



DORDT COLLEGE

Digital Collections @ Dordt

---

Master of Education Program Theses

---

4-2016

# Motivation, Mindset, and Grading Systems

Russell J. Vander Molen

Follow this and additional works at: [http://digitalcollections.dordt.edu/med\\_theses](http://digitalcollections.dordt.edu/med_theses)

 Part of the [Curriculum and Instruction Commons](#)

---

## Recommended Citation

Vander Molen, Russell J., "Motivation, Mindset, and Grading Systems" (2016). *Master of Education Program Theses*. Paper 101.

This Thesis is brought to you for free and open access by Digital Collections @ Dordt. It has been accepted for inclusion in Master of Education Program Theses by an authorized administrator of Digital Collections @ Dordt. For more information, please contact [ingrid.mulder@dordt.edu](mailto:ingrid.mulder@dordt.edu).

---

# Motivation, Mindset, and Grading Systems

**Abstract**

This action research study examines whether students in a standards-based grading environment are more intrinsically motivated than students in traditional grading environment. Additionally, it examines whether students in a standards-based grading environment exhibit more of a fixed or growth mindset compared to students in a traditional grading environment. The participants were 72 sixth grade students in a standards-based grading classroom environment, and 32 students in a traditional grading-based classroom environment. A survey with statements reflecting students' intrinsic motivation, extrinsic motivation, fixed mindset, and growth mindset was administered to both groups of students. The survey results suggest that the grading environment, standards-based or traditional, does not account for students' levels of intrinsic and extrinsic motivation, nor does it predict whether a student has a fixed or growth mindset.

**Document Type**

Thesis

**Degree Name**

Master of Education (MEd)

**Department**

Graduate Education

**First Advisor**

Pat Kornelis

**Keywords**

Master of Education, thesis, sixth graders, evaluation, motivation, attitude, academic achievement

**Subject Categories**

Curriculum and Instruction | Education

**Comments**

Action Research Report Submitted in Partial Fulfillment Of the Requirements for the Degree of Master of Education

Motivation, Mindset, and Grading Systems

by

Russell J. Vander Molen

B.A. Dordt College, 2000

Action Research Report  
Submitted in Partial Fulfillment  
Of the Requirements for the  
Degree of Master of Education

Department of Education  
Dordt College  
Sioux Center, Iowa  
April 2016

Motivation, Mindset, and Grading Systems

by

Russell J. Vander Molen

Approved:

Dr. Pat Kornelis

Faculty Advisor

04/21/2016

Date

Approved:

Dr. Steve Holtrop

Director of Graduate Education

04/21/2016

Date

**Table of Contents**

Title Page .....	i
Approval .....	ii
Table of Contents .....	iii
List of Tables and Graphs .....	iv
Abstract .....	v
Introduction.....	1
Review of Literature .....	5
Methods.....	13
Results.....	14
Discussion .....	24
References.....	32
Appendices	
Appendix A: Student Survey Statements on Extrinsic Motivation .....	36
Appendix B: Student Survey Statements on Intrinsic Motivation.....	37
Appendix C: Student Survey Statements on Fixed Mindset.....	38
Appendix D: Student Survey Statements on Growth Mindset .....	39

### List of Tables

Table	Page
1. Results of the Survey Statements Pertaining to External Motivation.” .....	16
2. Results of “I Do My Assignments Because I Want the Teacher to Say Nice Things About Me.” .....	17
3. Results of “I Like to Learn Because I Want to Do Better Than Other Students in My Class.” .....	17
4. Results of “I Redo Some Homework Because I Want to Get a Better Grade.” .....	18
5. Results for “The Reason I Do Homework is so My Teacher does not Think I Know Less than Others.” .....	18
6. Results of the Survey Statements Pertaining to Intrinsic Motivation .....	20
7. Results of the Survey Statements Pertaining to a Fixed Mindset .....	21
8. Results for “I Like to Get a Good Grade Because it Shows I Am Smart.” .....	22
9. Results for “If I Do Well on an Assignment or Test, I Think it’s Because of Good Luck.” .....	22
10. Results of the Survey Statements Pertaining to a Growth Mindset .....	24

**Abstract**

This action research study examines whether students in a standards-based grading environment are more intrinsically motivated than students in traditional grading environment. Additionally, it examines whether students in a standards-based grading environment exhibit more of a fixed or growth mindset compared to students in a traditional grading environment. The participants were 72 sixth grade students in a standards-based grading classroom environment, and 32 students in a traditional grading-based classroom environment. A survey with statements reflecting students' intrinsic motivation, extrinsic motivation, fixed mindset, and growth mindset was administered to both groups of students. The survey results suggest that the grading environment, standards-based or traditional, does not account for students' levels of intrinsic and extrinsic motivation, nor does it predict whether a student has a fixed or growth mindset.

The ever-present challenge of the middle school teacher is motivating students to learn. Motivation is defined by Eggen and Kauchak (1992) as “a force that energizes and directs behavior toward a goal” (p. 145). Cherry (2015) wrote that there are three major components to motivation: activation, which is the decision to start a behavior, persistence, which is continuing effort even when faced with obstacles, and intensity, which is the vigor at which the goal is pursued (para. 2). In the classroom, the goal of every teacher is student learning and the desired behavior is that students want to learn. Ideally, the students’ joy would be to delve into the class materials, to read and to explore the content to understand it to the best of their abilities, and to be engaged in true understanding. A 2011 Gallup student poll found that 63% of students in America were engaged—highly involved and enthusiastic about school. However, 23% of students were disengaged—not working up to their potential, and 14% were actively disengaged—causing problems and undermining the work of teachers and other students (Lopez, 2011). This is 37% of students who need more motivation to learn.

Motivating students tends to come through two pathways: intrinsic and extrinsic motivation. Intrinsic motivation comes from within individuals and fulfills curiosity, the need to know, the desire to do something successfully, and feelings of growth. Intrinsic motivation is not contingent on any external rewards (Eggen & Kauchak, 1992; Kong, 2009). Extrinsic motivation is driven by rewards, praise, or incentives that are not connected to the task at hand (Kong, 2009). Extrinsic rewards are not inspired by the activity itself, but by something unrelated to the activity.

Dweck (2010b) expanded intrinsic motivation’s characteristic of the need for the feeling of growth to what she called a “growth mindset” (para. 3). Dweck (2010b) explained that a growth mindset is the belief that although people do start with a given amount of natural ability,



all abilities can grow and develop through hard work and effort. On the contrary, a student with a fixed mindset believes that intelligence and ability are basic qualities that are fixed within a person and cannot change, and that external rewards, such as grades, must be used to prove this intelligence or ability (para. 3). Students with a growth mindset are intrinsically motivated to learn for their own enjoyment, growth, and pleasure, but students with a fixed mindset rely on extrinsic rewards such as grades, praise, or competition to prove their worth.

