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# Effects of Standards-Based Grading on Students in Agricultural Education

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EFFECTS OF STANDARDS-BASED GRADING ON STUDENTS IN

AGRICULTURAL EDUCATION

BY

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A thesis submitted in partial fulfillment of the requirements for the

Master of Science

Major in Agricultural Education

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EFFECTS OF STANDARDS-BASED GRADING ON STUDENTS IN

AGRICULTURAL EDUCATION

MATTHEW D. TRIPP

This thesis is approved as a creditable and independent investigation by a candidate for

the Master of Science in Agricultural Education degree and is acceptable for meeting the

thesis requirements for this degree. Acceptance does not imply that the conclusions

reached by the candidate are necessarily the conclusions of the major department.

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ABSTRACT

EFFECTS OF STANDARDS-BASED GRADING ON STUDENTS IN

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Standards-based grading is being discussed more frequently in the field of education as school districts either explore or adopt this grading method. This study examined the effects of standards-based grading on achievement and perceptions of students enrolled in high school agricultural education courses. This nonequivalent quasi-experimental study focused on how students' perceptions of classroom feedback, abilities, and opportunities to redo assessments were affected by the implementation of a standards-based grading method. Participants in this study were students who enrolled in a quarter long Home Maintenance course that used standards-based grading methods to assess student mastery on specific content standards in the course. The research questions were addressed through feedback from participants and compared to a control group, which were graded using traditional grading methods. Students' perceptions of abilities, classroom feedback, grading, and test, quizzes, and homework were recorded in a pre-survey. Standards-based grading methods including prompt feedback, opportunity to redo assessments, and clear learning targets were used. A post-survey was used to record any changes of student perceptions of grading practices, ability, grading preference, and teacher instructional methods. The results reveled student perception remained largely unchanged after having been evaluated in a standards-based grading classroom.

## Introduction

What does a letter grade represent? A question that seems simple at the surface level but when asked elicits varying definitions from different individuals. "Grading refers to the symbols assigned to individual pieces of student work or to composite measures of student performance on student report cards" (Brookhart, et al., 2016, p. 804). While grading can be given a definition, interpretation of a grade is open to discussion. Reeves (2012) recognized the complexity of this question and highlighted it with an experiment conducted with thousands of educators and administrators. Reeves (2012) asked participants to identify the final grade for a student who earned the following 10 scores: C, C, MA (missing assignment), D, C, B, MA, MA, B, A. The final grades participants would conclude for the student ranged from A to F (Reeves, 2012). Reeves's (2012) further explained "It turns out the difference between the A and B student and the D and F student had nothing to do with intelligence or home support and everything to do with the different grading systems of individual teachers" (p. 28). Reeve's (2012) experiment demonstrated how inconsistent traditional grading methods are among educators and how inaccurate a grade based on points reflects students' academic performance. The inconsistency of grading practices is not unique to one content area or another. Thus starting a movement towards a grading method known as standards-based grading. This proposed method removes the inaccuracy of grades by evaluating students solely on their academic mastery of specific content standards.

### Standards-Based Grading

Standards-based grading is based on giving multiple grades on specific standards along with student's product, process, and progress (Swan, Guskey, & Jung, 2014).

Guskey and Jung (2012) claimed education is moving quickly to adopt standards-based

grading as "School leaders have become increasingly aware of the tremendous variation

that exists in grading practices" (p. 23). Guskey and Jung (2012) continued that the

variation of grading is prevalent between teachers in the same school and department

who teach the same classes. As the probability of adopting standards-based grading

increases, practicing educators should familiarize themselves with this method of grading

and the effects it has in their classroom. The rationale for moving away from traditional

grading practices and adopting a standards-based grading system is explained by Reeves

(2012) statement: "Educators must start with the understanding that grading is feedback,

and the purpose of feedback is improved performance, not just the announcement of a

final evaluation" (p. 29). Scriffiny (2008) further supported transitioning to grading

solely on standards instead of nonacademic points and by doing so "we can actually help

students grapple with the idea of quality and walk away with a higher degree of self-

sufficiency" (p. 73). These studies found standards-based grading could benefit and

improve student learning and mastery while reducing the flaws of traditional grading.

       The possibility of transitioning to standards-based grading served as the

impetuous to investigate the effects of standards-based grading on student perceptions

and achievement in agricultural education. Agricultural educators may find themselves

needing to transition to a standards-based grading method, or accepting a job in a district

utilizing this method. In regards to standards-based grading, some questions agriculture

educators may have that should be addressed include how standards-based grading

impacts student achievement in agricultural classes, how agricultural teachers may adopt

this method, student perceptions of standards-based grading, and how it prepares students

for college or careers in agriculture. A further analysis of the literature that pertains to these questions will follow.

**Literature Review**

**Grading Practices**

For most, the familiar traditional grading method of recording academic success came in the form of percentage scores correlated to specific letter grades. "In the traditional system, students acquire points for various activities, assignments, and behaviors, which accrue throughout a grading period" (Marzano & Heflebower, 2011, p. 34). Percent scores or letter grades are calculated from the number of points accumulated throughout a course and divided by the total number of points available. Townsley and Varga (2018) described traditional grading as capturing what students have earned on homework, extra credit, and effort versus what they have learned. Students are also not afforded the opportunity to redo assignments or tests and are arbitrarily docked points for late or missing submissions.

Although deeply rooted in the educational system, traditional grading practices can be highly flawed due to variation between individual educators. Welsh, D'Agostino, and Kaniskan (2013) pointed out:

> Teachers may inflate grades with nonacademic extra credit assignments, base grades on improvement instead of mastery, or incorporate formative assessments into summative scores, all of which are unrelated to how much a student knows and can do at the end of a grading period. (p. 27)

Wormeli (2006a) expanded that grades become inflated with extra credit opportunities as students worked to improve their grade without meeting course standards. Because of this potential for grade inflation, the question must be asked if traditional grades really represent student knowledge and ability or if they are a conglomeration of points from

various assignments, extra credit, behavior, and other categories unassociated with content knowledge. Reeves (2012) identified another error, "at least for some students, grades are not linked to proficiency but to compliance" (p. 29). Students complete tasks and assignments because it is what is expected of them not because the task or assignment enriches their comprehension. Thus, the need for a better grading system that not only changes the way students are assessed, but also changes the way content is taught.

