TRADITIONAL GRADES OR OBJECTIVE-ALIGNED FEEDBACK: WHICH TYPE OF INSTRUCTIONAL FEEDBACK DO HIGH SCHOOL STUDENTS PREFER, AND WHY?

A Scholarly Research Project

Submitted in Partial Fulfillment of the Requirements for the Degree

Doctor of Education

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May 2022

Abstract

The purposes of this survey-based, mixed-methods, practical action research study were to 1) determine the type of instructional feedback that high school students believe supports their learning and 2) determine how high school students utilize feedback to support their learning. The study assimilated grades with instructional feedback using Student Learning Objectives (SLOs). Students completed an assessment, followed by the provision of two different types of reports: an objective-aligned feedback report and a traditional score report. Findings of the study revealed that 80% of the 40 high school students who participated preferred objective-aligned instructional feedback to traditional instructional feedback (e.g., letter grades). The findings from this study suggest that high school students value instructional feedback for improving their academic performance.

Keywords: Student Learning Objectives (SLOs), instructional feedback, traditional grades, objective-aligned feedback, mastery, standards-based grading, assessment, Mastery Manager, reteaching, small group instruction.

DEDICATION

This research is dedicated to my children Jayda and Jaden never give up on your dreams and always walk in the truth babies. To my mom Linda and dad Antoine thank you for always supporting me. To my mother, thank you for all the inspiration, motivation, and sacrifices you have made to help me accomplish my goals. Thank you for all the support and love you continue to show me and my children. This is for you!

ACKNOWLEDGEMENTS

I would like to thank my lifelong mentors Mrs. Dervin-Brown and Mr. Sokoya for supporting me over the last 20 years. From a young high school student in your science classes to my doctoral degree, thank you for remaining in my corner and supporting me in accomplishing my goals. Thank you to Mr. Pete Duffy, President of Goldstar Learning, and Mrs. Joann Lee, Education Solutions Manager of Goldstar Learning the creators of Mastery Manager. I would also like to thank Dr. Jana Hunzicker, Dr. Jenny Tripses, and all my professors for their outstanding instruction, support, and development of this doctoral program. Thank you also to all my family and friends for believing me.

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Chapter 1 - Introduction

I have always been guided by biblical precepts, psalms, and the word of God. One of my favorite parts of the scripture offers an insight into the purpose of my research study: “Wisdom is the principal thing; therefore get wisdom: And with all thy getting get understanding.” (Holy Bible King James Version, Proverbs 4:7). This verse has guided this research project from its very outset.

In my early years as a high school math and science instructor, I experimented with various methods to provide students with clear instructional feedback on their weekly quizzes and unit exams. I aimed to provide feedback that would explain how each student performed on the learning objectives assessed.

For each quiz and unit exam, I used a cover sheet that included a table listing the objectives tested on the assessment as well as the question numbers that corresponded with each objective. Upon scoring each student's assessment, I would either provide instructional feedback, let them know the number of questions they answered correctly out of each section, or calculate the students’ mastery for each objective if time permits. I employed a process that I now define as Objective-Aligned Instructional Feedback, a merge between traditional and standards-based grading. Through my trial-and-error practices, I learned that while students appreciated receiving clear feedback, providing such feedback in a prompt and consistent manner was a highly time-consuming task.

Around the same time, the high school I worked in purchased a Mastery Manager program, which is a tool that allows educators to track their instructional effectiveness. All teachers in the school received training on the program and began to use the Mastery Manager system to assess student mastery. As a result, I did not need to manually grade assessments. With Mastery Manager,

I immediately had access to student performance data, enabling me to improve my instructional practices and, ultimately, ensure my students' mastery of the learning objectives.

When I began my doctoral research, I knew that I wanted to continue studying clear and actionable instructional feedback. As I began to plan out the current action research project, I decided to reach out to the Mastery Manager company and explained the purposes and goals of my doctoral research to a customer service representative. Soon after the call, the representative put me in touch with the Mastery Manager's Education Solutions Regional Manager and the President and Founder of Goldstar Learning, the corporation owning Mastery Manager. We arranged a time to virtually meet and discuss my research project. Eventually, we created a Mastery Manager access and training plan for myself and the two teachers whose students I intended to recruit as research participants.

As the lead researcher of this study, I signed a customer contract agreeing to pay for the Mastery Manager services for myself and the two participating teachers. I continued to communicate with representatives from Mastery Manager throughout the planning process. However, as a customer of Mastery Manager and the lead researcher, I had no obligation to share my research findings with Mastery Manager nor was I provided any goods or services other than permission to conduct research using their system and use the name of the Mastery Manager system in my study's final report. Aside from the planning stage, the entirety of the study was conducted independently of Mastery Manager.

Given these contextual specifics, the current chapter introduces the research problem of the study in the form of a brief literature review, declares the purpose of the study, introduces the study's research questions, defines essential terms, and describes the significance of the study.

The Research Problem

Have you ever reflected on a grade you received on an assessment, paper, or project, and asked yourself - what did I do wrong? What skills did I master? What specific skills should I study to improve my grade the next time? Or, what does this letter grade mean? Have you ever wished that the grade you received was in the form of clear, actionable feedback so that you could know precisely how to improve? If you have answered yes to any of these questions, you are not alone in such an experience. An essential step to providing students with clear, actionable feedback is recognizing that instructional feedback and grades can work in tandem to support student learning. Hence, educators must first understand that grading is a form of instructional feedback. The purpose of instructional feedback is to improve student performance, rather than announcing a final evaluation or grade (Reeves, 2013). To support students academically, educators and stakeholders must regard all forms of grades as forms of instructional feedback.

Traditional grading methods have frequently left students feeling defeated and uncertain about succeeding in school. Thomas & Oldfather (1997) conducted a study with elementary and high school students, finding that grades and assessments impact student identity, motivation, and self-esteem. Teachers also experience challenges with traditional grading practices due to inconsistencies therein. According to Simon et al. (2010), a math teacher reported that grading policies conflicted with professional judgments regarding what must be included in grading. For example, some teachers believe in including student participation and behavior in addition to academic aspects.

Bowers (2011) found that teachers' grading practices vary significantly, ranging from grading for academic knowledge to socially appropriate behaviors such as class participation. It is important to note that academic achievement can differ from one area of content to another, based

on the student development level and the grading policies of the school district (Bowers, 2011; Bonner & Chen, 2009; Carey & Carifio, 2012). At times, grading practices differ among teachers in the same institution. For example, one teacher may believe in grading on a curve while another could grade based solely on individual merit. Overall, it is clear that there is a need for effective instructional feedback practices that forms of traditional instructional feedback fail to supply.

According to Gershernson (2010), low grading expectations were found to negatively impact student performance. As grading is frequently associated with instructional feedback, many students only receive instructional feedback when teachers update grades. At times, feedback aligned to specific objectives or standards is only provided to students during formative assessments as a part of particular lessons or instructional units. Thus, students tend to miss opportunities to completely understand their position in terms of the mastery of specific learning objectives. Furthermore, they lose out on a valuable opportunity to become independent learners. Boud (2000) cautioned, "Unless students can use the feedback to produce improved work through, for example, re-doing the same assignment, neither they nor those giving the feedback will know that it has been effective" (p. 158).

Providing students with clear, actionable feedback can help bridge educational gaps by empowering students with knowledge regarding their academic strengths and weaknesses. I believe that once this is carried out, students will be empowered to focus on the specific skills they require to succeed. This effort will also support teachers in achieving the ultimate goal of teaching, which is to help students understand concepts.

The Need for Clear, Actionable Instructional Feedback

Wiggins (1994) stated that grades should provide information about performance relative to the end of grade-level expectations and focus on distinguishing the quality of students' work.

Guskey & Brookhart (2019) stated that grading should “clearly define the criteria, clearly specify the weight or relative emphasis each criterion should contribute to the grade for the piece of student work, and apply the criteria and weights consistently” (p. 27). Student Learning Objectives and Bloom’s Taxonomy are tools that teachers may use to support their efforts to provide clear, actionable instructional feedback.

Student Learning Objectives

One may question the necessity to include learning objectives/standards to accompany students’ grades. According to one study, students refer to the learning objective 87% of the time when preparing for exams, while 85% refer to the learning objective while completing homework (Toledo & Dubas, 2017). As students reference learning objectives while studying, it is a logical initiative to provide them with grades and other forms of instructional feedback aligned with the corresponding learning objectives or learning standards. Toledo and Dubas (2017) confirmed the strengths of using scaffolded Student Learning Objectives (SLOs) along with a grading mechanism. Student Learning Objectives (SLOs) are defined as "a set of goals that measure educators' progress in achieving student growth targets" (Lachlan-Haché, Cushing, & Bivona, 2012, p. 1). Student Learning Objectives are an effective and efficient means by which students may be provided with clear, actionable instructional feedback

Bloom’s Taxonomy

Student learning objectives identify the knowledge and activity that the student is expected to possess and carry out, respectively, at the end of daily or weekly classroom instruction. Ideal learning objectives must always outline a knowledge- or skill-related verb from Bloom's Taxonomy. Bloom’s Taxonomy identifies a hierarchy of cognitive skills that can be developed through the process of learning (Oxford Reference, 2022). Each level of Bloom's Taxonomy

provides specific verbs that educators can use to clearly map out their Student Learning Objectives (SLOs). The action verbs can be broken down into six levels, from easiest to most difficult, to assist in the assessment of student learning. From most simplistic to most challenging, these levels include: (1) Remembering, (2) Understanding, (3) Applying, (4) Analyzing, (5) Evaluating, and (6) Creating.