All students in all types of classrooms are working for a goal. For a student in a classroom environment that emphasizes the letter grades or scores, the goal might be to receive a good grade, and the work that is done in the classroom may simply be a means to that good grade (Docan, 2006). Students with a fixed mindset are motivated to work for a good letter grade or score as proof of their intelligence and worth, while a low grade would be perceived by these students as evidence that their work and that they themselves are failures, and that there is nothing that could be done to change that state (Dweck, 2010b). Letter grades are extrinsic rewards for these students because the motive for student learning is not inherent in the understanding, but in the grade received (Stronks & Blomberg, 1994).

A classroom that uses traditional grading practices, then, may (intentionally or not) emphasize the external reward of the grade since the focus of the work for students with a fixed mindset is to receive the letter grade. This focus on the grade can validate students who have a fixed mindset since the grade is used to either prove they have superior intelligence if they received a high grade, or prove they have inferior intelligence if they receive a low grade.

Other classroom environments may emphasize meeting and mastering standards and learning goals. This classroom environment focus conveys the importance of learning and effort, the value of each student, and that hard work and effort brings success (Docan, 2006). Students

in this classroom environment may develop a growth mindset and see challenges and failures as opportunities to improve effort, and may believe that abilities can improve with hard work (Dweck, 2010b; Kong, 2009).

In this classroom environment, standards-based grading is a good fit. Standards-based grading clearly lays out which standards have been met successfully and which ones need work, so students get detailed information as to what they have mastered and what yet needs work. When opportunities are given for students to relearn and redo work to show they have learned more, these students may be more intrinsically motivated to increase effort to do so (Powell, 2011). While these students may still be working to earn a grade (a form of extrinsic motivation), this motivation can increase intrinsic motivation if the rewards are based on performance and not just participation (Kong, 2009). When students have intrinsic motivation, they will have inherent tendencies to seek out challenges and to learn, and they will be more inclined to mastery, spontaneous interest, and exploration (Ryan & Deci, 2000).

### **Purpose of Study**

Since extrinsic and intrinsic motivation along with a fixed or a growth mindset affect how students think and learn in the classroom, it is important to consider how the environment of the classroom affects these frames of mind. The purpose of this study is to determine whether classroom environments where standards-based grading is utilized are more intrinsically motivating to middle school students than ones utilizing traditional grading practices, and whether students in classroom environments where standards-based grading is utilized tend to have more of a fixed or growth mindset compared with students in an environment that utilizes traditional grading practices.

### **Research Questions**

To address the focus of this research study, the following research questions are explored:

1. Are 6<sup>th</sup> grade students who experience standards-based grading more extrinsically motivated than 6<sup>th</sup> grade students who experience traditional grading?
2. Are 6<sup>th</sup> grade students who experience standards-based grading more intrinsically motivated than 6<sup>th</sup> grade students who experience traditional grading?
3. Do 6<sup>th</sup> grade students who experience standards-based grading demonstrate more of a fixed mindset than 6<sup>th</sup> grade students who experience traditional grading?
4. Do 6<sup>th</sup> grade students who experience standards-based grading demonstrate more of a growth mindset than 6<sup>th</sup> grade students who experience traditional grading?

### **Definition of Terms**

For the purpose of this research, the following definitions will be used. Unless otherwise noted, the definitions are the researcher's.

*Motivation* – “a force that energizes and directs toward a goal” (Kong, 2009, p. 145).

*Extrinsic motivation* – an outward force, motivated not by the activity itself, but by outside rewards such as others' expectations, praise, or recognition (Kong, 2009).

*Intrinsic motivation* – an internal desire to accomplish a task successfully to fulfill a learner's curiosity, need to know, and feelings of competency and growth where no external reward is necessary (Kong, 2009).

*Growth mindset* – a frame of mind based on the belief that a person's basic level of intelligence and talent can be cultivated and grown through effort, experience, and application (Dweck, 2006).

*Fixed mindset* – a frame of mind based on the belief that a person’s basic level of intelligence and talent are fixed and cannot be increased (Dweck, 2006).

*Standards-based grading* – a grading system where students are measured by their mastery of specific standards or skills (Phillips, 2011) and proficiency on well-defined objectives (Scriffiny, 2008).

*Traditional grading* – a grading system in which letter grades or percentages are assigned based on combining evaluations of related or unrelated assessments of skills (Phillips, 2011).

*Performance goals* – way of thinking where the focus on one’s ability and sense of self-worth is evidenced by doing better than others and by surpassing standards or achieving success with little effort, especially when public recognition that one has done better than others is given (Ames, 1992).

*Evaluation* – the formative or summative assessments that are performed on student work to verify the level of understanding of the student.

*Grades* – the communication to the students and parents of the level of understanding a student has.

### **Literature Review**

“Motivation produces. It is therefore of preeminent concern to those in roles such as manager, teacher, religious leader, coach, health care provider, and parent that involve mobilizing others to act” (Ryan & Deci, 2000, p. 69). Since motivation has such an impact, it is important for classroom teachers to help motivate students to be successful in school and to set a pattern of motivation for many areas of their lives that will impact their whole lifespan. The following literature review surveys intrinsic and extrinsic motivation and how they affect

students. Additionally, this review examines the effect that a fixed or growth mindset has on students.

Motivation can take different forms, intrinsic and extrinsic, and both have value in impacting student success. Two characteristics of intrinsic motivation are curiosity and the internal need to know (Kong, 2009). Ryan and Deci (2000) stated that intrinsic motivation is the internal tendency to seek out new ideas and challenges and to extend one's own capacity to learn. Intrinsic motivation, then, is a driving force that affects student learning. Ryan and Deci (2000) gave the highest regard to intrinsic motivation noting that "perhaps no single phenomenon reflects the positive potential of human nature as much as intrinsic motivation" (p. 70). Intrinsic motivation unlocks the potential of students to grow learn in remarkable ways.

Extrinsic motivation does have its proponents. Although this form of motivation is based on an outward reward that is not related to the activity or learning itself (Kong, 2009), it still may be a valuable means of motivation. Ryan and Deci (2000) reported that when extrinsic motivation is accompanied by a higher degree of student autonomy, the students have better engagement, better performance, and a higher quality of learning.

Students, then, should have some sense of self-efficacy. Ames (1992) acknowledged that achievement may be advanced when extrinsic rewards are based on student effort, progress on short-term goals, and meaningful aspects of performance. The self-sufficiency comes from what the student has done in important aspects of their work, not just a nebulous "nice try." Students who receive extrinsic rewards for putting forth focused effort that shows real progress related to the learning task at hand are being acknowledged for the actual learning that taken place. The students' focus is on the learning, even if their goal is the external reward. Kong (2009) stated sometimes extrinsic rewards can increase intrinsic motivation if the rewards are based on the

quality of the performance and not just on participation. Accordingly, extrinsic motivation can be one valuable type of motivation if it is focused on the students' work at the learning task at hand.