A movement towards standards-based grading has resulted from acknowledgement of the flaws in traditional grading practices. "In an effort to cure the ills of current grading and reporting systems, many schools and districts across the United States have attempted to implement a standards-based system" (Marzano and Heflebower, 2011, p. 34). Standards-based grading evaluates students based on their proficiency in meeting well-defined course objectives and focuses on the knowledge a student gains in the course (Iamarino, 2014). Standards-based grading gained momentum to improve grading practices with educational leaders publishing literature and traveling from district to district sharing the ideology and benefits of this method. Proulx, Spencer-May, and Westerberg (2012) stated:

> Standards-based education and the system of grading it entails improves student achievement; increase accuracy and fairness of grades; and enhances communication between classroom teachers and students, parents, colleges, and employers regarding what students are expected to know and do in each course and how well each student is performing in relation to those expectations. (p. 30)

The use of standards-based grading mitigates the flaws of traditional grading and gives grades meaning. "Standards-based grading allows for students to be graded solely on mastery of course content, which can lead to student motivation and a meaningful learning relationship" (Shippy, Washer, & Perrin, 2013, p. 14). Student focus is removed from how many cumulative points are needed to earn a specific letter grade and refocused on specific learning outcomes. Instead of cumulative end of quarter grades over several course topics, Swan et al. (2014) described; "By providing separate grades or marks for product, process, and progress criteria, standards-based reporting clarifies the meaning of grades and offers a more accurate and informative depiction of students' performance in school" (p. 291). These separate grades or marks provide constructive feedback for students during the advancement of their education and changes their focus to advancing their education rather than earning points.

**Adopting Standards-based Grading**

Transitioning to a standards-based grading system can be a daunting task especially when it involves an extreme change from past grading practices. Proulx et al. (2012) discussed challenges in *Moving to Standards-based Grading: Lessons from Omaha*:

> Teachers struggle with the philosophical shift to standards-based education. The greatest challenge was moving away from a grading system that they could use to motivate students as well as punish them for undesirable behavior and instead begin grading students solely on the basis of evidence of their learning. (p. 32)

Once teachers realized that grades are not merely a reward system and should reflect what students have learned in class, the shift in grading practices may come easier.

Another challenge of using standards-based grading identified by Swan et al. (2014) is the amount of additional time it takes teachers to complete student grade reports. Swan et al. (2014) surveyed participating teachers in their study on standards-based reporting and found that participants noted the reporting process took more time than traditional grading methods. Although more time was needed to report grades, participating teachers did feel standards based reporting provided valuable feedback and was worth the additional time needed to report grades (Swan et al., 2014). Standards-based grading may be a difficult change for many teachers, however proper implementation of key aspects in standards-based grading along with time for development streamlines transition. Key aspects of standards-based grading includes feedback, redos, and aligned content standards.

Standards-based grading centers around feedback, which is crucial to student mastery. "Students need timely feedback on work in progress that salutes original ideas, solid research, and effective use of skills as well as offering suggestions for improvement" (Miller, 2013, pp. 114-115). Without proper and timely feedback, student improvement or mastery is difficult to obtain. Feedback from teachers allows students to evaluate and make corrections until success is reached. Teachers need to implement an efficient system to provide feedback to students in a timely manner so they will be able to improve.

The ability to redo assessments is vital to standards-based grading. Wormeli (2006a) pointed out "Our world is full of redos. Sure, most adults don't make as many mistakes requiring redos as students do, but that's just it – our students are not adults and as such, they can be afforded a merciful disposition" (p. 136). Allowing students to go

back and redo work removes the penalty of not knowing and affords students a chance to master course content. Wormeli (2006b) attributed denying students the ability to redo work lets them get away with not learning the material but when we command redos, students are held accountable. Wormeli (2006b) further elaborated as students redo work while continuing new work; this invokes motivation to be accountable to learn the material the first time. Redos provide the opportunity to learn from mistakes, it removes the feeling of being too far gone to improve, and reinforces quality work.

**Content Standards in Education**

Content standards guide classroom instruction and define specific measurable outcomes. Having lesson plans or instructional units with embedded content standards helps direct and give meaning to what is being done in class. Scriffiny (2008) implemented standards-based grading and had to redevelop curriculum by adding clear standards with exact levels of mastery. Welsh et al. (2013) further explained:

> For standards-based reform to work, it is important that teachers be well versed not only in content state standards, but also in what it means to assign students to specific performance levels in terms of the skills that must be attained or that are yet to be mastered. (p. 36)

Familiarity with content standards and building lessons or units around them will provide meaningful connections to learning. Clearly identified learning outcomes in lessons will also give students a direction and goal to reach. Further, the transition in grading practices is made easier.

**Student Perceptions of Grading**

Although students are the ones who earn grades, little literature was found on this topic. Two research studies conducted by Heipp (2016) and Winton (2015) investigated student perceptions of grading. Heipp (2016) explored high school students' views on grading with twelve students who had experienced education in both traditional and charter school settings. Heipp (2016) noted when participants were asked what the best and worst parts of school were; no direct references to grading were made. Heipp (2016) continued that participant responses showed stronger feelings towards other parts of school than grades. Another key finding from the study was participants believed grades did not represent what they learned and cited instances where all participants had experienced at least one time their grade did not match their learning (Heipp, 2016).