An example of an instructional learning objective, in line with Bloom's Taxonomy, would be: students will be able to evaluate linear equations. In this example, the action verb is the word "evaluate." Learning objectives must also state an explicit skill or concept, which, in this case, is evaluating linear equations. Learning objectives are often aligned with a standardized set of learning standards, such as the Common Core State Standards or the SAT Domains. A qualitative study conducted in 2015 found that using standards-based grading could result in twice as many students passing a state test and earning a letter grade of A or B in class (Pollio & Hochbein, 2015). The same study suggested that further qualitative and quantitative research should be conducted to determine the impact of standards-based grading.

Toledo and Dubas (2017) found that scaffolding standards using student learning objectives and assigning them to a particular grade comprises of a vital strategy to support student learning. According to their data, writing standards-based learning objectives guided by Bloom's Taxonomy and employing a grading method aligned with Student Learning Objectives would enable students to comprehend the value of their grades, and in turn, take up greater responsibility for their learning (Toledo & Dubas, 2017). It is evident that both educators and students could benefit from having an efficient and strategic model to support students' learning and academic performance. To produce independent student learners, improve instructional practices, and increase student

mastery, we must address invaluable grading practices by consistently and frequently providing students with clear, actionable instructional feedback.

Research Purpose and Questions

The two purposes of this study were to 1) determine the type of instructional feedback that high school students believe supports their learning and 2) determine how high school students utilize feedback to support their learning. The study was guided by two research questions: 1) What instructional feedback do high school students believe supports their learning and why? 2) How do high school students utilize instructional feedback to support their learning?

Essential Definitions

This study considered several definitions that were essential. Feedback was defined as "information provided by an agent (e.g., teacher, peer, book, parent, experience) regarding aspects of one's performance or understanding that occurs after instruction" (Ishchenko & Verkhovtsova, 2019, p.102). Instructional feedback "provides a link between the teacher's assessment of a student and the action that follows the assessment" (Ishchenko & Verkhovtsova, 2019, p. 116). There are three primary types of instructional feedback: traditional, standards-based, and objective-aligned. Traditional instructional feedback, also known as traditional letter grades in this study, was defined as a letter grade or scores that generally represent the percentage of questions, items, or tasks completed correctly on an assessment or assignment (see Table 1).

Table 1

Traditional Grading Scale and Letter Grades

Traditional Grading Scale	
100%- 90%	A
89%- 80%	B

79%- 70%	C
69%- 60%	D
59%- 0%	F

Standards-based instructional feedback, also known as *standards-based grading,* was defined as a system of feedback that describes student progress in terms of standards (Marzano Resources, 2022). According to Marzano (2022), standards-based grading is effective in providing feedback and evaluating students' performances using clearly defined criteria for specific learning standards. Standards-based grading differs from traditional instructional feedback as it focuses on students' performance levels aligned with their grade-level standards and skills (see Table 2).

Table 2

Standards-Based Grading Scale, Levels of Performance & Example of Standards-based Grading

Standards-Based Grading Scale	
Exceeds Expectations	4
Mastery of Target	3
Partial Mastery of Target	2
Little Mastery of Target	1
No Mastery of Target	0

Example of Standard-based Grading (Using Common Core State Standards)	
Overall Grade: Unit Test 1 Linear Equations	2.5
CCSS.MATH.CONTENT.HSA.CED.A.1 Create equations and inequalities in one variable and use them to solve problems.	2
CCSS.MATH.CONTENT.HSA.CED.A.2 Create equations in two or more variables to represent	3

relationships between quantities; graph equations on coordinate axes with labels and scales.	
CCSS.MATH.CONTENT.HSF.LE.A.2 Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table).	3
CCSS.MATH.CONTENT.HSF.LE.B.5 Interpret the parameters in a linear or exponential function in terms of a context.	2

Standards-based grading allows a teacher to assess student performance using a form of ranking instead of a point system. Common Goals Incorporated (n.d.) explained that with this form of grading, teachers may assess student performance and select an appropriate mastery level demonstrated by the standards-based grading scale, as seen in Table 2. While standards-based grading has been proven to increase student academic achievement (Pollio & Hochbein, 2015), it also requires a significant paradigm shift for all stakeholders involved, especially teachers.

Objective-aligned instructional feedback is a term that I have formulated, defined as numeric and language-based information that provides students with an overall percentage of mastery and an individual score correlated with the accuracy percentage that is precisely aligned with specific learning objectives assessed for an assignment or task (see Table 3).

Table 3

Objective-Aligned Feedback

Objective-Aligned Feedback (A merge of Traditional Instructional feedback & Standards-Based Grading)		
Overall Grade: Unit Test 1 Linear Equations	B =86%	Questions 1-20
Students will be able to evaluate linear equations.	70%	1, 5, 9, 13, 17
Students will be able to graph linear equations using slope and	80%	2, 6, 10, 14, 18

y-intercept.		
Students will be able to create linear equations using slope and y-intercept or the point-slope formula.	100%	3, 7, 11, 12, 19
Students will be able to interpret linear equations.	95%	4, 8 12,16, 20

When students receive objective-aligned feedback, each question on the assessment will be clearly correlated to a specific learning objective that identifies exactly what a student should know and be able to do at the end of daily or weekly classroom instruction. In my opinion, both standards-based grading and objective-aligned instructional feedback provide more meaningful information for students than the sole use of traditional letter grades. Objective-aligned instructional feedback can also make use of standards in place of objectives.

In this study, I chose to examine objective-aligned instructional feedback instead of standards-based instructional feedback because objective-aligned feedback uses more student-friendly and does not require stakeholders to adjust to a new grading scale. Moreover, objective-aligned instructional feedback provides students with bite-sized goals and skills that are specific and clear. Standards-aligned instructional feedback offers relatively general goals that students must achieve to attain a particular grade level.

Significance of the Study

The significance of this study is highlighted by how it addresses the challenges experienced and identified by several educators. The study answers the call for further research on clear, actionable instructional feedback. For example, Guskey & Brookhart (2019) state that future research on grading should focus on starting with “clear learning goals, the feedback function of the grade, providing multiple grades that reflect the product, process, and progress” (p. 27). The current study focuses on clear student learning goals and the feedback function of the grade.

Moreover, as stated by the American Institute for Research, "Student Learning Objectives (SLOs) can offer a clear connection between instruction, assessment, and student data" (Lachlan-Haché, Cushing, & Bivona, 2012, p. 10). This study sought to ensure that the Student Learning Objectives (SLOs) are clear and effectively written, such that the instructional feedback received by students is easy to understand.

Furthermore, Hattie & Tiniperley (2007) stated that feedback "needs to be more fully researched by qualitatively and quantitatively investigating how feedback works in the classroom and learning process" (p.104). The current study focuses on instructional feedback, outlining qualitative and quantitative data regarding factors therein that may benefit student learning

Finally, and most importantly, Laux (2018) reported that students must be allowed to voice themselves in the classroom. Neglecting the voice of students is an utter disservice to students and educators alike. I agree with the conclusion drawn by Laux and believe that the voices of students must be allowed in every instructional setting. Determining the type of instructional feedback that high school students believe supports their learning and understanding how high school students utilize feedback to support their learning will allow educators to gain perspectives concerning the value of consistent and frequent use of clear, actionable instructional feedback in place of traditional letter grades.

Organization of Research Report

This research report is organized into five chapters. The current chapter shared contextual information related to the genesis of the study, introduced the study's research problem in the form of a brief literature review, declared the purpose of the study, introduced the study's research questions, defined essential terms, and described the significance of the study. Chapter 2 will provide an extended literature review linked to the research problem and purposes of the study.

Chapter 3 will describe the research methodologies and methods. Chapter 4 will report and discuss the result and findings, while Chapter 5 will conclude the report by drawing conclusions, discussing implications for practice, and offering recommendations for future research.

Chapter 2 - Literature Review

Introduction

Most educators from K-12 and higher education institutions agree that there is a need to improve grading practices. Yet, educators hesitate to address challenges with grading as they "don't know how to make the change, and they are afraid that making the change will negatively affect students because employers and colleges won't know how to interpret a new grading system appropriately" (Cornue, 2018, p. xii). Upon researching instructional feedback practices, I reflected on the current grading and instructional practices implemented in most secondary school settings.