The roles of extrinsic and intrinsic motivation affect how students view themselves as learners in what Dweck (2010b) calls either a fixed or a growth mindset. To a student with a fixed mindset, success is believed to be based on talent alone no matter how much effort is put into it. Students with a fixed mindset have something to prove about themselves, and they believe successes or failures reflect that they themselves are successes or failures. When failures happen to a person with a fixed mindset, there is no more to be done to help improve. People with fixed mindsets often blame others for their own failures, making it impossible for them to change their situation (Dweck, 2010b).

On the other hand, Dweck (2010b) explained that a growth mindset creates a love for learning, motivation, and productivity. Students with a growth mindset will meet failure as an opportunity to find out what went wrong and they will seek to improve upon it. These students will ask themselves what they can do differently next time because they do not blame other people or outside causes for the setback. To a person with a growth mindset, true potential is unknown and anything could happen when passion and effort are involved.

All students, then, enter the classroom with various degrees of intrinsic and extrinsic motivation and with a fixed or growth mindset. In schools, learning is what teachers assess and evaluate, and many times the results of these assessments and evaluations are communicated through grades. Grades can be communicated traditionally by letters or a percentage that is often calculated mathematically. Final grades are often tabulated by combining tests grades, assignment grades, and other categories such as effort, participation, or even having all the needed supplies in class. This type of grading focuses on the external reward of the grade, and

according to Dweck (2010b), students with fixed mindsets who receive high grades read the grades as proof of their superior intelligence, while fixed mindset students who received low grades read the low grades as proof that they lack competence and potential and that they are failures.

When students are focused on performance goals, the focus is on their ability, and they define their self-worth by doing better than others (Ames, 1992). Letter grades can then become a way for students to compare their worth against others. Students with a fixed mindset also use grades to prove to others their worth (Dweck, 2010b), and social comparisons can be detrimental to student motivation (Ames, 1984, as cited by Ames, 1992). Mitchell (1996) noted that there is no relationship between perceived competitiveness and intrinsic motivation.

Powell (2011) wrote that students who receive low grades without details and descriptions of the shortcomings have never been shown to increase motivation, and threats of lower grades may actually have a negative affect on their motivation. Classroom environments that use traditional grading practices may emphasize competition, comparison, and self-focus (Eccles, Wigfield, Midgley, Reuman, Mac Iver, & Feldlaufer, 1993), thus perpetuating the fixed mindset and extrinsic motivation orientation.

An alternative way grades can be communicated is through standards-based grading. Standards-based grading is a method of grading where students are assessed based on their content mastery (Deddeh, Main, & Fulkerson, 2010; Phillips, 2011). Homework is seen as practice for which students are not penalized, but, rather, as a part of the learning on the way to mastering the standard (Deddeh et al., 2010). The focus of summative assessment grades is not on a percentage, but on the level of mastery reached by the student. A grade on a standards-based assessment may be communicated by a rating of advanced, proficient, partially proficient, or not

yet proficient (Scriffiny, 2008). Deddeh et al. (2010) offered a 5-point scale where 5 = you got it, 4 = getting it, 3 = not yet, 2 and 1 = little or no mastery, and 0 = not enough information. Rubrics in standards-based grading are often used not only to identify a student's level of understanding, but also to give a brief description of the work. Descriptive feedback, even if it contains negative comments, can help students feel more competent, and when students feels more competent and opportunity is given to show they have improved their understanding, intrinsic motivation can increase (Powell, 2011; Ryan & Deci, 2000). This type of grading is compatible with a growth mindset since students understanding and mastering the standards is the goal, not the grade itself. This type of grading system offers students descriptive feedback of where they are in the mastery process, and if needed, students can work to improve.

But when students' motivation to learn is for the extrinsic reward of the grade itself, it is not for the intrinsic reward of understanding (Stronks & Blomberg, 1994). Students with fixed mindsets in this context interpret a low grade as a judgment on them as a failure, that they lack competence, and that they cannot improve (Dweck, 2010b). A low grade would be perceived as indicating that the task at hand is too challenging and unattainable and not as an opportunity to focus their attention on what they need yet to improve and to grow in understanding.

Moeller and Reschke (1993) concluded that grades themselves are not a motivator for student learning and performance. In their study, 84 participants were enrolled in four German classes in a junior high school in Omaha, Nebraska. Two of these classes were first-year German students and two classes were second-year German students. One class of the first-year students and one class of the second-year students were assigned randomly to be in the experimental group where their directed, oral classroom activities were graded. The other class of each was assigned to be the control group where the directed, oral classroom activities were not graded.



The same teacher taught all four classes. Real-world, hands-on activities such as role playing were used to give students practice using the German language. During these exercises, the students in the experimental groups were graded on their performance while the students in the control group were not. At the beginning of the year, an entrance interview was conducted by an outside interviewer so teacher bias would not be a factor. After six months, the same interviewer returned to perform an exit interview using the same types of tests and ratings, and the results of each were compared.

The results of this study indicate that the external reward of grades did not motivate the students to learn. However, the researchers suggested that being able to carry out the task at hand was reward enough (Moeller & Reschke, 1993), so internal motivation for students to perform to the best of their ability in activities that were hands-on and relevant was more motivating than the external reward of the grade itself.

Powell (2011) stated when teachers provide descriptive narratives, even with negative comments, student motivation increases because the student sees it as an opportunity to improve. When grades are accompanied with a chance to improve, students recognize that effort is good and can lead to effective learning (Ames, 1992). Students who take this view are displaying a growth mindset (Dweck, 2010b). It is this formative aspect of learning that puts responsibility on students for their own learning (Popham, 2008), while the teacher's role is to provide feedback so students know where they are in the mastery process.

Rakoczy, Klieme, Burgermeister, and Harks (2008) did a study to test what effect the type of feedback would have on students' intrinsic motivation. Two types of teacher feedback were explored. The first was evaluative feedback where the teacher responded with simple statements such as "yes," "correct," or "that's right" for correct answers given, and "no,"

“incorrect,” or “that’s not right” for incorrect answers given. The second type of feedback was informational, meaning that if a student gave a correct answer, the teacher would provide further cues on how to proceed farther, and if incorrect answers were given by students, teachers would describe where the error was and would provide assistance or questions to give students opportunities to reflect and improve their understanding and work.

To test this question, 240 ninth grade math students were videotaped during three of their math classes. The researchers watched the video to determine how much of the teacher feedback was evaluative and how much was informational. The students were also given a questionnaire where they were asked to describe their motivation during those videotaped lessons. The results of this study indicate that positive evaluative feedback was associated with increased intrinsic motivation, while negative evaluative feedback did not play a major role in the motivation. At the same time, students’ levels of intrinsic motivation rose with informational feedback (Rakoczy et al., 2008). Intrinsic motivation was increased when students received descriptive feedback from teachers and had opportunity to improve or move onto the next level.