In the area of standards-based grading, Winton (2015) surveyed 115 high school students and interviewed twelve of them about their perceptions of the grading method. Survey results showed 65.21% of students felt standards-based grading did not prepare them for college, 72.17% felt standards-based grading did not prepare them for the workforce, and 70% of students felt standards based grading was not the best for evaluating learning (Winton, 2015). In the interviews conducted by Winton (2015), six students were in favor of standards-based grading, five were in favor of traditional grading, and one student held no opinion. Interviewees cited an advantage of standards-based grading as being more difficult to fail and a disadvantage as being more difficult to get an A (Winton, 2015).

**College and Career Readiness**

Standards-based grading prepares students to work in careers based on industry and performance standards. Standards are utilized in the workplace and when similar standards are incorporated into the classroom, it permits students to learn and master skills necessary and in-demand in the labor market. Davis (2006) stated, "Skill standards define work to be performed, the criteria of the mastery, and the knowledge and skills necessary for competent performance" (p. 22). Through incorporation of standards in education, Davis (2006) continued that "Industry based standards merge employment and education, clarify job competencies, improve capabilities and productivity and aid in students' transition to the work place" (p. 22). In addition, Scriffiny (2008) found after adopting standards-based grading, some parents commented on how this method paralleled workplace evaluations. The alignment of skill standards with content standards and utilizing standards-based grading can help better-prepare students for college and careers.

Proulx et al. (2012) further connected standards-based grading to student college and career readiness. Proulx et al. (2012) stated, "Implemented properly, standards-based grading will allow a clear picture of college and career readiness for students, parents, colleges and employers" (p. 31). By using a standards-based method, students will be leaving classrooms and entering college and careers with clearly defined abilities and skills. Iamarino (2014) expanded "In addition to helping repurpose education as a fundamental step toward a career, the critical connections students make between course material and long-term goals will serve their ability to understand the world around them in more multidimensional, comprehensive terms" (p. 3). The implementation of

standards-based grading can follow students beyond the classroom not only in their career but also as lifelong learners.

**Purpose**

The purpose of this study was to investigate how a standards-based approach to grading affects student anticipated achievement and perceptions in an agricultural education course. Standards-based grading is being investigated by the school district in which I am employed and this research will allow for a broader understating of how it may affect an agricultural education classroom. This research fills a gap in the literature by looking at student perceptions and achievement in an agricultural education class using standards-based grading practices. More specifically:

1. Is feedback a valuable tool of standards-based grading to motivate student learning?

2. Will students perceive their grade accurately represents their abilities?

3. Do students find value in the opportunity to redo assessments?

With this study, student anticipated achievement and perceptions of standards-based grading was observed, recorded, and evaluated. The collected data was used to uncover changes in anticipated achievement and changes in student perception that may have occurred among students enrolled in an agricultural education course.

**Methods**

**Participants**

The accessible population for this study included all high school students who attended a large high school in Minnesota. The population was students 14 to 19 years of age and consisted of culturally diverse males and females from varying backgrounds. According to Minnesota Report Card (2018), 886 students were enrolled at the school of which the race/ethnicity consisted of 48.4% Hispanic/Latino, 33.3% White, 10.7% Asian, 6.3% Black/African American, 1.1% two or more races, and 0.1% American Indian/Alaskan Native. The population of students also consisted of 19.2% English Learner, 14.9% Special Education, 63.5% Free/Reduced Priced Lunch, and 0.2% Homeless students (Minnesota Report Card, 2018).

The sample frame for this quasi-experimental study were all students enrolled in an agricultural education course offered during the 2017-2018 school year. The convenience sample was determined by selecting students enrolled in the Home Maintenance courses to participate in the study. Fifty-three participants were involved. Of the participants, fourteen were female and thirty-nine were male, with one freshman, twenty-three sophomores, nine juniors, and twenty seniors. Participants identified their race/ethnicity as 32.1% Hispanic/Latino, 51.0% White, 15.1% Asian, 1.9% Black/African American, 0.0% two or more races, and 0.0% American Indian/Alaskan Native.

A control group was established for data comparison at a neighboring high school that offered a similar home maintenance course that used traditional grading practices. Demographic data for this school included a total enrollment of 355 students of which the race/ethnicity consisted of 91% White, 3.1% two or more races, 2.3% Hispanic/Latino,

2.3% Asian, and 1.4% Black/African American (Minnesota Report Card, 2018). In addition, the student population consisted of 0.3% English Language learner, 15.8% Special Education, and 32.7% Free/Reduced Priced Lunch (Minnesota Report Card, 2018). Fourteen participants made up the control group, five females and nine males, with zero freshman, zero sophomores, six juniors, and eight seniors. Participants identified their race/ethnicity as 0.0% Hispanic/Latino, 100.0% White, 0.0% Asian, 0.0% Black/African American, 0.0% two or more races, and 0.0% American Indian/Alaskan Native.

**Measures**

A pre-survey (Appendix A) and post-survey (Appendix B) were used to collect data from participants in both the control and treatment groups to be analyzed and compared. The survey tool was reviewed by current practicing agricultural educators to establish face validity. The survey tool contained four constructs: abilities, classroom feedback, grades, and tests, quizzes and homework. In addition, the pre-survey collected data on gender, grade level, ethnicity, and anticipated grade for the course. The post-survey was identical to the pre-survey but was written specifically to participants' experience in the Home Maintenance course. The post-survey for the treatment group included seven open-ended questions to collect additional feedback. The control group did not complete the open-ended questions. The survey tool used a Likert-type scale with a 1 through 7 response format of *strongly disagree* to *strongly agree*.

**Design**

The design of this study is a nonequivalent quasi-experimental pretest-posttest design. The study can be displayed in notational form as the following:

$$N \qquad O \quad X \quad O$$

$$N \qquad O \qquad O$$

N signifies that the groups are nonequivalent, the O signifies the measures used, and X

signifies the treatment. This design is generally weak in internal validity due to selection

threats; the outcome from the data collected can be analyzed and compared between the

two groups to determine if the program had an effect and to what extent.