Most high school teachers assess students using traditional grading practices that fail to provide students, parents, and even educators with a clear picture of what students have and have not learned. Generally, traditional grading practices only give a letter grade that equates to the students' overall mastery percentage. Traditional grading practices do not offer students information on the skills necessary to continue studying or skills that they have already mastered. The logical answer most schools lean towards is the standards-based grading system; however, there are challenges with using standards-based instructional feedback as a primary approach. Educators require a method for effective grading that will not require a significant paradigm shift.

The two purposes of this study were to 1) determine the type of instructional feedback that high school students believe supports their learning and 2) determine how high school students

utilize feedback to support their learning. The study was guided by two research questions: 1) What instructional feedback do high school students believe supports their learning and why? 2) How do high school students utilize instructional feedback to support their learning? This chapter provides a comprehensive literature review focused on the benefits and challenges of traditional and standards-based grading to demonstrate how merging traditional grading and standards-based grading to create objective-aligned instructional feedback could prove to be an ideal solution to provide students with clear, actionable instructional feedback as objective-aligned instructional feedback is a practice being defined in this study.

Grading as Instructional Feedback

Purpose of grading

Grading is the process of assessing student learning through classroom tests, assignments, and projects, where teachers establish the process and define the value attributed to grades for various audiences (Cross, 1990; Walvoord & Anderson, 1998). It is important to bear in mind that grading is a form of instructional feedback. The purpose of instructional feedback is to improve student performance, rather than simply announcing a final evaluation (Reeves, 2013). Historically, four purposes have been outlined for grading: 1) it evaluates the quality of a student's work; 2) communicates with the student, employers, graduate schools, and others; 3) motivates the students to study and determines their focus and involvement in the course, and 4) organizes to-mark transitions, offer closure and focuses effort for both students and teachers (Chickering & Gamson 1987; Walvoord & Anderson, 1998 p. 2). The two most commonly used types of instructional feedback are traditional instructional feedback and standards-aligned instructional feedback.

Types of Instructional Feedback

Traditional Instructional Feedback

Traditional instructional feedback also referred to as *traditional letter grades* in this study, relates to the letter grade or score that typically represents the percentage of questions, items, or tasks completed correctly on an assessment or assignment (Common Goals Systems, Inc., n.d.).

Advantages

There are advantages to traditional instructional feedback that explain its common use in the field. Out of the several research studies that have incorporated student voices and surveys, a study by Healy et al. (2014) exemplifies an excellent job of incorporating individual student voices. The authors' research considered students' perspectives on assessments. Students reflected on the importance of specific assessments and the meaning they associated with them. The research concluded that traditional assessment activities can promote student learning (Healy & Doran, 2014). This evidence is essential to the current study as it identifies the benefits of traditional assessment activities. Traditional grading practices are beneficial as they have been used for years across all educational settings. An article by Meador (2019) reports that traditional grades benefit all stakeholders as they can easily interpret the meaning of the grades. Meador (2019) also shares that the "traditional grading scale allows for a direct comparison from one student to another within a specific class." These are a few of the reasons for which educators continue to adopt traditional grading practices today as well.

Disadvantages

There are also disadvantages to using traditional instructional feedback. Lehman, De Jong, and Baron (2018) investigated traditional-based grades and standards-based grades in the context of middle school students' performance on the scholastic math inventory assessment. The authors

provided a wealth of research-based knowledge concerning the challenges of traditional grading and the need for a new grading system. The study concluded that if "traditional-based grading systems persist, leaders in mathematical instruction will continue to ineffectively communicate about student achievement, which is misrepresenting their learning" (Lehman, De Jong, & Baron, 2018, p. 13). A study by Healy and Doran (2014) also outlines the following challenges: "lack of feedback, problems with bunching of assessments, and perceived lack of relevance to the learning outcomes were all cited as negative aspects of traditional assessments." These challenges are addressed through the implementation of objective-aligned feedback.

The use of traditional grades and traditional grading scales also leads to unclear communication with students and parents regarding how a student earned a particular grade. According to Meador's (2019) article that discussed the pros and cons of traditional grading, The traditional grading scale is limited because it does not show what a student is learning or what they should be learning. It provides no explanation for why or how a student ended up with a particular grade (Meador, 2019). The author also shares that traditional grades can be manipulated and used inconsistently across educators.

Standards-Aligned Instructional Feedback

Standards-based instructional feedback, also known as *standard-based grading,* is a system of feedback that describes student progress in relation to standards (Marzano Resources, 2022).

Advantages

There are many advantages of using standards-based grading practices to support student learning. Lehman, De Jong, and Baron, (2018) share that standards-based grades are beneficial since they identify the specific learning goals or objectives of the curriculum, ensuring appropriate rigor. One study states that standards-based grading allows "teachers to more accurately

communicate achievement and learning to students, to parents, and other educators" (Lehman, De Jong & Baron, 2018, p. 12). Pollio and Hochbein (2015) outline evidence to prove that the use of standards-based grading could result in twice as many students passing state tests and many more students earning better grades, in comparison to traditional grading practices. The study also pointed out that further qualitative and quantitative research requires to be carried out on standards-aligned grading practices. Hochbein and Pollio (2016) later conducted a study to determine which of the two grading systems (standards-based grading or traditional-based grading) was a more effective predictor of standardized test score performance. They also determined which of the two forms is most beneficial to minorities and disadvantaged students. The authors found that standards-based grading practices demonstrated a stronger correlation between grades and standardized test scores than traditional grading practices. This study found that 55% of students who earned an "A" or "B" in a math class demonstrated proficiency when scored on the standards-based grading rubric. In contrast, only 24% of the same students earned proficiency in a science class that used traditional grading. This study speaks to the benefits of standards-based grading practices, in comparison with traditional grading practices.

Standards-based grading has shown to be beneficial for supporting exceptional learners when specific steps are followed. Jung and Guskey (2011) suggested a five-step model and two mandatory foundational strategies to ensure accurate grades for diverse learners and English language learners. They focused primarily on the two foundational steps that must be followed in all schools before implementing the five-step model:

> Using this model, instructional teams agree on upfront the achievement standards appropriate for the student and report on these separately from progress and process indicators. Then, the school clearly communicates the grades' meaning to exceptional

> learners and their families through a practical and understandable reporting system (Jung & Guskey, 2011, p. 34).

The authors also stated that one of the two strategies present is a form of precise grading that is oriented according to standards or skills. The authors suggest aligning these standards or skills to grades based on product, process, and progress to support exceptional learners, stating that "effective grading systems establish clear standards" (Jung & Guskey, 2011, p. 35). Using the model outlined in this article would provide educators with efficient and effective steps to support exceptional learners when transitioning to grading practices that provide them with clear, actionable instructional feedback as represented by objective-aligned instructional feedback.

Disadvantages

While research demonstrates several benefits of using standards-based grading, they are not without their challenges. Townsley and Varga (2018) studied the impact of standards-based grading on ACT scores. Pre-existing data was collected from two high schools in rural areas in the Midwest. The study used nonparametric statistics to determine the mean ranking for GPA for traditional, as compared to standardized. According to the results, no significant change was found in GPA when comparing traditional and standards-based grading. The data from the study also indicates that using standards-based grading alone could result in a lower ACT score. This research proves that standards-based grading alone is not the answer to improving student performance. The results from the study suggest that standards-based grading may negatively impact ACT scores and not improve GPA. The current article supports the notion that neither traditional nor standards-based grading can operate alone – and that they must be used in conjunction.

Students' Use of Instructional Feedback

Buckmiller, Peters, and Kruse (2017) investigated the perceptions of students enrolled in a course that utilizes standards-based grading, identifying its benefits at the university level. Students from Drake University reported that standards-based grading supported them in becoming responsible for their learning. The study suggests that even students who did not like the standards-based grading practice generally reported it to be beneficial. The results from this article prove that students utilize instructional feedback at the college level as well.

Toledo and Dubas (2017) focused on prompting students to use grades as a tool by aligning instructional feedback with standards or objectives. The authors concentrated on using Marzano's Taxonomy and Student Learning Objectives (SLOs) and Standards. Marzano's Taxonomy is composed of three systems: "the Self-System, the Metacognitive System, and the Cognitive System, which is inclusive of the knowledge domain" (Intel Teach Program, 2012, p.1). This study shows that students with feedback aligned with standards or student learning objectives are more knowledgeable about their feedback on formative and summative assessments. The study supports that faculty and students using instructional feedback can proficiently determine the strengths and weaknesses of the learning outcomes. The study explains the benefit of providing clear, actionable feedback in terms of standards or objectives. The study also suggests that student performance improved most on comprehension tasks over analysis tasks.

All educators want their practices to motivate students, increase student performance, and improve their mastery of skills. Mahmood & Hugo (2019) focused on utilizing a sliding grading scale rubric to encourage struggling learners. Their research shows that students become more motivated when their goals and current performance levels are transparent. The researchers implemented a sliding grading scale rubric to observe its impact on high-performing students and

diverse learners. The results from the study also incorporated the voices of students, some of whom felt more motivated by the new sliding grading scale aligned with goals. However, higher-performing students who performed at the advanced level had no means to demonstrate their growth using the grading practices of the researchers. The authors' data support progress in students' academic development or scores. Out of the small population size tested in this study, 16.6% more students performed better than in the first implementation. Furthermore, the study results showed that the number of developing students decreased from 33% to 8.3%. This research supports that communicating grades as clear goals positively impacts students' academic performance. This data reinforces the notion that aligning students' grades with clearly identified goals or students' learning objectives motivate students.