Standards-based grading is a system of evaluating students that gives thoughtful descriptive feedback of the positive and negative aspects of student work where students are encouraged to focus their attention on areas of concern that they can improve and increase self-competency. This type of feedback has been shown to increase intrinsic motivation (Eccles et al., 1993; Mitchell, 1996; Rakoczy et al., 2008; Wentzel, 1997). In standards-based grading, teachers use rubrics to mark the proficiency levels of each student in different standards or categories (Stiggins & Chappuis, 2012). The rubric categories give descriptive details to the level of understanding the student has attained, and also shows where the student can improve. Dweck (2010b) suggested that students’ deficiencies should not be hidden, but pointed out so they can

be overcome. Dweck (2010a) also noted that when students say they are not good at something or cannot understand it, teachers should add the word “yet” because this helps convey the idea that ability and motivation are fluid.

But does a standards-based environment where feedback and opportunities to improve are given affect intrinsic motivation? Shin and Ryan (2005) conducted a study of 361 college students who were given a survey to find if they had a mastery goal orientation or a performance goal orientation. In this study, mastery goals emphasize gaining understanding and mastery of the learning objectives (intrinsic motivation) with a focus of self-improvement—a characteristic of a growth mindset. Performance goals emphasize gaining favorable judgements or avoiding negative judgements on one’s ability (external motivation) with a focus on comparing one’s work to others—a characteristic of a fixed mindset. The survey also gathered information from the students concerning their grades and their levels of motivation.

Shin and Ryan (2005) found that when students with a focus on performance goals received high grades, changes in motivation measures were unaffected, but when low grades were received, motivation measures were decreased. The motivation of the students with a focus on mastery goals was increased during the critical phase of learning and was not decreased even when low grades were received. The study found that when the focus of students is on comparing themselves to others, their motivation is vulnerable to negative changes when feedback in the form of grades are given; however, focus on mastery and self-improvement is beneficial regardless of the feedback in the form of a grade (Shim & Ryan, 2005, p. 347).

Taken together the research literature indicates that intrinsic motivation and growth mindset seems to encourage more student learning (Kong, 2009; Ryan & Deci, 2000; Shim & Ryan, 2005). But these characteristics must be nurtured in the classroom and can be disrupted if

not supported (Ryan & Deci, 2000). Standards-based grading was shown not only to increase student achievement (Thompson, 2009), but also provides a safe way for students to find their deficiencies, so they can have an opportunity to improve.

Based on the research literature, standards-based grading seems to increase student motivation, and the purpose of this study is to investigate whether a classroom environment that uses standards-based grading increases student motivation more than a classroom environment that uses traditional grading practices.

## **Methods**

### **Participants**

The research participants were a 6<sup>th</sup> grade currently using standards-based grading, and a 6<sup>th</sup> grade currently using traditional grading. These participants were chosen because of availability of access to these classrooms already using their respective methods. Seventy-two 6<sup>th</sup> graders, 33 females and 39 males, made up the class where standards-based grading was utilized. The standards-based class was located in a northwest Iowa public middle school. Thirty-two 6<sup>th</sup> graders, 20 females and 12 males, made up the class where traditional grading was utilized. The traditional grading class was located in a northwest Indiana private, Christian school.

### **Materials**

A survey was created to measure the participants' motivation using a 5-point Likert scale (See Appendices A-D). Twenty-five statements were gathered and developed to measure motivation: 14 statements for extrinsic motivation and 11 statements for intrinsic motivation. Statements were generated from the work of Midgley, Kapan, Middleton, Maehr (1998), Mitchell (1996), a Self-Determination Questionnaire (2016), and by the researcher himself. Thirty-seven statements were gathered and developed to measure mindset: 21 for fixed mindset

and 16 for growth mindset. Statements were generated from the work of Dweck (2010b), Greeneville, Tennessee's High School Student Mindset Survey (Student Mindset Survey, n.d.), and the researcher himself.

The survey, made up of 62 statements, was taken via Survey Monkey and was administered to the students in the two classrooms during their regular class time. The survey statements required students to identify their perceptions of different aspects of their motivation. These survey statements were designed to gain insight from students about their levels of intrinsic and extrinsic motivation, if they had a growth or fixed mindset, and whether their respective classroom environments, standards-based or traditional, increased motivation.

The survey was piloted by administering a paper copy to 26 seventh grade and 21 eighth grade students who did not participate in the study. After the pilot study, changes were made in the wording of 11 statements to clarify the meaning.

## **Results**

### **Data Analysis**

The results of the surveys from the standards-based classroom were compared with the results of the traditional classroom to determine the effects of standards-based grading on student intrinsic and extrinsic motivation and to determine if the students had a fixed or a growth mindset. The independent variable was the different classroom environments. One group of students belonged to a classroom that used standards-based grading, while the other group was in a classroom that used traditional grading practices.

When the results of the survey statements were gathered, a t-test was run to determine if there was a statistically significant difference in the results between the traditional and standards-

based classrooms. For this study, a p-value of less than 0.05 was considered to be statistically significant. The following reviews the results of the survey by research question.

### **Research Question One**

The first research question was as follows: Are 6<sup>th</sup> grade students who experience standards-based grading more extrinsically motivated than 6<sup>th</sup> grade students who experience traditional grading? Positive responses to these statements indicate that the students have a higher level of extrinsic motivation, while negative responses indicate students have a lower level of extrinsic motivation. Fourteen survey statements examined students' levels of extrinsic motivation. In the standards-based classroom, 15% of the students strongly disagreed with the statements, 31% disagreed, 25% were neutral, 21% agreed, and 8% strongly agreed. The mean of the students from the standards-based classroom was 2.77 for the level of extrinsic motivation. In the traditional classroom, 19% of the students strongly disagreed, 34% disagreed, 22% were neutral, 18% agreed, and 7% strongly agreed. The mean of the students from the traditional classroom was 2.59. The results of the survey are illustrated in Table 1.

Table 1

*Results of the Survey Statements Pertaining to External Motivation.*

Survey statement	Strongly disagree		Disagree		Neutral		Agree		Strongly agree	
	SBC	TC	SBC	TC	SBC	TC	SBC	TC	SBC	TC
11	20	8	30	12	11	8	6	3	3	0
14	18	13	30	13	15	2	6	3	1	0
16	10	6	26	16	22	9	6	0	6	0
17	4	1	9	4	17	8	26	14	13	4
19	1	1	1	0	10	8	37	10	21	11
24	11	6	29	15	18	4	9	5	4	1
33	4	2	4	3	27	13	27	12	8	1
35	9	10	29	13	23	6	8	2	2	0
37	2	0	18	0	12	5	30	15	7	11
39	11	5	19	16	23	4	13	5	4	1
42	16	7	27	14	17	8	6	2	5	0
48	16	10	29	10	12	8	11	2	2	1
54	11	8	31	14	18	8	10	1	1	0
55	11	7	26	17	18	5	11	2	5	0
Percent	15%	19%	31%	34%	25%	22%	21%	18%	8%	7%

*Note.* SBC means standards-based classroom and TC means traditional classroom.