**Procedures**

This research was completed over a 9-week period in the Home Maintenance

courses. Approval was received from the IRB and building principal to proceed with the

study. Parental assent and student consent was obtained before any data collection

occurred.

At the start of the 9-week course, participants in the treatment and control group

were given the pre-survey (Appendix A) to complete. The pre-survey was written in a

general format in relation to all classes participants have taken. The survey was

administered as a paper copy and collected upon completion. Participants used a unique

number to identify their surveys to protect their confidentiality. The unique number

allowed the pre-survey to be matched and compared to the post-survey for each

individual participant. The participants in the treatment group were assessed using

standards-based grading methods that centered on clear and specific learning targets

(Appendix C), prompt and detailed feedback, and opportunities to redo assessments upon

request. Although students were assessed with a standards-based grading approach, a

single letter grade was still utilized to display overall individual achievement at the end of

the course. Participants in the control group were evaluated through traditional grading practices.

At the conclusion of the 9-week course, participants completed the post-survey (Appendix B). The post-survey used identical measures written specifically to the participants experience in the Home Maintenance course. The treatment group post-survey included seven additional open-ended questions. The open-ended questions were used in the post-survey to obtain further insight on participants' perceptions of standards-based grading. The control group completed the post-survey written specifically to their experience in the course. Short response questions were not included on the control group's post survey.

**Data Analysis**

Pre-surveys and post-surveys were collected and responses entered into an Excel Spreadsheet. The spreadsheet was organized by treatment and control group with each participant aligned with their pre-survey and post-survey responses. The survey tools used a Likert-type scale with a 1 through 7 response format. The response were 1 *strongly disagree,* 2 *disagree,* 3 *somewhat disagree,* 4 *neutral,* 5 *somewhat agree,* 6 *agree,* and 7 *strongly agree*. Questions 6, 13, 19, 21, and 26 on the survey tools were reversal items and were reverse coded prior to analysis. Recorded data was exported SPSS, a statistical analysis software program, for data analysis. A one-way ANOVA test was ran for all groups of data. Open-ended responses from the treatment group's post-survey were coded for emerging themes.

**Results**

Analyses focused on participant responses to each construct on the survey tool,
Abilities, Classroom Feedback, Grades, and Tests, Quizzes, and Homework. The
following tables show the descriptive analyses and results from the one-way ANOVA for
each construct. Since this was an exploratory research, a lower Cronbach's Alpha is
acceptable.

Objective 1 sought to determine if feedback is a valuable tool of standards-based
grading to motivate student learning (see table 1). This was measured through the
classroom feedback construct from the survey tool. The pre-survey means of participants
in the treatment group and control group were compared using a one-way ANOVA. No
significant difference was found ($F(1,65) = 2.51$, $p > .05$). The participants did not differ
significantly at the start of the course. Students in the treatment had a mean score of 5.17
($sd = 0.87$). Students in the control group had a mean score of 5.25 ($sd = 0.85$). A one-
way ANOVA was computed comparing the post-survey means of participants in the
treatment and control group. A significant difference was found ($F(1,65) = 21.20$, $p <
.05$). Post hoc comparisons using Tukey's HSD test was used to determine the nature of
the differences between the treatment and control groups (see table 2). This analysis
revealed participants in the treatment scored higher ($m = 5.94$, $sd = 0.74$), students in the
control group scored lower ($m = 4.83$, $sd = 1.02$). An Eta Squared of 0.25 for the main
effect for classroom feedback represents a medium effect size.

Objective 2 sought to determine if students will perceive their grades accurately
represent their abilities. This was measured with the constructs abilities and grades on the
survey tool. For the abilities construct, the pre-survey means of participants in the

treatment group and control group were compared using a one-way ANOVA (see table 3). No significant difference was found ($F(1,65) = 2.51$, $p > .05$). The participants did not differ significantly at the start of the course. Students in the treatment had a mean score of 4.88 ($sd = 0.78$) and students in the control group had a mean score of 5.26 ($sd = 0.86$) (table 4). The post-survey means of participants in the treatment and control group were compared using a one-way ANOVA. No significant difference was found ($F(1,65) = 1.70$, $p > .05$). The participants did not differ significantly at the conclusion of the course students in the treatment had a mean score of 5.31 ($sd = 0.96$) and students in the control group had a mean score of 4.92 ($sd = 1.12$).

For the grades construct, the pre-survey means of participants in the treatment group and control group were compared using a one-way ANOVA (see table 5). No significant difference was found ($F(1,65) = 1.83$, $p > .05$). The participants did not differ significantly at the start of the course. Students in the treatment had a mean score of 4.48 ($sd = 1.25$) and students in the control group had a mean score of 5.02 ($sd = 1.62$) (see table 6). The post-survey means of participants in the treatment and control group were compared using a one-way ANOVA. No significant difference was found ($F(1,65) = 1.31$, $p > .05$). The participants did not differ significantly at the conclusion of the course. Students in the treatment had a mean score of 5.08 ($sd = 1.25$) and students in the control group had a mean score of 4.64 ($sd = 1.43$).

Objective 3 sought to determine if students found value in the opportunity to redo assessments. The pre-survey means of participants in the treatment group and control group were compared using a one-way ANOVA (see table 7). No significant difference was found ($F(1,65) = 2.51$, $p > .05$). The participants did not differ significantly at the

start of the course. Students in the treatment had a mean score of 4.77 ($sd = 0.82$).

Students in the control group had a mean score of 4.72 ($sd = 0.85$). A one-way ANOVA

was computed comparing the post-survey means of participants in the treatment and

control group. A significant difference was found ($F(1,65) = 21.20$, $p < .05$). Post hoc

comparisons using Tukey's HSD test was used to determine the nature of the differences

between the treatment and control groups (see table 8). This analysis revealed

participants in the treatment scored higher ($m = 4.92$, $sd = 0.94$), students in the control

group scored lower ($m = 4.32$, $sd = 0.75$). An Eta Squared of 0.07 for the main effect for

test, quizzes, and homework represents a small effect size.