Transitioning towards Efficient and Effective Grading

As most schools already make use of traditional instructional feedback, and given that the aim of the study is to merge standards-aligned grading with traditional grading to produce objective-aligned feedback, it would be beneficial to review literature on transitioning to the standards-based grading. One of the challenges to implementing standards-based grading is effectively implementing the practice for all stakeholders. Knight & Cooper's (2019) study investigated the effect of standards-based grading on learning, assessments, and students' behavior. This research speaks to challenges with implementing standard-based grading, reporting that stakeholders must be invested and prepared to transition to standards-based grading by breaking the processes into multiple steps. According to the study, if not used effectively, standards-based grading may become ineffective. The authors suggest the need to follow certain steps to ensure that standards-based grading is effective - teachers must identify priority standards, develop a grading

scale, redesign assessments, align instructions with learning standards, and develop strong classroom management practices (Knight & Cooper, 2019). The study concludes:

> Standards-based grading implementation does not come without a price. Standards-based grading requires time to develop, often faces pushback from community members resistant to change, and may cause frustration when inconsistencies or unanticipated issues arise and do not produce immediate results (Knight & Cooper, 2019, p. 89).

The study illustrates the challenges involved in transitioning to standards-based grading, the time required to make such a shift, and the steps to be implemented by the leaders. Note that objective-aligned grading does not require a paradigm shift to be carried out by stakeholders or community members, thereby avoiding frustration and pushback. Similarly, utilizing objective-aligned grading does not require teachers to create a proficiency scale, which prevents the need for additional work. Teachers would have to assign certain assessment questions to particular learning objectives; however, the assessments do not necessarily have to be redesigned. Ideally, teachers may use the student learning objectives from lessons they are teaching for grades so that teachers should not have to re-align their instruction with the objectives because it is already done. Link's (2018) research focused on the significance of pre-service grading practices and training, stating that grading appears inconsistent in K-12 institutions. Link (2018) utilizes the Teachers' Perceptions of Grading Practices (TPGP), a scale developed and validated through exploratory and confirmatory factor analysis. The results indicate that grading practices of middle and high school teachers include students' behavior, assigning no credit for missing work, and deducting points progressively until students submit their assignments. Furthermore, Link (2018) indicates that middle and high school teachers are "more likely than elementary teachers to base students' grades on effort, homework completion, and ability to turn in assignments on time" (p.

40). Over time, several other studies have discussed the challenges of traditional grading practices. "Instead of being a primary source of information, this system is not often an accurate representation of student knowledge" (Lehman, De Jong, & Baron, 2018, p. 13). Studies by Lehman et al. (2018) and Link (2018) suggest that sometimes, traditional grading practices fail to represent student knowledge and that teachers implement various grading practices in an inconsistent manner.

Carter (2016) provided evidence for implementing effective practices for transitioning to standards-based grading in secondary schools. This study identified eight best practices to support leaders in transitioning to standards-based grading practices. Step 1: Establish a sense of urgency, Step 2: Create the guiding coalition, Step 3: Develop a change vision, Step 4: Communicate the Vision for Buy-in, Step 5: Empower broad-based action, Step 6: Generate short-term wins, Step 7: Never let up, and Step 8: Incorporate change into the culture. The framework offered by Carter (2016) can support transitions in system-based grading to positively impact and improve academic progress of students. Employing standard or objective-aligned grading methods to provide students with actionable feedback is an effective practice that has been based on research.

Objective-aligned instructional feedback can be defined as a merge between standard-based grading and traditional grading. *Objective-aligned instructional feedback* provides students with an overall percentage of mastery and individual mastery percentages on each learning objective assessed on an academic task. According to Cornue (2018), linking student scores with individual standards can help them to understand particular areas of strength and weakness.

I believe that students deserve to receive feedback that provides them with information about the skills they have mastered and those that they still need to work upon. Providing students with such valuable information during grading has increased student engagement.

Chapter Summary

The current chapter provided a comprehensive literature review on the two primary types of instructional feedback currently used in secondary education institutions. The section provided literature on traditional instructional feedback and standards-based grading to prove that the merging of the two to create objective-aligned instructional feedback is an ideal approach to support student learning. Chapter 3 will describe the research methodologies and methods used in this study.

Chapter 3: Research Methodology and Methods

Introduction

The purposes of this study were to 1) determine the type of instructional feedback that high school students believe supports their learning and 2) determine how high school students utilize feedback to support their learning. Two research questions guided the study: 1) What type of instructional feedback do high school students believe supports their learning, and why? and 2) How do high school students utilize instructional feedback to support their learning? This chapter describes the research methodologies and methods utilized in this study to address the research questions posed, including the research context, data collection procedures, and data analysis procedures.

Research Methodology

Action Research

This study employed an action research methodology. "Action research is the process that requires us to 'test' our ideas about education" (Mertler, 2020, p. 18). According to Parson and Brown (2002), action research allows opportunities for collaboration and reflection, that may, in turn, lead to essential improvements in education. Action research is commonly adopted in K-12 schools due to the tendency of teachers to favor collaboration and reflective practices. In many K-12 schools, regular Professional Learning Community meetings occur where teachers discuss challenges and best practices linked to topics such as student learning, instructional feedback, and assessment. An excellent benefit of action research is that it promotes educators who collaborate with other educators to empower their relationships toward common goals (Mertler, 2020; Johnson, 2008; Mertler & Charles, 2011; Mills, 2011; Schmuck, 1997).

Practical Action Research

The specific variant of action research used for the study was practical action research. According to Fraenkel et al. (2012), "Practical action research is intended to address a specific problem within a classroom, school, or other community" (p. 590). The practical focus relevant to this study was aimed at determining the type of instructional feedback that high school students believe supports their learning and how they make use of instructional feedback to support their learning. Practical action research "has been shown to serve as a means of improving teachers' problem-solving skills and their attitudes toward professional development and school change as well as increasing their confidence and professional self-esteem" (Mertler, 2020, p. 23; Parsons & Brown, 2002). This most likely occurs because practical action research provides educators with an opportunity to determine the mechanisms that will best improve student learning within teachers' actual classrooms and schools.

Mixed Methods Research Design

This study utilized a mixed-methods research design, which is "an approach to an inquiry involving collecting both quantitative and qualitative data, integrating the two forms of data, and using distinct designs that involve philosophical assumptions and theoretical frameworks" (Creswell & Creswell, 2018, p. 4). A significant benefit of using mixed methods research is that it provides information and establishes connections between data points that are typically not captured by quantitative or qualitative data independently (Creswell & Creswell, 2018; Johnson & Turner, 2003).

Modified Explanatory Sequential Mixed Methods

Explanatory Sequential Mixed Methods is a specific mixed methods research design that collects, reports, and analyzes quantitative research before carrying out the same procedures with qualitative data. Thus, the qualitative findings of a study build on its quantitative results to explain and describe the topic in more detail than quantitative or qualitative data alone (Creswell & Creswell, 2018).

For the purpose of the current research, I selected a modified version of the Explanatory Sequential Mixed Methods research design as it allowed me to further my understanding of the numerical survey results using students' open-ended survey responses. This study differs from a traditional Explanatory Sequential Mixed Methods research design as both quantitative and qualitative data were collected simultaneously, rather than sequentially. In other words, both types of data were collected at the same time. However, during the procedure for data analysis, the quantitative data were analyzed first and subsequently elaborated using the qualitative data, a technique consistent with the Explanatory Sequential Mixed Methods research design.

Survey Research

Both quantitative and qualitative data were collected via a single survey. Surveys can be used "to assess needs, evaluate demand, and examine impact" (Salant & Dillman, 1994, p. 2). However, scholarly research has documented certain disadvantages of surveys such as the possibility of a low participant response rate and difficulty in collecting an amount of data that is sufficient for adequately generalizing answers to the research questions posed for the research (Malhotra & Grover, 1998). Notwithstanding this, the benefits of survey research design outweigh the disadvantages. Survey research provides flexibility to research participants in terms of the variety of modes they can adapt to – online, via the United States Postal Service, through phone interviews, and even face-to-face (Malhotra & Grover, 1998). Surveys are generally cost-efficient, and data can be gathered from large populations and across long distances through survey research (Creswell & Creswell, 2018). Moreover, survey questions can be written in multiple ways to collect both quantitative and qualitative data, such as nominal or multiple-choice questions, Likert rating scales, and open-ended responses.

Research Context

Research Setting

This survey-based, practical action research, modified explanatory sequential mixed-methods study was carried out at two high schools in the Chicago Public Schools school district in the State of Illinois, which is located in the Midwest region of the United States. Chicago Public Schools, also known as City of Chicago District 299, is the third-largest school district in the United States. According to the 2020-2021 Illinois Report Card (n.d.), Chicago Public Schools comprises 626 schools and 338, 956 students with 78% identifying as low income, 14% having an Individualized Education Plan, and 20% labeled as English Language Learners. The district has a 78% graduation

rate. For this study, two classes of students within two different high schools in Chicago Public Schools were selected as the study's research setting. The high schools were referred to as High School 1 and High School 2.