Of the 14 survey questions that addressed extrinsic motivation, four were found to be statistically significant. The first statement that had statistical significance was the following: I do my assignments because I want the teacher to say nice things about me. The mean for the standards-based classroom was 2.60, while the mean for the traditional classroom was 2.10. The results of this survey item are illustrated in Table 2.

Table 2

*Results of “I Do My Assignments Because I Want the Teacher to Say Nice Things About Me.”*

Variable	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Standards-based grading ( $n = 70$ )	14%	37%	31%	9%	9%
Traditional grading ( $n = 31$ )	19%	52%	29%	0%	0%

The second statement that had statistical significance was the following: I like to learn because I want to do better than other students in my class. The mean for the standards-based classroom was 2.51, while the mean for the traditional classroom was 2.00. The results of this survey item are illustrated in Table 3.

Table 3

*Results of “I Like to Learn Because I Want to Do Better Than Other Students in My Class.”*

Variable	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Standards-based grading ( $n = 71$ )	13%	41%	32%	11%	3%
Traditional grading ( $n = 31$ )	32%	42%	19%	6%	0%

The third statement that had statistical significance was the following: I redo some homework because I want to get a better grade on it. The mean for the standards-based



classroom was 3.32, while the mean for the traditional classroom was 4.19. The results of this survey item are illustrated in Table 4.

Table 4

*Results of “I Redo Some Homework Because I Want to Get a Better Grade on It.”*

Variable	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Standards-based grading ( $n = 69$ )	3%	26%	17%	43%	10%
Traditional grading ( $n = 31$ )	0%	0%	16%	48%	35%

The fourth statement that had statistical significance was the following: The reason I do homework is so my teacher does not think I know less than others. The mean for the standards-based classroom was 2.62, while the mean for the traditional classroom was 2.06. The results of this survey item are shown in Table 5.

Table 5

*Results of “The Reason I Do Homework Is so My Teacher Does not Think I Know Less Than Others.”*

Variable	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Standards-based grading ( $n = 71$ )	15%	37%	25%	15%	7%
Traditional grading ( $n = 31$ )	23%	55%	16%	6%	0%

**Research Question Two**

The second research question was as follows: Are 6th grade students who experience standards-based grading more intrinsically motivated than 6th grade students who experience traditional grading?

Fourteen survey statements dealt with student's level of intrinsic motivation. Positive responses to these statements indicate that the students have a higher level of intrinsic motivation, while negative responses indicate students have a lower level of intrinsic motivation. None of the statements concerning intrinsic motivation showed any statistically significant differences between the two classroom environments. The mean of the students from the standards-based classroom was 3.32 for the level of intrinsic motivation. The mean of the students from the traditional classroom was 3.39. The results of this survey item are illustrated in Table 6.

Table 6

*Results of the Survey Statements Pertaining to Intrinsic Motivation.*

Survey statement	Strongly disagree		Disagree		Neutral		Agree		Strongly agree	
	SBC	TC	SBC	TC	SBC	TC	SBC	TC	SBC	TC
4	5	1	4	5	29	13	27	7	6	5
7	0	1	8	0	13	6	28	12	22	12
15	14	5	15	6	28	17	13	3	1	0
18	22	7	18	6	19	16	10	2	0	0
22	6	3	19	13	20	8	18	5	8	2
25	0	1	2	1	13	5	39	12	17	12
32	1	0	2	2	20	7	32	11	15	11
36	17	3	25	11	17	12	7	4	2	0
38	3	0	2	4	23	6	31	13	11	8
40	0	0	0	0	8	3	18	11	45	17
41	6	1	9	5	28	12	25	9	3	4
Percent	10%	6%	13%	16%	28%	31%	32%	26%	17%	21%

*Note.* SBC means standards-based classroom and TC means traditional classroom.

### Research Question Three

The third research question was as follows: Do 6<sup>th</sup> grade students who experience standards-based grading demonstrate more of a fixed mindset than 6<sup>th</sup> grade students who experience traditional grading?

Twenty-one survey statements dealt with students' demonstration of a fixed mindset. Positive responses to these statements indicate that the students demonstrates more of a fixed mindset, while negative responses indicate students demonstrates less of a fixed mindset. The mean of the students from the standards-based classroom was 2.39 for the demonstration of a fixed mindset. The mean of the students from the traditional classroom was 2.25. Although the students in the traditional grading environment showed slightly less agreement with the

statements about fixed mindset than students in the standards-based environment, the differences are negligible. The results of the survey are illustrated in Table 7.

Table 7

*Results of the Survey Statements Pertaining to a Fixed Mindset.*

Survey statement	Strongly disagree		Disagree		Neutral		Agree		Strongly agree	
	SBC	TC	SBC	TC	SBC	TC	SBC	TC	SBC	TC
3	20	7	24	16	17	5	7	3	2	0
10	19	8	31	17	7	4	10	2	2	0
12	21	8	20	13	14	6	12	2	4	2
13	27	10	29	12	6	4	7	3	2	2
26	32	10	22	13	7	4	6	2	4	2
27	23	7	26	18	12	5	7	1	3	0
28	27	10	25	16	10	2	6	2	2	1
50	21	7	24	12	12	8	6	3	5	1
51	20	4	28	14	12	6	8	7	3	0
52	18	9	21	10	19	8	10	4	3	0
56	24	6	29	18	8	5	7	2	3	0
44	34	17	28	11	7	3	2	0	0	0
46	16	20	27	9	15	1	11	1	2	0
53	6	3	27	12	23	13	7	3	8	0
21	18	8	20	13	18	6	8	4	6	0
34	2	1	6	6	13	11	39	12	10	1
49	9	3	18	6	21	14	16	7	7	1
60	12	2	13	15	21	9	19	3	5	1
62	9	2	22	7	17	7	18	13	5	1
63	10	4	25	20	23	3	13	4	0	0
64	32	17	25	8	9	4	2	1	3	1
Percent	27%	25%	33%	41%	20%	20%	15%	12%	5%	2%

*Note.* SBC means standards-based classroom and TC means traditional classroom.

Of the 21 survey questions that concerned fixed mindset, two were found to be statistically significant. The first statement that had statistical significance was the following: I

like to get good grades because it shows I am smart. The mean for the standards-based classroom was 3.70, while the mean for the traditional classroom was 3.19. The results of this survey item are illustrated in Table 8.

Table 8

*Results of “I Like to Get Good Grades Because It Shows I Am Smart.”*

Variable	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Standards-based grading ( $n = 70$ )	3%	9%	19%	56%	14%
Traditional grading ( $n = 31$ )	3%	19%	35%	39%	3%

The second statement that had statistical significance was the following: If I do well on an assignment or test, I think it's because of good luck. The mean for the standards-based classroom was 2.38, while the mean for the traditional classroom was 1.45. The results of this survey item are illustrated in Table 9.