Table 1

*One-Way Analysis of Variance for the Effects of Standards-Based Grading on Student Perceptions of Classroom Feedback*

| Source | | df | SS | MS | F | p | $\eta^2$ |
|--------|--------|-----|--------|-------|-------|------|------|
| Pre-Survey | Between-groups | 1 | 0.07 | 0.07 | 0.09 | 0.77 | 0.00 |
| | Within-group | 65 | 48.21 | 0.74 | | | |
| | Total | 66 | 48.278 | | | | |
| Post-Survey | Between-groups | 1 | 13.81 | 13.81 | 21.20 | 0.00 | 0.25 |
| | Within-group | 65 | 42.35 | 0.65 | | | |
| | Total | 66 | 56.16 | | | | |

Table 2

*Descriptive Analysis of Variance for the Effects of Standards-Based Grading on Student Perceptions of Classroom Feedback*

| | | | N | M | SD | SE | 95% Confidence Interval for Mean | | Min |
| | | | | | | | Lower Bound | Upper Bound | |
|---|---|---|---|---|---|---|---|---|---|
| Pre-Survey | Treatment | | 53 | 5.17 | 0.87 | 0.12 | 4.93 | 5.41 | 3.71 |
| | Control | | 14 | 5.25 | 0.85 | 0.23 | 4.76 | 5.73 | 3.43 |
| | Total | | 67 | 5.18 | 0.86 | 0.10 | 4.97 | 5.39 | 3.43 |
| | Model | Fixed Effects | | | 0.86 | 0.11 | 4.97 | 5.39 | |
| | | Random Effects | | | | 0.11 | 3.85 | 6.52 | |
| Post-Survey | Treatment | | 53 | 5.94 | 0.74 | 0.10 | 5.74 | 6.15 | 3.86 |
| | Control | | 14 | 4.83 | 1.02 | 0.27 | 4.24 | 5.42 | 2.43 |
| | Total | | 67 | 5.71 | 0.92 | 0.11 | 5.49 | 5.94 | 2.43 |
| | Model | Fixed Effects | | | 0.81 | 0.10 | 5.51 | 5.91 | |
| | | Random Effects | | | | 0.64 | -2.40 | 13.82 | |

Table 3

*One-Way ANOVA Analysis of Variance for the Effects of Standards-Based Grading on Student Perceptions of Abilities*

| Source | | df | SS | MS | F | p | $\eta^2$ |
|---|---|---|---|---|---|---|---|
| Pre-Survey | Between-groups | 1 | 1.59 | 1.59 | 2.51 | 0.19 | 0.04 |
| | Within-group | 65 | 40.96 | 0.62 | | | |
| | Total | 66 | 42.55 | | | | |
| Post-Survey | Between-groups | 1 | 1.67 | 1.67 | 1.70 | 0.20 | 0.03 |
| | Within-group | 65 | 63.92 | 0.98 | | | |
| | Total | 66 | 65.59 | | | | |

Table 4

*Descriptive Analysis of Variance for the Effects of Standards-Based Grading on Student Perceptions of Abilities*

| | | | N | M | SD | SE | 95% Confidence Interval for Mean | | Min |
| | | | | | | | Lower Bound | Upper Bound | |
|---|---|---|---|---|---|---|---|---|---|
| Pre-Survey | Treatment | | 53 | 4.88 | 0.78 | 0.11 | 4.67 | 5.10 | 3.00 |
| | Control | | 14 | 5.26 | 0.86 | 0.23 | 4.77 | 5.76 | 3.67 |
| | Total | | 67 | 4.96 | 0.80 | 0.10 | 4.77 | 5.16 | 3.00 |
| | Model | Fixed Effects | | | 0.79 | 0.10 | 4.77 | 5.16 | |
| | | Random Effects | | | | 0.20 | 2.48 | 7.45 | |
| Post-Survey | Treatment | | 53 | 5.31 | 0.96 | 0.13 | 5.04 | 5.57 | 3.00 |
| | Control | | 14 | 4.92 | 1.12 | 0.30 | 4.27 | 5.56 | 2.17 |
| | Total | | 67 | 5.22 | 1.00 | 0.12 | 4.98 | 5.47 | 2.17 |
| | Model | Fixed Effects | | | 0.99 | 0.12 | 4.98 | 5.47 | |
| | | Random Effects | | | | 0.19 | 2.83 | 7.62 | |

Table 5

*One-Way Analysis of Variance for the Effects of Standards-Based Grading on Student Perceptions of Grades*

| Source | | df | SS | MS | F | p | $\eta^2$ |
|--------|--|-----|--------|------|------|------|----------|
| Pre-Survey | Between-groups | 1 | 3.26 | 3.26 | 1.83 | 0.18 | |
| | Within-group | 65 | 115.86 | 1.78 | | | |
| | Total | 66 | 119.12 | | | | |
| Post-Survey | Between-groups | 1 | 2.16 | 2.16 | 1.31 | 0.26 | |
| | Within-group | 65 | 107.69 | 1.66 | | | |
| | Total | 66 | 109.86 | | | | |