High School 1

High School 1 was an Early College STEM high school located on the far south side of Chicago. At the time of the study, this high school reported a student population of 278 students. According to the 2020-2021 Illinois Report Card (n.d.), 96% of the student population at High School 1 identified as Black, 2.2% identified as Hispanic, 1.1% identified as white, and less than 1% identified as two or more races. Only 1% of the students at High School 1 identified as English Language Learners. High School 1 offered several Advanced Placement (AP) courses and a range of Career and Technical Education programs to support students' career development. This high school reported a graduation rate of approximately 60%.

High School 2

High School 2 was a Military Academy located on the far south side of Chicago. At the time of the study, this high school reported a student population of 435 students. According to the Illinois Report Card (n.d.), 38.6% of the student population at High School 2 identified as Black, 60% identified as Hispanic, 1.4% identified as white, and 6% identified as English Language Learners. High School 2 offered several Advanced Placement (AP) courses, a range of foreign language courses, and several Career and Military Leadership programs to support students' development. The graduation rate at High School 2 was approximately 88%.

Participant Recruitment and Selection

Two of my lifelong mentors and former high school science teachers, one teaching at High School 1 and the other teaching at High School 2, permitted me to use their physics classes to

support the completion of this research study. These teachers introduced me to the principals at both high schools, where I requested permission to complete my research at their facilities. After both principals granted written forms of authorization for the study to be carried out at their respective high schools, student participants were recruited by the two physics teachers. Students were recruited from physics classes since the two teachers who volunteered their classes for participation in the study were both high school physics teachers. Due to this specification, all students who participated in the study were eleventh-grade students. All students were provided with general information about the study during class announcements in addition to a parental consent form that I created for students to take home for their parents to review and sign. A hard copy and a soft copy of the parental consent form were provided in English and Spanish, accounting for English Language Learner (ELL) students and parents. In addition to the class announcement, both teachers posted the parental consent form on their Google Classroom learning management systems for students to access online via Google Forms. This supported remote learners during the COVID-19 pandemic by reducing the transfer of paper.

There were no exclusion criteria for participation in the study. However, students were required to sign up by a specific date, as it was important for me to create an account in Mastery Manager for all research participants well before data collection was initiated. All students who returned their parental consent form by the stated deadline of Friday, November 19, 2021, were included as participants in the study. These participants were thus considered self-selected as students and parents chose to participate of their free will. Self-selected research participants support the practical action research methodology. Chen (2015) explained, “people who want to make a change are more likely to participate in an intervention program” (p. 283). In other words,

motivated individuals are usually self-selected participants. Students and parents were told that they could choose to stop participating in the study at any time.

Research Participants

At High School 1, 27 parents permitted their children to participate in the study. However, due to illness, quarantines, and remote learning during the COVID-19 pandemic, only 24 students actually participated in the study. At High School 2, 23 parents permitted their children to participate. However, due to similar circumstances, only 16 students participated in the study. Overall, a combined total of 40 students signed up to participate in the research study, however, only 39 students answered all questions; 23 from High School 1 and 16 from High School 2. The demographics of the High School 1 participants appear as follows: 23 Black students, one Hispanic student, 14 male students, and nine female students (see Table 4). Four students from High School 1 that had an Individual Education Plan (IEP), one student who identified as an English Language Learner (ELL), and four students that had a Section 504 plan participated in the study. The demographics of the student participants from High School 2 appeared thus: four Black students, 12 Hispanic students, six male students, and ten female students (see Table 4). Two students from High School 2 who identified as English Language Learners (ELL) participated in the study.

Table 4

Participants by school

	Black Students	Hispanic Students	Males	Females	n	%
High School 1	23	1	15	9	24	60%
High School 2	4	12	6	10	16	40%
Total	27	13	21	19	40	100%

Initially, a combined total of 40 students participated in the study; however, one student from High School 1 did not complete the survey in its entirety. I noticed that this student answered all the rated, multiple-choice questions but skipped the open-ended questions. Therefore, some student responses were calculated out of 40 participants while some others were calculated out of 39 participants. Since 40 students in total participated in the study that is the number reflected in table 4.

Data Collection

Instruments

Mastery Manager

Mastery Manager is one of the two instruments used to complete this research study. "Mastery Manager is a product made by Goldstar Learning Incorporation, founded in 2003 in conjunction with Dr. Rick DuFour, commonly known as the 'father' of Professional Learning Communities, and his assessment team at Adali E. Stevenson High School in Lincolnshire, Illinois, and other high achieving K-12 school districts across the country" (J. Lee, personal communication, January 25, 2022). An educational tool that is available to educators via purchase, Mastery Manager allows one to track the effectiveness of instruction and student learning in minutes. "Mastery Manager provides web-based assessment development, delivery, and reporting tools that support standards-based, real-time monitoring and reporting to give educators clear, actionable insight into student performance" (Mastery Manager, n.d.). The Mastery Manager database helps teachers answer an important question: How will we know that students are learning?

This study used three subscriptions to the Mastery Manager database, purchased by the researcher for herself and the two teachers whose students participated in the study. The tool was

purchased to align sample assessment questions to specific learning objectives. Mastery Manager was selected because the researcher was familiar with it, students participating in the study could complete the study's sample assessment online, the assessment could be automatically scored, and participants would be immediately provided with both traditional instructional feedback and objective-aligned feedback.

Student Sample Assessment

To provide students with both traditional and objective-aligned feedback, participants completed a sample assessment using the Mastery Manager database. The sample assessment was co-created by the researcher and the study's two participating teachers to ensure that the assessment was relatable to students and aligned with the content they were currently learning in their physics classes. The purpose of the sample assessment was not to determine student mastery of specific learning objectives but to generate two authentic types of instructional feedback for students – traditional and objective-aligned – in order to determine the type of instructional feedback high school students prefer, and the reasons for such a preference. Thus, the content and rigor of the sample assessment ranged from basic to challenging questions.

The student sample assessment consisted of 20 questions, with each aligned with one of the five learning objectives added to Mastery Manager. Table 5 shows the learning objectives assessed on the sample assessment as well as the questions assigned to each learning objective.

Table 5

Learning Objectives by Question on Sample Assessment

Learning Objectives Assessed on Sample Assessment	Question #
Objective 1: Students will be able to interpret, analyze and draw conclusions from graphs, tables, and charts.	Questions: 1, 2, 3, 4

Objective 2: Students will be able to apply general knowledge to answer questions.	Questions: 5, 6, 7, 8
Objective 3: Students will be able to use given information to solve for velocity, distance, and/or time.	Questions: 9, 10, 11, 12
Objective 4: Students will be able to solve multi-step equations and solve for slope and y-intercept.	Questions: 13, 14, 15, 16
Objective 5: Students will be able to solve SAT math and science "Conversion" word problems.	Questions: 17, 18, 19, 20

The sample assessment focused on math, science, and general education skills. The five learning objectives assessed were: 1) Students will be able to interpret, analyze and draw conclusions from graphs, tables, and charts; 2) Students will be able to apply general knowledge to answer questions; 3) Students will be able to use given information to solve for velocity, distance, and/or time, 4) Students will be able to solve multi-step equations and solve for slope and y-intercept, and 5) Students will be able to solve SAT math and science conversion word problems. The assessment was designed using practice SAT questions as well as force and velocity questions from participating students' current physics courses, general knowledge questions, and foundational graphing questions from standard Algebra 1 courses.

The students were informed that the assessment was called a "sample" assessment because their scores would not be shared with their teachers or published in the study's final report. At all times, students' identities were protected, and identifying information remained confidential. For example, participating students' names were de-identified and replaced with generic names, such as *Student 1*.

Before completing the sample assessment, I created student accounts in Mastery Manager for all students who participated in the study. The student accounts allowed participating students to log in to the Mastery Manager database and complete the sample assessment online. Students at

High School 1 completed the study on December 1, 2021, and students at High School 2 completed the study on December 2, 2021. Students completed the sample assessment and the subsequent student survey during their scheduled lunch period. All students completed the activities together at the same time. The sample assessment was only open to students during their lunch period, and students could only complete the sample assessment and survey on the day scheduled for their school. If students missed the date scheduled for the study, there would be no further opportunities to collect data.

Procedures

The data collection process of the study took place over two days. On Day 1, all participants at High School 1 completed the sample assessment and the survey. On Day 2, all participants at High School 2 completed the sample assessment and the survey. On both days, I organized the assessment and data collection to be completed within one hour during the students' lunch period. Each day, the research procedures were broken down into a Part A and Part B schedule, ensuring that the process was straightforward for both students and their teachers.

