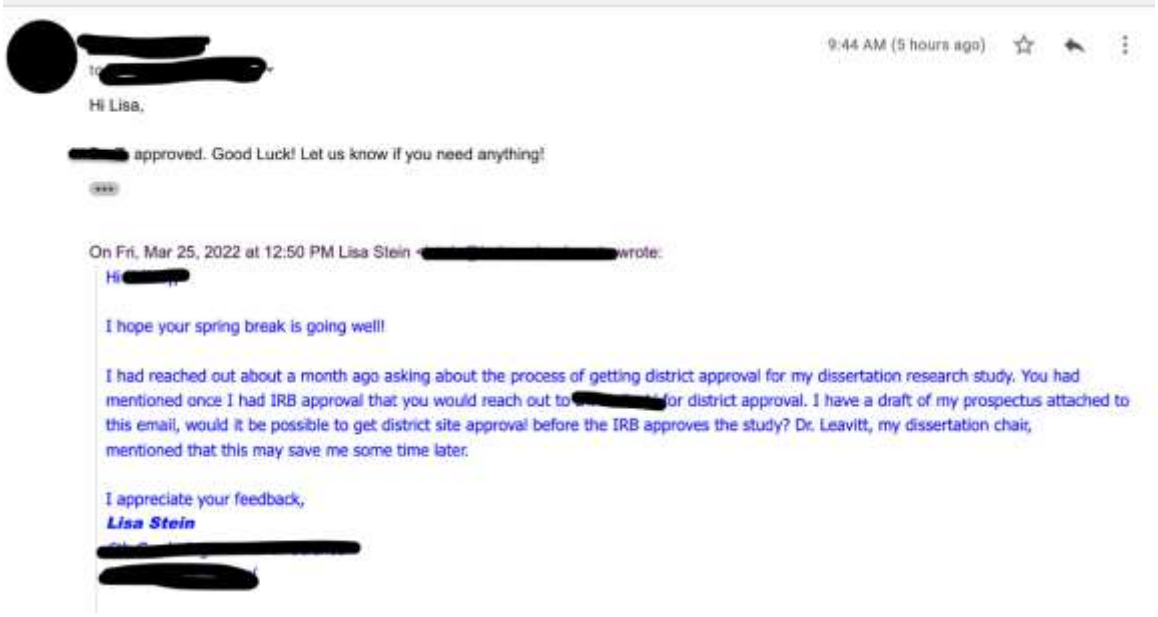
Appendix A: Site Permission



[redacted] 9:44 AM (5 hours ago)

Hi Lisa,

[redacted] approved. Good Luck! Let us know if you need anything!

On Fri, Mar 25, 2022 at 12:50 PM Lisa Stein [redacted] wrote:

Hi [redacted]

I hope your spring break is going well!

I had reached out about a month ago asking about the process of getting district approval for my dissertation research study. You had mentioned once I had IRB approval that you would reach out to [redacted] for district approval. I have a draft of my prospectus attached to this email, would it be possible to get district site approval before the IRB approves the study? Dr. Leavitt, my dissertation chair, mentioned that this may save me some time later.

I appreciate your feedback,

Lisa Stein

[redacted]

Appendix B: Student Survey Questions

1. I understand what is for a grade in science class.

Strongly Agree, Agree, Neutral, Disagree, Strongly Disagree

2. My grade in science class accurately reflects what I know.

Strongly Agree, Agree, Neutral, Disagree, Strongly Disagree

3. My science grade keeps me informed about my understanding of the material.

Strongly Agree, Agree, Neutral, Disagree, Strongly Disagree

4. The learning material in class should be graded.

Strongly Agree, Agree, Neutral, Disagree, Strongly Disagree

5. My science grade is higher than my understanding of the material.

   (Example: I have a grade of A, but I really do not understand the course material)

Strongly Agree, Agree, Neutral, Disagree, Strongly Disagree

6. My science grade is lower than my understanding of the material.

   (Example: I have a grade of D, but understand everything or most of the course material)

Strongly Agree, Agree, Neutral, Disagree, Strongly Disagree

7. Grades should be based on my understanding and mastery of the material taught in class.

Strongly Agree, Agree, Neutral, Disagree, Strongly Disagree

8. Grades should be based on the amount of effort that I put into class.

Strongly Agree, Agree, Neutral, Disagree, Strongly Disagree

9. Grades should be penalized if the work is turned in late.

Strongly Agree, Agree, Neutral, Disagree, Strongly Disagree

10. I put less effort into assignments that were used as learning material and were not graded.

Strongly Agree, Agree, Neutral, Disagree, Strongly Disagree

11. I think it is fair that the lowest grade in science class is a 50%.

Strongly Agree, Agree, Neutral, Disagree, Strongly Disagree

12. How do science grading practices this year compare to previous years?
13. What information does a grade tell you?
14. What do you think your science grade reflects?
15. Describe the reason(s) that you think your grade is accurate or inaccurate of your learning?
16. What do you think your science grade should include?
17. Describe your learning experience this year specifically related to items that were previously graded now used as learning material and not graded?
18. What should happen when a student submits a late assignment?
19. Describe how you feel about the 50% being the lowest grade in science.

Appendix C: Permission to use Survey

Kenny Vexler Sun, Feb 27, 10:36 AM

to me

Hi Lisa,
Thank you for reaching out. I apologize for the late response, my district is on a week vacation so I have not been checking my email.

Of course, you can use whatever you would like from my thesis. I am happy to help. If you need anything else, please don't hesitate to ask.