Table 6

*Descriptive Analysis of Variance for the Effects of Standards-Based Grading on Student Perceptions of Grades*

| | | | N | M | SD | SE | 95% Confidence Interval for Mean | | Min |
| | | | | | | | Lower Bound | Upper Bound | |
|---|---|---|---|---|---|---|---|---|---|
| Pre-Survey | Treatment | | 53 | 4.48 | 1.25 | 0.17 | 4.14 | 4.83 | 1.00 |
| | Control | | 14 | 5.02 | 1.62 | 0.43 | 4.09 | 5.96 | 1.00 |
| | Total | | 67 | 4.59 | 1.34 | 0.16 | 4.27 | 4.92 | 1.00 |
| | Model | Fixed Effects | | | 1.34 | 0.16 | 4.27 | 4.92 | |
| | | Random Effects | | | | 0.27 | 1.20 | 7.99 | |
| Post-Survey | Treatment | | 53 | 5.08 | 1.25 | 0.17 | 4.74 | 5.43 | 1.67 |
| | Control | | 14 | 4.64 | 1.43 | 0.38 | 3.82 | 5.47 | 1.00 |
| | Total | | 67 | 4.99 | 1.29 | 0.16 | 4.68 | 5.31 | 1.00 |
| | Model | Fixed Effects | | | 1.29 | 0.16 | 4.68 | 5.31 | |
| | | Random Effects | | | | 0.20 | 2.45 | 7.54 | |

Table 7

*One-Way Analysis of Variance for the Effects of Standards-Based Grading on Student Perceptions of Tests, Quizzes, and Homework*

| Source | | df | SS | MS | F | p | $\eta^2$ |
|---|---|---|---|---|---|---|---|
| Pre-Survey | Between-groups | 1 | 0.02 | 0.02 | 0.04 | 0.85 | 0.00 |
| | Within-group | 65 | 44.52 | 0.69 | | | |
| | Total | 66 | 44.55 | | | | |
| Post-Survey | Between-groups | 1 | 4.06 | 4.06 | 4.93 | 0.03 | 0.07 |
| | Within-group | 65 | 53.58 | 0.82 | | | |
| | Total | 66 | 57.64 | | | | |

Table 8

*Descriptive Analysis of Variance for the Effects of Standards-Based Grading on Student Perceptions of Tests, Quizzes, and Homework*

| | | | N | M | SD | SE | 95% Confidence Interval for Mean | | Min |
| | | | | | | | Lower Bound | Upper Bound | |
|---|---|---|---|---|---|---|---|---|---|
| Pre-Survey | Treatment | | 53 | 4.77 | 0.82 | 0.11 | 4.54 | 5.00 | 1.00 |
| | Control | | 14 | 4.72 | 0.85 | 0.23 | 4.24 | 5.21 | 1.00 |
| | Total | | 67 | 4.76 | 0.82 | 0.10 | 4.56 | 4.96 | 1.00 |
| | Model | Fixed Effects | | | 0.83 | 0.10 | 4.56 | 4.96 | |
| | | Random Effects | | | | 0.10 | 3.48 | 6.05 | |
| Post-Survey | Treatment | | 53 | 4.92 | 0.94 | 0.13 | 4.66 | 5.18 | 3.29 |
| | Control | | 14 | 4.32 | 0.75 | 0.20 | 3.88 | 4.75 | 3.29 |
| | Total | | 67 | 4.80 | 0.93 | 0.11 | 4.57 | 5.02 | 3.29 |
| | Model | Fixed Effects | | | 0.91 | 0.11 | 4.57 | 5.02 | |
| | | Random Effects | | | | 0.33 | 0.58 | 9.01 | |

The open-ended questions completed by the treatment group on the post-survey had reoccurring themes. Most notable was classroom feedback, discussed by 19 participates in multiple short response questions. The multiple-choice questions about feedback also showed strong positive perceptions. One student wrote, "The most beneficial [part of standards-based grading] would be the feedback that the teacher gives and how to improve from your mistakes." The ability to redo assessments was discussed by 18 students on multiple questions. One student wrote about redos, "The ability to retake or redo something paired with instruction on how to do something right when it wasn't done correctly made it easy for everyone to strive for excellence, even for those who didn't quite get it the first time." Lastly, a notable response from a participant when asked if standards-based grading changed their perceptions of grading practices replied, "Yes. It makes me realize how much better my classroom experience could be without the confusion of unclear objectives and feedback, and the pressure of needing to do things right the first time."

**Discussion**

**Limitations**

Limitations of this study included the accessible population, self-reporting, and time constraints. First was the accessible population for the treatment and control groups. Both groups were relatively small and did not match perfectly in demographics. In addition, there was also no interaction with the control group and teacher. This could have led to differences in the results. Second, self-reporting was used to obtain data from the control and treatment group. Anytime self-reporting is used, there is always a concern of validity in responses. Self-reporting relies on truthful and unbiased answers from the participants which may not always happen and decrease validity (Carducci, 2009). Lastly, the time span of the study was limited. This study was conducted for one quarter of the school year, which is 45 student contact days. Given more time, student perceptions could have changed in either direction in relation to standards-based grading.

**Conclusions**

Overall, results from the data analyses suggested that student perceptions were not significantly changed after receiving the treatment. However, some parts of standards-based grading did yield significant changes in student perceptions. Those parts included classroom feedback and tests, quizzes, and homework.

In light of the research questions:

1. Is feedback a valuable tool of standards-based grading to motivate student learning?

From the data analysis, participants in the treatment group did show a significant change in this construct. This suggests that feedback provided to students is perceived as

valuable in their learning experience. Open-ended question responses further supported the data for this question. This corresponds with the statement from Miller (2013) on feedback, "Students need timely feedback on work in progress that salutes original ideas, solid research, and effective use of skills as well as offering suggestions for improvement" (pp. 114-115). Including timely and accurate feedback to students in class may prove beneficial to learning whether a standards-based approach to grading is implemented or not.

    2.  Will students perceive their grade accurately represents their abilities?

Data did not support an overall change in student perceptions of grades and their abilities. When compared to the control group, no significant changes occurred. For work required to transition to a standards-based grading method, the data does not support making that change.

    3.  Do students find value in the opportunity to redo assessments?

Data from the tests, quizzes, and homework construct suggested student perceptions of this construct changed significantly. This was further supported in the open-ended responses. Several participants cited the opportunity to redo assessments was beneficial to their mastery of content. This echoes that allowing redos holds students accountable and motivates them to learn (Wormeli, 2006b). Adopting a redo policy in the classroom may prove beneficial to student learning and mastery.