Part A

Part A of the data collection consisted of three steps (see Table 6). First, teachers provided all students with laptops or computers to complete the sample assessment and the survey. Second, students logged in to Google Classroom to access the link for the sample assessment. The participating teachers had posted the link on their Google Classrooms in advance so that students could easily access it. Third, once the students clicked on the assessment link, they used a student identification number to log in to the Mastery Manager database to complete the sample assessment online for 20 minutes. The students were given a 15-minute break after completing the sample assessment to eat lunch. During this time, the participating teachers and I printed the

traditional instructional feedback and objective-aligned feedback reports. These steps concluded Part A of the data collection. Before beginning Part B, the researcher completed step 4, which involved the distribution of both instructional feedback forms to each student.

Part B

Part B of the data collection included steps 5 and 6 – this procedure was allotted 15 minutes so that students had sufficient time to complete the survey (see Table 6). The two participating teachers posted the survey on their Google Classrooms prior to this procedure so that students could easily access and complete the survey. For step 5, once students had received their traditional feedback and objective-aligned feedback, they were asked to log in to Google Classroom again to complete the survey via Google Forms. The students were instructed to complete the survey honestly using their instructional feedback reports as required. When students finished the survey, they had officially completed the study. The entire data collection experience lasted about an hour or less.

Table 6

Steps Students took to Complete Action Research Study

Part A: Students Completed Sample Assessment (20 minutes)
Step 1: Students were instructed to use a school-provided laptop to complete the assessment and survey.
Step 2: Students were instructed to log in to Google Classroom to access the link for the research assessment they are to complete online via Mastery Manager.
Step 3: Students clicked on the assessment link in Google Classroom and entered their student ID number to complete the 20-question sample assessment in the Mastery Manager database.
Step 4: After students completed the assessment, they were instructed to raise their hand to let the researcher and teacher know that they have finished part A of the research.
Intermission (10-15 minutes) *An intermission took place after all students completed the sample assessment.*

Students ate lunch while the researcher and teachers printed both forms of instructional feedback for each student participant.
Part B: Students Completed Research Survey (15 minutes)
Step 5: Both forms of feedback were distributed to students - traditional feedback and objective aligned feedback. Students were then told to log in to Google classroom again, click on the link for the research survey, and complete it via Google Forms.
Step 6: When students are finished with the survey, they had finished the study.

Objective-Aligned Instructional Feedback

As soon as students completed the sample assessment, I printed both traditional instructional feedback and an objective-aligned instructional feedback report for each student from the Mastery Manager database. First, students received a traditional instructional feedback report that showed the percentage of correct items on the sample assessment. Second, students received an objective-aligned instructional feedback report. Table 7 models students' objective-aligned feedback report printed from the Mastery Manager database.

Table 7

Example of Objective-Aligned Instructional Feedback

Objective-Aligned Instructional Feedback			
Overall Score: 71%			
Learning Objectives Assessed on Sample Assessment	Question #	Points Earned	Percent Correct
Objective 1: Students will be able to interpret, analyze and draw conclusions from graphs, tables, and charts.	Questions 1, 2, 3, 4	3 out of 4 points	75% Approaching Mastery
Objective 2: Students will be able to apply general knowledge to answer questions.	Questions 5, 6, 7, 8	3 out of 4 points	75% Approaching Mastery

Objective 3: Students will be able to use given information to solve for velocity, distance, and/or time. (Question 12 counts for 2 points as it requires the student to select all that apply)	Questions 9, 10, 11, 12	2 out of 4 points	40% Below Mastery
Objective 4: Students will be able to solve multi-step equations and solve for slope and y-intercept.	Questions 13, 14, 15, 16	4 out of 4 points	100% Exceeds Mastery
Objective 5: Students will be able to solve SAT math and science "Conversion" word problems.	Questions 17, 18, 19, 20	3 out of 4 points	75% Approaching Mastery

The objective-aligned instructional feedback report provided participating students with their overall score and listed each learning objective from the sample assessment, the questions aligned to each learning objective, and the student's percentage of mastery for each learning objective. As shown in Table 6, the objective-aligned feedback report was color-coded to represent how students performed on each learning objective. Green indicated that the student reached or exceeded mastery; yellow indicated a student was approaching mastery, and red signified that the student was below mastery. Likewise, the sample assessment question numbers were also color-coded. Green indicated correct responses to the question, red indicated that the question was answered incorrectly, and yellow signified that the question was answered partially correctly. Yellow question numbers, such as question number 12 in Table 6, were only used for those questions that had more than one correct answer choice. This included questions with choices such as, select all that apply. As question number 12 had two possible correct answers, unlike other questions that were worth a single point, it was worth two points. A score of 71% was calculated as the overall score in Table 6 as the hypothetical student herein earned 15 out of the 21 possible points. Students' overall score and letter grade were the same on both reports. However, the objective-aligned feedback report provided additional sub-scores for each learning objective tested.

Google Forms

Once participating students received and read both their traditional and objective-aligned Mastery Manager instructional feedback, they were immediately asked to complete a 14-question online survey via Google Forms (Google Suites, 2021). Google Forms is a free, easy-to-use online tool that the researcher, participating teachers, and participating students were already familiar with at the time of the study. According to Nguyen et al. (2018), Google Forms "can be used in several ways such as surveying students outside of class to learn about them as individuals, engaging them in a class by collecting responses at the moment, and collecting their self-reflections after a lesson" (p. 75.). Google forms also "saves class time, decreases the amount of paper needed to be printed, and giving students more time to type their responses" (Nguyen et al., 2018, p. 75). Another excellent benefit of using Google Forms is that it automatically calculates response frequency for questions.

The survey included multiple-choice, yes/no, and open-ended response questions and was divided into two sections (see Appendix C). Section 1 of the survey focused on ensuring that students had received both the traditional and the objective-aligned instructional feedback so that they had the experiential information required to complete the survey in an effective manner. I also surveyed students to determine how often they received instructional feedback from their teachers if they currently use instructional feedback to support their learning, and what traditional grades and other forms of instructional feedback mean to students. Section 2 of the survey prompted students in interpreting the instructional feedback they received after completing the sample assessment via Mastery Manager. Students were asked about how they performed on the overall sample assessment, following which, they reflected on the received instructional feedback by identifying the learning objectives on which they had achieved 80% or higher.

Next, students reviewed their instructional feedback reports again to identify the learning objectives that corresponded with their lack of mastery. Students then indicated which form of instructional feedback – traditional or objective-aligned – better assisted them in determining the learning objectives they had mastered and not mastered. The last few survey questions focused on the form of feedback students preferred, how they typically use instructional feedback, and whether they believed objective-aligned feedback is beneficial to supporting student learning. It is important to note that two different survey questions asked students about the preferred form of feedback or grading in two different ways to track the consistency of the student responses.

Data Analysis

The quantitative data were analyzed using Google Forms algorithms and manual calculations. The data analysis process began with the alignment of each research question with the students' survey questions of the study. Frequency and percentage data corresponding with the quantitative questions for the two high schools combined were automatically calculated by Google Forms and graphically depicted using pie charts. The calculation and data display feature of Google Forms supported the data analysis phase of the current study as it automatically merged the quantitative data collected for both high schools. However, I collected the quantitative and qualitative data for each high school manually such that the data for each school could be displayed separately. To better understand the procedures I engaged with to analyze the survey data, the two research questions were divided into two components correlating with the quantitative or qualitative data.

Research Question 1

Quantitative Data

The first research question was as follows: What types of instructional feedback do high school students believe supports their learning, and why? This research question aligned with several of the study's student survey questions. To analyze the data taken from the survey to address this question, I first wanted to determine if students use instructional feedback. I reviewed student responses to question 2 from the student survey, which asked students if they currently use instructional feedback. Once it was clear that students did use instructional feedback, I intended to determine whether students believed clear instructional feedback (i.e., objective-aligned feedback) could support student learning. To this end, I gathered student responses from survey question 4, which provided quantitative data regarding whether students felt instructional feedback could help learning. The final form of quantitative data I collected to answer research question 1, was analyzed from survey question 12 to identify the form of instructional feedback students preferred after completing a sample assessment and receiving traditional instructional feedback and objective-aligned instructional feedback. Student responses from survey questions 2, 4, and 12 were used to provide quantitative data to answer research question 1: what type of instructional feedback do high school students believe supports their learning and why? (See Table 8)

As quantitative data was immediately available to me due to the use of Google Forms, I had instant access to percentages that corresponded with answers to survey questions 2, 4, and 12 for both high schools combined. However, I did not automatically have access to the percentages for each high school separately. To determine the frequency of student responses for each high school separately for survey questions 2, 4, and 12, I calculated the percentage of students who selected each choice from each question at each high school. This data provided me with a percentage of

students who use instructional feedback, the percentage of students who believe instructional feedback could support student learning, and the percentage of students who prefer traditional or objective-aligned feedback from each high school and both high schools combined.