Table 9

*Results of “If I Do Well on an Assignment or Test, I Think It's Because of Good Luck.”*

Variable	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Standards-based grading ( $n = 71$ )	23%	38%	21%	15%	3%
Traditional grading ( $n = 31$ )	65%	29%	3%	3%	0%

**Research Question Four**

The fourth research question was as follows: Do 6<sup>th</sup> grade students who experience standards-based grading demonstrate more of a growth mindset than 6<sup>th</sup> grade students who experience traditional grading?

Sixteen survey statements dealt with students' demonstration of a growth mindset. Positive responses to these statements indicate that the students demonstrates more of a growth mindset, while negative responses indicate students demonstrates less of a growth mindset. None of the statements concerning a growth mindset showed any statistically significant differences between the two classroom environments. The mean of the students from the standards-based classroom was 3.75 for the demonstration of a growth mindset. The mean of the students from the traditional classroom was 3.82. The results of the survey are illustrated in Table 10.

Table 10

*Results of the Survey Statements Pertaining to a Growth Mindset.*

Survey statement	Strongly disagree		Disagree		Neutral		Agree		Strongly agree	
	SBC	TC	SBC	TC	SBC	TC	SBC	TC	SBC	TC
8	0	0	2	0	11	5	20	14	37	12
31	1	0	3	3	16	8	24	11	27	9
47	0	0	1	2	15	4	30	16	25	9
5	0	0	0	0	5	3	26	12	39	16
6	0	0	4	1	19	12	33	11	15	7
9	1	0	0	0	5	4	28	13	37	14
57	0	0	4	1	23	9	37	14	6	7
58	0	0	3	2	23	7	35	13	8	9
59	1	0	6	2	23	8	25	13	12	8
61	0	0	0	0	16	6	38	12	16	12
20	7	2	21	5	14	9	19	12	9	3
23	5	0	13	6	20	9	21	11	10	5
29	4	1	10	6	21	7	26	16	7	1
30	2	0	8	6	16	4	32	17	13	4
43	8	2	15	5	16	11	24	11	7	2
45	3	1	5	1	22	7	30	16	11	6
Percent	3%	1%	8%	8%	24%	23%	40%	43%	25%	25%

*Note.* SBC means standards-based classroom and TC means traditional classroom.

## Discussion

### Overview of the Study

The purpose of this study was to determine whether classroom environments where standards-based grading is utilized are more intrinsically motivating to middle school students than ones utilizing traditional grading practices, and whether students in classroom environments where standards-based grading is utilized tend to have more of a fixed or growth mindset

compared with students in an environment that utilizes traditional grading practices. A survey was created to measure the participants' motivation using a 5-point Likert scale and given to 72 sixth grade students currently in classrooms that use standards-based grading, and 32 sixth grade students currently in classrooms that use traditional grading. The survey statements were designed to gain insight from students about their levels of intrinsic and extrinsic motivation, if they had a growth or fixed mindset, and whether their respective classroom environments, standards-based or traditional, increased motivation.

### **Summary of Findings**

The first research question concerning levels of extrinsic motivation reveals some differences between a classroom that utilizes standards-based grading and one that utilizes traditional grading practices, but the differences were not all expected. Of the 14 statements, four showed statistically significant differences. The first of these statements is the following: "I do my assignments because I want the teacher to say nice things about me." Since a classroom using a traditional grading system may have more focus on extrinsic motivation that is driven by rewards and incentives such as grades received (Kong, 2009; Stronks & Blomberg, 1994), the researcher expected the results to indicate that the classroom utilizing traditional grading practices would agree more with this statement than the classroom utilizing standards-based grading. However, none of the students in the traditional grading classroom agreed/strongly agreed with this statement, while 18% of the standards-based classroom students did agree/strongly agree. Twenty percent more of the students in the traditional grading classroom disagreed/strongly disagreed that the reason they do their assignments is so the teacher says nice things about them. This does not mean these students do not want the teacher to say nice things, but it is not a motivation for them to do their assignments.



The second statement concerning extrinsic motivation that showed statistical significance was as follows: I like to learn because I want to do better than other students in my class. This statement focuses on students competing against each other and using grades to compare with each other. Since classrooms that use traditional grading practices may emphasize competition and comparison (Eccles et al., 1993), it would be expected that the students in the traditional grading classroom would reveal more competition, but this was not the case. Eight percent more of the students in the standards-based classroom agreed/strongly agreed with this statement. More revealing is that 20% more students in the traditional grading classroom disagreed/strongly disagreed with this statement. The students in the traditional grading classroom seemed to focus less on competing with each other than in the standards-based classroom.

The third statement concerning extrinsic motivation that showed statistical significance is as follows: I redo homework because I want to get a better grade on it. Even though there is a statistically significant difference between the two classroom environments on this question, the meaning of the difference is questionable. Traditional grading classroom environments emphasize grades, so it would be expected that students in this kind of classroom would redo homework to earn a better grade, and 83% of students in the traditional grading classroom did agree/strongly agree and none disagreed/strongly disagreed with this statement which may appear to verify that they are working for the grade. Student may be actually agreeing or disagreeing not with the “because I want to get a better grade,” but with “I redo some homework.” In that case, the reason for answering would not be why they redo some homework, but whether they do redo homework or not. Since the data is unclear, the results of this statement are unreliable.

The fourth statement concerning extrinsic motivation that showed statistical significance is as follows: The reason I do homework is so my teacher does not think I know less than others. This statement again focuses on competition, but the students' motivation for doing homework is not for learning, but for the teacher to think they are better than the others. Since grades can be a way students compare themselves with others (Eccles et al., 1993), it would be expected that students in the traditional grading classroom would agree more with this statement. Sixteen percent more of the students in the standards-based classroom agreed/strongly agreed with this statement than in the traditional grading classroom. Additionally, 26% more students in the traditional grading-based classroom disagreed/strongly disagreed. According to these results, students in a traditional grading classroom do not do homework to prove to the teacher that they are smarter than other students.

Taking the results of all the extrinsic motivation statements, this researcher concludes that in this study there is not sufficient evidence to show that students in a standards-based classroom are more or less extrinsically motivated than students in a traditional grading classroom.

The survey statements that dealt with intrinsic motivation did not show any statistically significant differences between the two classrooms. While 28% of the responses from the students in the standards-based classroom and 31% of the students in the traditional grading classroom were neutral, 49% and 47% of the students (from the standards-based classroom and traditional based classroom respectively) responded with agree/strongly agree, and only 23% and 22% of the students (from the standards-based classroom and traditional based classroom respectively) responded with disagree/strongly disagree. It seems that students in both

classrooms are more inclined to be intrinsically motivated than not, irrespective of the grading system used in the classroom.