Best,
Kenny Vexler

On Tue, Feb 22, 2022, 1:14 PM Lisa Stein [redacted] wrote:

Good Afternoon Mr. Vexler,

My name is Lisa Stein, I am a 6th grade science teacher a[redacted]nd am currently working towards a research study involving student perceptions on equitable grading practices through Lindenwood University. Through my research, I came across your thesis on student perceptions and implementation of standards-based grading and the data collection survey that you used is very similar to what I was envisioning using to gain my data. I would like to use your survey with some modifications to better fit my needs. Could I have your permission to modify and use your survey in my data collection?

I appreciate your time and consideration,
Lisa Stein
[redacted]

Appendix D: Teacher Interview Questions

1. Describe the process of grading during the current year. How is this different than previous grading practices?
2. Describe your experience with implementing equitable grading practices.
3. What do you perceive grades reflect?
4. Describe what happens when a student submits late work related to your grading practices.
5. Describe your experience with student completion of independent work on learning material.

Appendix E: Participant Consent Form

LINDENWOOD

Research Study Consent Form

A mixed-methods study on the implementation and perceptions of grading for equity practices in a 6th grade science Midwest middle school.

Before reading this consent form, please know:

- Your decision to participate is your choice
- You will have time to think about the study
- You will be able to withdraw from this study at any time
- You are free to ask questions about the study at any time

After reading this consent form, we hope that you will know:

- Why we are conducting this study
- What you will be required to do
- What are the possible risks and benefits of the study
- What alternatives are available, if the study involves treatment or therapy
- What to do if you have questions or concerns during the study

Basic information about this study:

- We are interested in learning about the implementation of equitable grading practices in a sixth-grade science Midwest middle school.
- You will be asked to participate in an interview on your perceptions and experience with implementation of equitable grading practices in the science classroom.
- There are no risks to participants of this study.

LINDENWOOD

Research Study Consent Form

A mixed-methods study on the implementation and perceptions of grading for equity practices in a 6th grade science Midwest middle school.

You are asked to participate in a research study being conducted by Lisa Stein under the guidance of Dr. Lynda Leavitt at Lindenwood University. Being in a research study is voluntary, and you are free to stop at any time. Before you choose to participate, you are free to discuss this research study with family, friends, or a physician. Do not feel like you must join this study until all of your questions or concerns are answered. If you decide to participate, you will be asked to sign this form.

Why is this research being conducted?

We are doing this study to learn more about the implementation of equitable grading practices in a sixth-grade science Midwest middle school. We will be asking 1 other person to answer these questions.

What am I being asked to do?

If you choose to be part of this study, you will be asked to complete an interview on your experience with the implementation of equitable grading practices in the sixth-grade science classroom.

How long will I be in this study?

This study is going to last about 30 minutes.

What are the risks of this study?

We are collecting data that could identify you, such as your responses to interview questions. Every effort will be made to keep your information secure. Only members of the research team will be able to see any data that may identify you.

What are the benefits of this study?

You will receive no direct benefits for completing this survey. We hope what we learn may benefit other people in the future.

What if I do not choose to participate in this research?

It is always your choice to participate in this study. You may withdraw at any time. You may choose not to answer any questions or perform tasks that make you uncomfortable. If you decide to withdraw, you will not receive any penalty or loss of benefits. If you would like to withdraw from a study, please use the contact information found at the end of this form.

What if new information becomes available about the study?

During the course of this study, we may find information that could be important to you and your decision to participate in this research. We will notify you as soon as possible if such information becomes available.

How will you keep my information private?

We will do everything we can to protect your privacy. We do not intend to include information that could identify you in any publication or presentation. Any information we collect will be stored by the researcher in a secure location. The only people who will be able to see your data are: members of the research team, qualified staff of Lindenwood University, representatives of state or federal agencies.

How can I withdraw from this study?

Notify the research team immediately if you would like to withdraw from this research study.

Who can I contact with questions or concerns?

If you have any questions about your rights as a participant in this research or concerns about the study, or if you feel under any pressure to enroll or to continue to participate in this study, you may contact the Lindenwood University Institutional Review Board Director, Michael Leary, at (636) 949-4730 or mleary@lindenwood.edu. You can contact

the researcher, Lisa Stein directly at [redacted] You may also contact Dr. Lynda Leavitt at Lleavitt@lindenwood.edu.

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 Principle Investigator or Designee	**Date**
_____	
Investigator or Designee Printed Name	

Vitae

Lisa M. Stein

Education

Lindenwood University, St. Charles, Missouri
Doctoral Student
Major: Instructional Leadership

Lindenwood University, St. Charles, Missouri
Master of Arts, December 2014
Major: School Administration

Missouri State University, Springfield, Missouri
Bachelor of Science, December 2010
Major: Middle School Education

Certifications

Initial Administrator Certificate
Missouri Professional Certificate Science 5-9
Missouri Professional Certificate Mathematics 5-9

Experience

Ladue School District, Ladue, Missouri
6th Grade Science Teacher, August 2015 – Present

- Site Director Summer School Program: 2020, 2024
- Site Director for Camp Invention: 2021
- Leadership in 6th grade camp
- Sponsored Science Olympiad Team, Science Bowl Team, Homework Club
- Member of district STEM cohort

Macon County R-1, Macon, Missouri
6th-8th Grade Math Teacher, August 2014 – July 2015

- Certification in Kagan Cooperative Learning Structures Program

St. Patrick School, Wentzville, Missouri
Administration Internship, Summer 2014
7th and 8th Grade Math and Science Teacher, August 2011 – July 2014

- Sponsored Math Club and coordinated team participation in competitions