Qualitative Data

To address research question 1 sufficiently, it was imperative to determine why students believed that the specific instructional feedback they selected would support their learning. This required me to collect qualitative data from the survey, in the form of students' open-ended responses. To understand why most students preferred objective-aligned instructional feedback, I asked students if they found it beneficial and why. Responses to survey question 11 provided qualitative data to support the quantitative data collected for the first part of research question 1. The answers to the survey's quantitative questions provided actual data to answer research question 1, which asked, what type of instructional feedback do high school students believe supports their learning and why?

Table 8

Data Analysis for Research Questions 1

Modified Explanatory Sequential Mixed Methods Study Data Analysis Process	
Research Question 1 What types of instructional feedback do high school students believe supports their learning, and why?	
Quantitative Data **Answering:** What types of instructional feedback do high school students believe supports their learning	
Student Survey Q2	Do you currently use instructional feedback (grades) to support you in accomplishing your academic goals? ___ Yes ___ No
Student Survey Q4	Do you believe clear instructional feedback (grades) can support student learning? ___ Yes ___ No
Student Survey Q12	After reviewing both forms of feedback (grades). Do you prefer traditional feedback or objective aligned feedback (grades)? ___ I prefer traditional feedback where I get only an overall percentage and letter grade. ___ I prefer objective aligned feedback where I get to see my percent mastery overall and on each individually tested objective.
Qualitative Data **Answering:** Why?	
Student Survey Q11	Do you find objective-aligned feedback reports (grades) beneficial? Why or why not?

Research Question 2

Quantitative Data Analysis

To answer the second research question, I analyzed the quantitative data from the survey before analyzing the qualitative data. To this end, I first revisited the second research question: How do high school students utilize instructional feedback to support their learning? This required me to revisit the results gathered from student survey question 2, which allowed me to view the percentage of students that reported the use of instructional feedback. After reviewing this percentage, I delved further into how students utilize instructional feedback by checking participating students' responses to survey question 10, which was formulated as a multiple-choice question to provide additional quantitative data that specifically illustrated the behavior of students after receiving instructional feedback when they have not achieved mastery. To calculate the data

for each high school individually, I independently calculated the percentages to observe the response of students at both high schools separately and combined.

Qualitative Data

Finally, the qualitative data was gathered to support the quantitative data underpinning research question 2 from student survey question 5, which was posed as an open-ended question asking students what feedback or a grade means to them. I intended to utilize these data to support the quantitative data from research question 2 as it would provide further evidence that students value instructional feedback and grades. The qualitative data from question 5 also provided genuine student quotations that described their definitions of meaningful instructional feedback, thus allowing me to better understand their use of the same. In summary, I analyzed the quantitative data from questions 2 and 10 of the survey before analyzing the qualitative data from survey question 5 to answer the research question: How do high school students utilize instructional feedback to support their learning? (see Table 9)

Table 9

Data Analysis for Research Question 2

Modified Explanatory Sequential Mixed Methods Study Data Analysis Process	
Research Question 2 How do high school students utilize instructional feedback to support their learning?	
Quantitative Data	
Student Survey Q2	Do you currently use instructional feedback (grades) to support you in accomplishing your academic goals? ___ Yes ___ No
Student Survey Q10	If you learn that you have not accomplished mastery on an assessment or assignment, what do you typically do next? ___ Nothing ___ I attend office hours and ask to retake the assessment. ___ I review my notes independently and ask to retake the assessment. ___ I do nothing and try to do better on the next test or assignment. ___ I usually don't check my grades in detail.
Qualitative Data	
Student Survey Q5	What does a grade or instructional feedback mean to you?

Chapter Summary

This chapter described the research methodologies and methods used in this study to answer the research questions. Furthermore, it outlines the research context, data collection procedures, and data analysis procedures. Chapter 4 will report and discuss the study's findings to answer the research questions.

Chapter 4 - Results and Discussion

Introduction

The current chapter reports the results and findings from this Explanatory Sequential Mixed Methods Survey research study that aimed to 1) determine the type of instructional feedback that high school students believe supports their learning, and 2) determine how high school students utilize feedback to support their learning. Two research questions guided the study: 1) What type of instructional feedback do high school students believe supports their learning, and why? 2) How

do high school students utilize instructional feedback to support their learning? The chapter will conclude with a discussion of the findings and results, establish connections between the results and the current research literature, and answer the two research questions.

Students' Perceptions of Instructional Feedback

Analysis of the study's quantitative data revealed four trends associated with high school students' perceptions of instructional feedback. First, the high school students in this study preferred objective-aligned feedback to traditional letter grades. Second, high school students in this study used instructional feedback. Third, high school students receive instructional feedback inconsistently. Fourth, the high school students in this study believed that instructional feedback supports their learning.

Quantitative Results

Students Preferred Objective-Aligned Feedback to Traditional Letter Grades

The high school students in this study generally preferred objective-aligned feedback to traditional letter grades. Responses to survey question 12 showed that 80% of the students from both high schools preferred objective-aligned feedback to traditional feedback. Upon delving deeper into the results for each high school, we find that 75% of the students from High School 1 preferred objective-aligned feedback while 87.5% of students from High School 2 preferred objective-aligned feedback (see Table 10). This means that 32 of the 40 students from both high schools preferred objective-aligned feedback to traditional feedback, such as letter grades.

Table 10

Percentage of students who prefer objective-aligned or traditional feedback by the school.

	% of Students who Prefer Objective Aligned Feedback	% Students who Prefer Traditional Feedback
High School 1	75% 18 out of 24	25% 6 out of 24

High School 2	87.5% 14 out of 16	12.5% 2 out of 16
Combined High School Responses	80% 32 out of 40	20% 8 out of 40

Students use Instructional Feedback

When asked if instructional feedback was currently used to support their accomplishment of academic goals, 67.5% of students from both institutions responded positively (see Table 11). Table 11 also shows that 66.7% of participants from High School 1 used instructional feedback to support their learning while 33.3% did not. Similarly, 68.8% of participants from High School 2 used feedback to support their learning while 31.2% did not use instructional feedback.

Table 11

Percentage of participants that currently use instructional feedback.

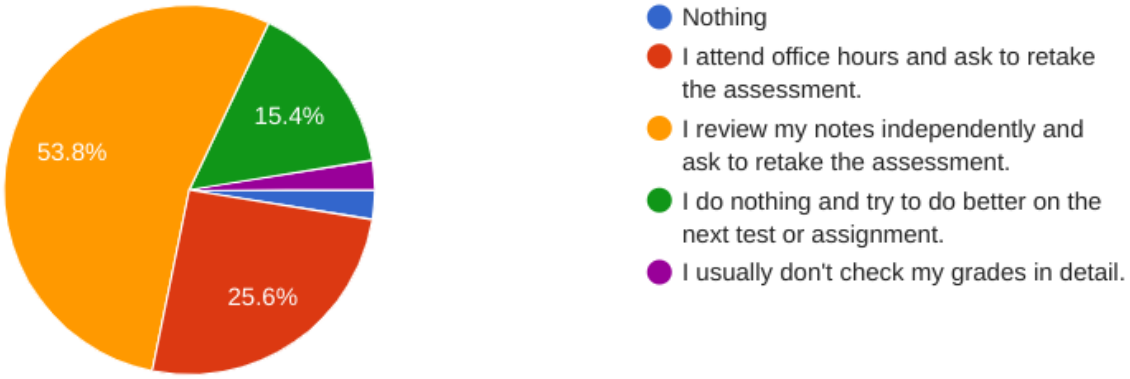
	Yes, I use instructional feedback and grades	No, I do not use instructional feedback or grades
High School 1	66.7% 16 out of 24	33.3% 8 out of 24
High School 2	68.8% 11 out of 16	31.2% 5 out of 16
Combined High School Responses	67.5% 27 out of 40	32.5% 13 out of 40

Students were also asked about their actions after receiving instructional feedback that illustrated a lack of mastery of an objective or skill. Students' combined survey results showed that 53.8% of students reviewed notes independently and ask to retake the assessment (see Figure 1). While 25.6% of students stated that they attend office hours and ask to retake the examination, 15.4% of students said that they do not do anything, and simply try to do better on the next test or assignment. One student, representing 2.6% of the total responses, stated that he would do nothing

at all. Another student, representing the other 2.6% of the total responses, said that she generally does not check her grades in detail (see Figure 1). While observing the percentage of students who either reviewed their notes or attended office hours after receiving instructional feedback, it is noted that 79.4% of student participants in the study use the feedback received to gain more knowledge, make corrections, and improve their grades.