Of the 21 statements on the survey that focused on a fixed mindset, two were found to have a statistically significant difference. The first statement was “I like to get good grades because it shows I am smart.” This statement shows the characteristic of a student with a fixed mindset because students with a fixed mindset want to prove how smart they are as though the good grade reflects that they are a success (Dweck, 2010b). Since a standards-based grading emphasizes the level of mastery, it would be expected that the students in the standards-based classroom would not put so much emphasis on showing how smart they are, yet 70% of the students in the standards-based classroom responded with agree/strongly agree for this statement, while only 42% of the students from the traditional classroom did. An explanation for this discrepancy may be in the understanding of the word “smart.” If the students from the standards-based classroom understood “smart” to reflect the level of mastery of a topic, the results of this question are as expected. However, this result could be viewed differently if the students understood “smart” to refer to the natural level of intelligence a person has, not including effort. Because one cannot be certain of what students understood “smart” to mean, this question may not give much insight.

The second statement concerning a fixed mindset that showed a statistically significant difference was “If I do well on an assignment or test, I think it’s because of good luck.” A person with a fixed mindset believes that outside forces have a lot of influence on their successes or failures (Dweck, 2010b). A majority (61%) of the students in the standards-based classroom responded that they disagreed (23%) or strongly disagreed (38%) that good luck was the reason for success, but an astounding 94% of students in the traditional classroom responded that they

disagreed (29%) or strongly disagreed (65%). While 18% of the students in the standards-based classroom agreed (15%) or strongly agreed (3%), only 3% of students in the traditional classroom agreed and 0% strongly agreed.

A majority of students in both the standards-based classroom and the traditional grading classroom demonstrated that they were inclined to have a growth mindset. For the students in the standards-based classroom, 65% responded with agree/strongly agree, and 68% of the students in the traditional grading classroom did. Few students in either setting disagreed/strongly disagreed with the growth mindset statements (11% for the students in the standards-based and 9% in the traditional grading classrooms).

### **Conclusion**

Based on the results of this study, the classroom environment does not seem to be a major factor for the extrinsic motivation of students. Ten statements about extrinsic motivation did not show any statistically significant differences between the two environments. Of the four that did show statistically significant differences, three were not as expected, but showed that the students in the traditional grading classroom environment were less extrinsically motivated than the students in the standards-based classroom environment.

No statements related to students' levels of intrinsic motivation showed statistically significant differences between the two classroom environments. Forty-nine percent of the students in the standards-based environment and 47% of the students in the traditional grading environment agreed or strongly agreed with the statements regarding intrinsic motivation, showing that students in both environments possess about the same levels of intrinsic motivation. Accordingly, the classroom grading environment does not seem to be a significant factor in the level of intrinsic motivation.

Of the two statements concerning a fixed mindset showing statistically significant differences, both revealed concerns about their validity for this study. Considering then that none of the other statements about fixed or growth mindset showed statistically significant differences, the classroom grading environment does not seem to play a major role in students' mindsets.

### **Implications**

Based on the data collected in this study, using a standards-based or traditional grading system is not the primary factor for students' motivation or mindset. Students in both classroom environments still receive grades for their work. With the focus of the grade in a standards-based grading environment being on descriptive feedback and the level of mastery, one may expect students in this environment to focus on their own level of mastery. However, students who are extrinsically motivated by grades may view the descriptive feedback about the level of mastery as a roadmap to learn more with the goal of achieving a higher grade, not better mastery of the subject. Whether these extrinsically motivated students receive the highest grade in a standards-based grading system or the highest grade in a traditional grading system, they have still received the external reward of the highest grade, regardless of the grading environment.

### **Limitations**

This study focused on the classroom environments' grading systems' possible effects on student motivation and mindset, yet the classroom environment is much more than a grading system. Because there are many other factors involved in the students' whole learning environment besides grading systems, there are some limitations of this study that affect the implications of this research. This study did not take into account such conditions as the role of teachers and parents in forming students' motivations and mindsets. Students may be extrinsically or intrinsically motivated to learn with the understanding that a high grade in either

grading system would reflect the level of mastery they have of the content. This study did not take into account the amount and type of feedback given to students. Descriptive feedback increases intrinsic motivation (Rokoczy et al., 2008), and both standards-based grading and traditional grading practices can include feedback to the students, giving the students opportunities to re-learn and re-take assessments to show improvement.

Further, the extrinsic reward of grades is not necessarily a bad thing for students. When extrinsic rewards are given along with a higher degree of student autonomy, students have better engagement, performance, and a higher quality of learning (Ryan & Deci, 2000). When extrinsic rewards are based on student effort, progress, and meaningful aspects of performance, extrinsic rewards may advance achievement (Ames, 1992). However, intrinsic motivation is still ideal because students are then learning to the sake of understanding the content of the subject. Feldmesser (1971) maintained that it is undesirable for anyone to respond exclusively to extrinsic or intrinsic rewards, but that it is commendable that there is a balance between the two.

There are aspects of standards-based grading that can help emphasize student understanding and learning while using both extrinsic and intrinsic motivation. Standards-based grading has a focus on mastering the standards, where the descriptive feedback given to students describes for students what they did well and what needs improvement. The students then have opportunity to re-learn and try again to show how they have improved. These characteristics can be implemented in any classroom regardless of the grading system that is used to help students develop a growth mindset to use throughout their whole lives.

### References

- Ames, C. (1992). Classrooms: Goals, structures, and student motivation. *Journal of Educational Psychology, 84*(3), 261-271. Retrieved from Google Scholar.
- Cherry, K. (2015). What is motivation? In *About Health*. Retrieved December 3, 2015, from <http://psychology.about.com/od/mindex/g/motivation-definition.htm>
- Deddeh, H., Main, E., & Fulkerson, S. R. (2010). Eight steps to meaningful grading. *Phi Delta Kappan, 91*(7), 53-58. doi:10.1177/003172171009100711
- Docan, T. N. (2006). Positive and negative incentives in the classroom: An analysis of grading systems and student motivation. *Journal of Scholarship of Teaching and Learning, 6*, 21-40. Retrieved from ERIC (ej854925).
- Dweck, C. S. (2006). *Mindset*. New York, NY: Ballantine Books.
- Dweck, C. S. (2010a). Even geniuses work hard. *Educational Leadership, 68*(1), 16-20.
- Dweck, C. (2010b). In *Mindset*. Retrieved from <http://mindsetonline.com/whatisit/about/index.html>
- Eccles, J. S., Wigfield, A., Midgley, C., Reuman, D., Mac Iver, D., & Feldlaufer, H. (1993). Negative effects of traditional middle schools on students' motivation. *The Elementary School Journal, 93*(5), 553-574. Retrieved from JSTOR.
- Eggen, P., & Kauchak, D. (1992). *Educational psychology: Classroom connections* (p. 431). New York, NY: Macmillan Publishing Company.
- Feldmesser, R. A. (1971). The positive function of grades. *Resources in Education*. Retrieved from ERIC (ED049704).