While results failed to show significant changes in student perceptions for standards-based grading, some parts did show change. Providing clear and timely feedback to students and implementing a redo policy for assessments is worthy of consideration by practicing educators. These two aspects can be easily adopted into any

classroom without implementation of a full standards-based grading system. I would recommend practicing educators evaluate their current grading methods to ensure concise and timely feedback is included in their evaluation methods. I would further recommend practicing educators adopt a redo policy as well to help students master course objectives.

**Recommendations for Future Research**

Further research on student perception of standards-based grading should be completed to add to the literature of standards-based grading. While much is known about the process of standards-based grading, very little literature pertains to student perceptions of this method. Uncovering perceptions students have of standards-based grading may provide insight for the adoption and implementation of such a system. Identification of key components students perceive as beneficial to their learning could lead to better course experiences for them as well. Further research should be done on a broader scale with the inclusion of entire educational departments or schools that align more closely in demographics. Future research should also be conducted over a longer period, perhaps for the entire school year.

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# Appendix A

## Beginning of Class Survey

**Directions:** Circle the number in a box that best reflects your perceptions towards other classes.

| Abilities | Strongly Disagree | Disagree | Somewhat Disagree | Neutral | Somewhat Agree | Agree | Strongly Agree |
|---|---|---|---|---|---|---|---|
| 1. I can learn everything my teachers teach me. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 2. I set goals in classes that I try to achieve. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 3. I am motivated to learn new content. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 4. I learn new content quickly. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 5. I find learning new material easy. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 6. I struggle to pay attention in classes. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

| Classroom Feedback | Strongly Disagree | Disagree | Somewhat Disagree | Neutral | Somewhat Agree | Agree | Strongly Agree |
|---|---|---|---|---|---|---|---|
| 7. My teachers are available to answer questions when I need help. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 8. My teachers make it clear what I am supposed to learn. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 9. My teachers writes things on my assignments to help me do better in the future. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 10. My teachers gives me feedback | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

| | Strongly Disagree | Disagree | Somewhat Disagree | Neutral | Somewhat Agree | Agree | Strongly Agree |
|---|---|---|---|---|---|---|---|
| throughout class to let me know how I am doing. | | | | | | | |
| 11. I find it valuable to receive timely and appropriate feedback. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 12. It is valuable for me to fix mistakes on assignments to learn from them. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 13. I do not review the feedback from my teachers. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

| Grades | Strongly Disagree | Disagree | Somewhat Disagree | Neutral | Somewhat Agree | Agree | Strongly Agree |
|---|---|---|---|---|---|---|---|
| 14. My grades represents what I learn in classes. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 15. My grades reflect how much effort I put forth in classes. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 16. My grades reflect how much growth I made. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 17. I can interpret the meaning of my grades. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 18. Grades measure my abilities accurately. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 19. Grades do not motivate me in classes. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

| Tests, Quizzes, and Homework | Strongly Disagree | Disagree | Somewhat Disagree | Neutral | Somewhat Agree | Agree | Strongly Agree |
|---|---|---|---|---|---|---|---|
| 20. Homework is beneficial to understanding a concept in classes. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

| 21. Homework is extra work that is not important. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| 22. Homework assignments are valuable to achieving mastery. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 23. Optional homework is useful when I need extra practice. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 24. Retaking tests/quizzes aids in my ability to master a standard. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 25. Test and quiz scores show my level of mastery of a standard. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 26. I find it difficult to complete homework assignments on time. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

**Please complete the following demographic information:**

**Gender:**     Male          Female

**Grade:**      9              10              11              12

**Ethnicity:** _____

**Identify the grade you anticipate to earn in this class:**     A     B     C     D     F

**Appendix B**

**End of Class Survey**

**Directions:** Circle the number in a box that best reflects your perceptions towards how

things went in this class.

| Abilities | Strongly Disagree | Disagree | Somewhat Disagree | Neutral | Somewhat Agree | Agree | Strongly Agree |
|---|---|---|---|---|---|---|---|
| 1. I can learn everything my teacher teaches me. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 2. I set goals in class that I try to achieve. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 3. I am motivated to learn new content. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 4. I learn new content quickly. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 5. I find learning new material easy. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 6. I struggle to pay attention in class. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

| Classroom Feedback | Strongly Disagree | Disagree | Somewhat Disagree | Neutral | Somewhat Agree | Agree | Strongly Agree |
|---|---|---|---|---|---|---|---|
| 7. My teacher is available to answer questions when I need help. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 8. My teacher makes it clear what I am supposed to learn. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 9. My teacher writes things on my assignments to help me do better in the future. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 10. My teacher gives me feedback | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

| | Strongly Disagree | Disagree | Somewhat Disagree | Neutral | Somewhat Agree | Agree | Strongly Agree |
|---|---|---|---|---|---|---|---|
| throughout class to let me know how I am doing. | | | | | | | |
| 11. I find it valuable to receive timely and appropriate feedback. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 12. It is valuable for me to fix mistakes on assignments to learn from them. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 13. I do not review the feedback from my teacher. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

| Grades | Strongly Disagree | Disagree | Somewhat Disagree | Neutral | Somewhat Agree | Agree | Strongly Agree |
|---|---|---|---|---|---|---|---|
| 14. My grades represents what I learn in class. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 15. My grades reflect how much effort I put forth in class. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 16. My grades reflect how much growth I made. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 17. I can interpret the meaning of my grade. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 18. Grades measure my abilities accurately. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 19. Grades do not motivate me in class. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

| Tests, Quizzes, and Homework | Strongly Disagree | Disagree | Somewhat Disagree | Neutral | Somewhat Agree | Agree | Strongly Agree |
|---|---|---|---|---|---|---|---|
| 20. Homework is beneficial to understanding a concept in class. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 21. Homework is extra work that is not important. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| 22. Homework assignments are valuable to achieving mastery. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 23. Optional homework is useful when I need extra practice. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 24. Retaking tests/quizzes aids in my ability to master a standard. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 25. Test and quiz scores show my level of mastery of a standard. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 26. I find it difficult to complete homework assignments on time. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

**Short Response:** Please provide a response to the following questions.

27. What parts of standards-based grading did you find the most beneficial?

28. Was there anything you did not like or find as helpful with standards-based grading? If yes, how could it be improved?