- Kong, Y. (2009). A brief discussion in motivation and ways to motivate students in English language learning. *International Education Studies*, 2(2), 145-149. Retrieved from ERIC (EJ1065695).
- Lopez, S. J. (2011). The highs and lows of student engagement. *Phi Delta Kappan*, 93(2), 72-73. Retrieved from JSTOR.
- Midgley, C., Kaplan, A., Middleton, M., & Maehr, M. L. (1998). The development and validation scales assessing students' achievement goal orientations. *Contemporary Educational Psychology*, 23, 113-131.
- Mitchell, S. A. (1996). Relationship between perceived learning environment and intrinsic motivation in middle school physical education. *Journal of Teaching in Physical Education*, 15, 369-383.
- Moeller, A. J., & Reschke, C. (1993). A second look at grading and classroom performance: Report of a research study. *The Modern Language Journal*, 77(2), 163-169. Retrieved from JSTOR.
- Phillips, A. (2011). Standards-based vs. traditional grading. In *Promethean Planet*. Retrieved from <http://community.prometheanplanet.com/en/blog/b/blog/archive/2011/02/16/standards-based-vs-traditional-grading.aspx>
- Popham, W. J. (2008). *Transformative assessment* (pp. 24-98). Alexandria, VA: Association for Supervision and Curriculum Development.
- Powell, S. D. (2011). *Introduction to middle school* (2nd ed., pp. 246-247). Boston, MA: Pearson.



- Rakoczy, K., Klieme, E., Burgermeister, A., & Harks, B. (2008). The interplay between student evaluation and instruction. *Journal of Psychology, 216*(2), 111-124. doi:10.1027/0044-3409.216.2.111
- Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist, 55*(1), 68-78. doi:10.1037//0003-066X.55.1.68
- Scriffiny, P. L. (2008). Seven reasons for standards-based grading. *Educational Leadership, 66*(2), 70-74.
- Self-Determination Theory. (2016). In *Self-Determination Theory*. Retrieved from <http://selfdeterminationtheory.org/self-regulation-questionnaires/>
- Stiggins, R. J., & Chappuis, J. (2012). *An introduction to student-involved assessment for learning* (6th ed., pp. 248-249). Boston, MA: Pearson.
- Shim, S., & Ryan, A. (2005). Changes in self-efficacy, challenge avoidance, and intrinsic value in response to grades: the role of achievement goals. *The Journal of Experimental Education, 73*(4), 333-349. Retrieved from JSTOR.
- Stronks, G. G., & Blomberg, D. (1994). *A vision with a task* (2nd ed., pp. 267-270). Grand Rapids, MI: Baker Books.
- Student Mindset Survey. (n.d.). Retrieved from <http://images.schoolinsites.com/SiSFiles/Schools/TN/GreenevilleCity/GreenevilleHigh/Uploads/DocumentsCategories/Documents/Mindset%20Survey%20for%20students.pdf>
- Thompson, C. J. (2009). Preparation, practice, and performance: An empirical examination of the impact of standards-based instruction on secondary students' math and science achievement. *Research in Education, 81*(1), 53-62. Retrieved from ERIC.

Wentzel, K. R. (1997). Student motivation in middle school: The role of perceived pedagogical caring. *Journal of Educational Psychology*, 89(3), 411-419. doi:10.1037/0022-

0663.89.3.411

**Appendix A****Student Survey Statements on Extrinsic Motivation**

1. I do my homework because I will get in trouble if I don't.
2. I do my homework because that's what I am supposed to do.
3. I do my assignments because I want the teacher to say nice things about me.
4. I like to show the teacher I am smarter than other students in my class.
5. The reason I do homework is so my teacher does not think I know less than others.
6. It is important to me to do better than other students.
7. I redo some homework because I want to get a better grade on it.
8. An important reason I do my homework is so I do not embarrass myself.
9. If an assignment is not graded, I do not work very hard on it.
10. I like studying things in class that I already know because I can easily get a good grade.
11. I try to get a better grade than others in class.
12. I compete against other students in class for the best grade.
13. I like to learn because I want to do better than other students in my class.
14. I feel successful in school only if I do better than most other students.

**Appendix B****Student Survey Statements on Intrinsic Motivation**

1. I do my homework because it is fun.
2. I do assignments because I enjoy them.
3. I study hard because I want to really understand what I am learning.
4. An important reason I do my assignments is because I like to learn new things.
5. An important reason I do my homework is because I want to get better at the subject.
6. I redo some homework because I enjoy learning.
7. I don't like to study things that I already know because I don't learn anything new.
8. I feel successful in school when I know I have improved, even when others outperform me.
9. Even if I may look dumb to others, I still ask questions because I want to understand the material better.
10. I work hard because I enjoy learning.
11. I want to do my best in school.

**Appendix C****Student Survey Statements on Fixed Mindset**

1. I can't really change how intelligent I am.
2. Even if I learn to do new things, my basic level of talent does not really change.
3. I can learn new things, but I cannot really change how intelligent I am.
4. To do well in school, natural ability is more important than effort.
5. A person is just smart at school or not.
6. Even if I learn new things, my basic level of intelligence stays the same.
7. I have a certain amount of talent, and I can't really do much to change it.
8. My talent in an area is something about me that I can't change very much.
9. To be honest, I can't really change how much talent I have.
10. I have a certain amount of intelligence, and I can't really do much to change it.
11. My intelligence is something about me that I can't change very much.
12. Tests are usually too hard.
13. If I do poorly on an assignment or test, it's usually the teacher's fault.
14. If I do well on an assignment or test, I think it's because of good luck.
15. When teachers point out my mistakes, the teachers are telling me I am not very smart.
16. I do not like to study hard things in class because if I do poorly, it shows I am not very smart.
17. When I get a bad grade, I do not feel very important.
18. It's very important to me that I don't look like a fool in class.
19. I like to get good grades because it shows I am smart.
20. When I do not make mistakes, it shows I am smart.
21. When I solve a problem fast, it shows I am smart.

**Appendix D****Student Survey Statements on Growth Mindset**

1. I can change my intelligence level a lot.
2. I can really improve my level of intelligence.
3. If I work hard, I can really change my level of talent.
4. By working hard, I can be successful on assignments and tests.
5. I can do well on any assignment if I try hard enough.
6. Effort is more important than natural ability for doing well in school.
7. When a concept is hard, I work really hard until I understand it.
8. When I ask a lot of questions, I learn a lot.
9. When I do poorly on a project, I work harder next time to do better.
10. An important reason I do my homework is to get better at what I am learning.
11. I like it when teachers point out my mistakes, because it gives me opportunity to improve.
12. If I do poorly on an assignment or test, it's because I didn't try hard enough.
13. I like homework that I'll learn from, even if I make a lot of mistakes.
14. I feel smart when I see a mistake I made and can work hard to understand what I did wrong.
15. I do not care how long it takes me to work a problem.