29. Did standards-based grading help you better learn course material? If yes, explain how it helped and if no, explain how it did not help.

30. Did standards-based grading motivate you to master or make progress towards mastery of the identified standards? Please explain why or why not.

31. Was the use of standards-based grading more or less reflective of your actual knowledge or ability than other grading practices? Please explain.

32. Did standards-based grading change your perception of grading practices? If yes, in what way did they change?

33. Share any additional information you feel is relevant to your experience with standards-based grading.

**Appendix C**

**Home Maintenance Course Standards**

**Home Buying Standards Based Evaluation**

| Performance Objectives | 4- Mastery | 3- Proficient | 2- Developing | 1- Needs Work |
|---|---|---|---|---|
| I can define terms related to home buying | | | | |
| I can weigh the pros and cons of buying a house | | | | |
| I can differentiate between wants and needs in a house | | | | |
| I can develop a budget for my income and expenses | | | | |
| I can calculate my monthly house payment | | | | |

| Scale Score | Percentage Score |
|---|---|
| 4 | 100 |
| 3.5 | 95 |
| 3.0 | 90 |
| 2.5 | 80 |
| 2.0 | 70 |
| 1.5 | 65 |
| 1.0 | 60 |
| Below 1.0 | 50 |

**Framing Standards Based Evaluation**

| Performance Objectives | 4- Mastery | 3- Proficient | 2- Developing | 1- Needs Work |
|---|---|---|---|---|
| I can construct a stud wall 16" on center. | | | | |
| I can properly identify and use required tools to frame a wall. | | | | |
| I can identify the 4 main structural areas of a house. | | | | |
| I can explain and execute safe work habits at home and in the shop. | | | | |

| Scale Score | Percentage Score |
|---|---|
| 4 | 100 |
| 3.5 | 95 |
| 3.0 | 90 |
| 2.5 | 80 |
| 2.0 | 70 |
| 1.5 | 65 |
| 1.0 | 60 |
| Below 1.0 | 50 |

**Electricity Standards Based Evaluation**

| Performance Objectives | 4- Mastery | 3- Proficient | 2- Developing | 1- Needs Work |
|---|---|---|---|---|
| I can draw and interpret wiring diagrams. | | | | |
| I can properly identify and use required tools and equipment for electrical wiring. | | | | |
| I can define different vocabulary words related to electricity and wiring. | | | | |
| I can explain and execute safe electrical working habits. | | | | |
| I can correctly wire different type of circuits commonly found in a home. | | | | |

| Scale Score | Percentage Score |
|---|---|
| 4 | 100 |
| 3.5 | 95 |
| 3.0 | 90 |
| 2.5 | 80 |
| 2.0 | 70 |
| 1.5 | 65 |
| 1.0 | 60 |
| Below 1.0 | 50 |

**Drywall Standards Based Evaluation**

| Performance Objectives | 4- Mastery | 3- Proficient | 2- Developing | 1- Needs Work |
|---|---|---|---|---|
| I can describe and use various tools for hanging drywall. | | | | |
| I can explain how to cut drywall using different tools. | | | | |
| I can properly hang drywall using screws or nails. | | | | |
| I can explain the importance of corner bead. | | | | |

| Scale Score | Percentage Score |
|---|---|
| 4 | 100 |
| 3.5 | 95 |
| 3.0 | 90 |
| 2.5 | 80 |
| 2.0 | 70 |
| 1.5 | 65 |
| 1.0 | 60 |
| Below 1.0 | 50 |

**Taping and Mudding Standards Based Evaluation**

| Performance Objectives | 4- Mastery | 3- Proficient | 2- Developing | 1- Needs Work |
|---|---|---|---|---|
| I can differentiate between a butt and tapered drywall joint. | | | | |
| I can explain the steps for each mud coat. | | | | |
| I can identify and use tools and materials needed for taping and mudding. | | | | |
| I can properly t tape and mud different drywall joints. | | | | |

| Scale Score | Percentage Score |
|---|---|
| 4 | 100 |
| 3.5 | 95 |
| 3.0 | 90 |
| 2.5 | 80 |
| 2.0 | 70 |
| 1.5 | 65 |
| 1.0 | 60 |
| Below 1.0 | 50 |

**Drywall Texturing Standards Based Evaluation**

| Performance Objectives | 4- Mastery | 3- Proficient | 2- Developing | 1- Needs Work |
|---|---|---|---|---|
| I can describe different methods of drywall texturing. | | | | |
| I can texture drywall using one texturing method. | | | | |
| I can remove texture from drywall. | | | | |

| Scale Score | Percentage Score |
|---|---|
| 4 | 100 |
| 3.5 | 95 |
| 3.0 | 90 |
| 2.5 | 80 |
| 2.0 | 70 |
| 1.5 | 65 |
| 1.0 | 60 |
| Below 1.0 | 50 |

**Drywall Patch Standards Based Evaluation**

| Performance Objectives | 4- Mastery | 3- Proficient | 2- Developing | 1- Needs Work |
|---|---|---|---|---|
| I can fix drywall using the California patch. | | | | |
| I can identify proper patching techniques based on the damage. | | | | |

| Scale Score | Percentage Score |
|---|---|
| 4 | 100 |
| 3.5 | 95 |
| 3.0 | 90 |
| 2.5 | 80 |
| 2.0 | 70 |
| 1.5 | 65 |
| 1.0 | 60 |
| Below 1.0 | 50 |