Figure 1

How students use feedback to improve

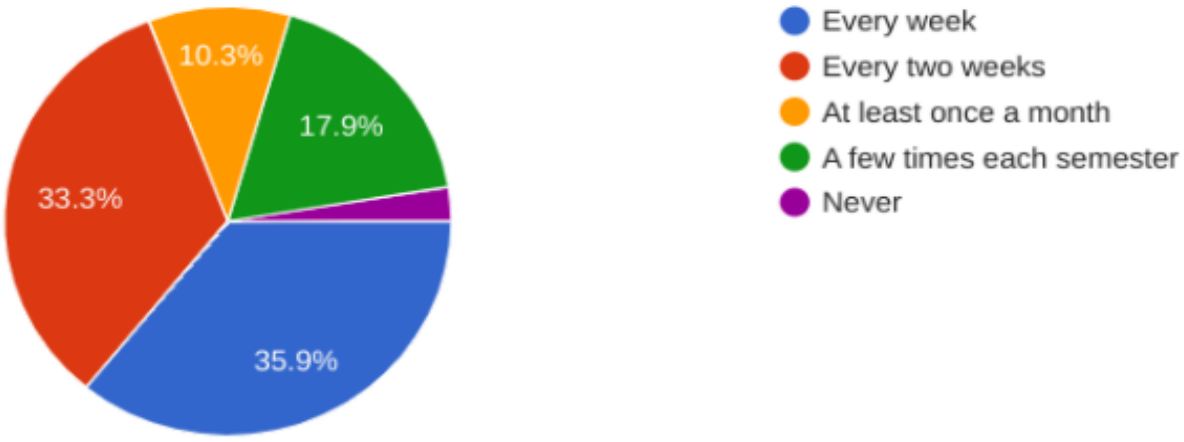


Students Inconsistently Receive Instructional Feedback

When students were asked about how often they receive feedback on school assignments or assessments, approximately 36% stated that they received feedback weekly; 33% stated that they received feedback every two weeks; 10% stated at least once a month; 18% noted they receive feedback a few times in a semester; and lastly, a little over 2% said that they never receive feedback (see Figure 2). This trend suggests a significant inconsistency in the frequency of feedback delivery in various high school courses.

Figure 2

How frequently students receive instructional feedback



Students Believe Instructional Feedback Supports their Learning

The quantitative data analysis revealed that the high school students in this study generally state that instructional feedback supports their learning. Of the 40 students from High School 1 and High School 2 combined, 90% of the students stated that they believe clear instructional feedback can support their learning. When reviewing data by high school, 91.7% of students from High School 1 believed that clear instructional feedback can support student learning, while 87.5% from High School 2 agreed with the sentiment (see Table 12). This indicates that only 8.3% of students from High School 1 and 12.5% of students from High School 2 did not believe that clear instructional feedback could support student learning. This trend suggests students' overwhelming desire for frequent and consistent instructional feedback.

Table 12

Students Believe Clear Instructional Feedback Supports Student Learning

	Yes, I believe clear instructional feedback supports student learning	No, I do not believe clear instructional feedback supports student learning
High School 1	91.7%	8.3%

	22 out of 24	2 out of 24
High School 2	87.5% 14 out of 16	12.5% 2 out of 16
Combined High School Responses	90% 36 out of 40	10% 4 out of 40

Students' Perceptions of Objective-Aligned Feedback

The results of the survey also suggested that students find objective-aligned feedback beneficial as it reveals their academic strengths and weaknesses. Table 13 shows that 87% of the participants from High School 1, 87.5% from High School 2, and a combined total of 87.2% found objective-aligned instructional feedback beneficial. It is also noted that approximately 13% of participants from both high schools did not find objective-aligned feedback beneficial.

Table 13
Results showing if students find objective-aligned feedback beneficial

	% of Students who find Objective-Aligned Feedback Beneficial	% of Students who do not find Objective Aligned Feedback Beneficial
High School 1	87% 20 out of 23	13% 3 out of 23
High School 2	87.5% 14 out of 16	12.5% 2 out of 16
Combined High School responses	87.20% 34 out of 39	12.8% 5 out of 39

Qualitative Findings

Students' Perceptions of Objective-Aligned Instructional Feedback

An analysis of the study's qualitative data allowed the researcher to elaborate on the study's quantitative results. Certain direct quotations from students who supported objective-aligned feedback included comments such as:

Yes, I find [objective-aligned instructional feedback] beneficial because it shows me where I am at. I didn't know I was a master of general knowledge. It's more helpful and easy to look at, so I understand where I went wrong. This was more understanding than just a letter because there are multiple things under a letter but understanding whether you reached the objectives or not is more of my speed.

Two other students wrote, "Yes, [the objective-aligned instructional feedback] showed me what areas I needed to work on instead of me redoing the whole unit and wasting my time," and "I do find objective-aligned feedback reports beneficial because it shows my percentage on how I performed, and it tells me if I mastered the topic, approaching mastery the topic, or below mastering the topic." Another student stated, "I do find objective-aligned feedback reports beneficial because it shows my percentage on how I performed and it tells me if I mastered the topic, approaching mastery of the topic, or below mastery of the topic."

In contrast, a combined 12.8% of the participating high school students responded that they did not find objective-aligned feedback beneficial. One student wrote, "It causes stress and anxiety." Another student responded that they supported objective-aligned feedback but shared that they see both "pros and cons," stating, "Yes, I do [find objective-aligned instructional feedback beneficial], but I still like the traditional feedback. I think the official [objective-aligned feedback] is ok, but I didn't want to know all of that." Two other students shared that, "I can know what I need to improve on," and "[It} helps me see what I can improve on and better myself at for the future." Another student shared that objective-aligned instructional feedback is beneficial stating, "It helps me see my mistakes, and I can learn from those mistakes so that next time I don't make the same mistakes and improve gradually." Most student responses were similar to these. One last student's response indicated the need for effective grading practices. The student stated, "When I

receive a grade, I don't really know what I did and what I need to improve on. With [objecitve-aligned] instructional feedback, I can focus more on what I need to improve on."

Students Define Instructional Feedback and Grades

In this study, students defined instructional feedback as information they require to know exactly how they may improve their academic performance. One student differentiated between instructional feedback and letter grade, stating, "A grade by itself is just a letter meant to signify one's understanding of the concept/material. The instructional feedback capitalizes on the mistakes one made and assists the students on doing better next time." This student's response is significant as it speaks to the disconnect between grades and instructional feedback. The comment would allow stakeholders to be cognizant of the urgent need to merge instructional feedback with grading practices by using objective-aligned feedback. Objective-aligned instructional feedback provides students with an overall letter grade and clear instructional feedback. In combination with extant research, these results suggest that teachers should begin to provide clear feedback to students in a consistent manner. "When students recognize the importance of feedback on writing assignments, they look forward to getting, reading, and using such feedback, and instructor efficacy increases" (Brody & Santos, 2019, p. 110).

Discussion

Effective grading, which has been referred to as clear, actionable instructional feedback in this study, is essential to the improvement of student academic performance. This discussion will answer the study's two research questions by synthesizing the quantitative and qualitative data results and findings.

Research Question 1: What type of instructional feedback do high school students believe supports their learning and why?

Research question 1 asked, what type of instructional feedback do high school students believe supports their learning, and why? The results and findings of this study suggest that students prefer objective-aligned instructional feedback to traditional grades. These results indicate that high school students value instructional feedback when it is easy to read, understand, and use to further their learning. Eighty-five percent of high school students in the study indicated objective-aligned feedback to be beneficial. These results align with Toledo & Dubas's (2017) study, which implies that the use of a grading method aligned with Scaffolded Student Learning Objectives allows students to better understand their grades and take more responsibility for their learning.

Twenty percent of the student participants did not prefer objective-aligned feedback to traditional grades. This statistic particularly intrigues me, propelling me to consider a repetition of this study with a larger population to verify whether similar results are achieved. Furthermore, I question whether the students who prefer traditional feedback accurately identified the labels on the two different forms of feedback. In any case, the study must consider the fact that some students still prefer traditional feedback, as communicated by students. However, a study by Healy & Doran (2014) reported that while some students prefer traditional grades, there are certain challenges that still emerge as a result of a perceived lack of relevance to the learning goal or objectives. This further justifies the need for objective-aligned instructional feedback and student guidance on the use of objective-aligned instructional feedback.

Given the benefits of objective-aligned feedback and the finding that nearly 80% of students already use instructional feedback to make academic improvements, it is important to look back upon several previously mentioned studies. For instance, Toledo and Dubas (2017) stated that students reference learning objectives 87% of the time when preparing for exams and 85% of the

time when completing homework. Higgins, Hartley, and Skelton (2001) reported that shared feedback must be easily understood by students before they can take action. This historical research supports the research findings that students value clear instructional feedback.

Research Questions 2: How do high school students utilize instructional feedback to support their learning?

Research question 2 asked, how do high school students utilize instructional feedback to support their learning? The results and findings of the study suggest that students utilize instructional feedback to improve academically. The qualitative results suggest that students understand the value of grades and feedback. Students stated that instructional feedback helped them understand how to improve academically and succeed; however, letter grades do not provide the same critical detailed information. Seventy-nine percent of student participants in the study reported using instructional feedback to gain further knowledge, make corrections, and improve their grades. Yet, I have come across several educators who state that they do not provide students with feedback because students do not make use of instructional feedback. “Most teachers today ‘are not well trained’ in methods such as utilizing specific learning criteria to enhance grading reliability or appropriately interpreting student work as evidence of learning, which contributes to variations in teachers’ grading practices” (Brookhart et al., 2016, p. 31; Link, 2018, p. 65). This indicates that educators may require professional development to efficiently and effectively provide students with clear, actionable feedback.

Boud (2000) wrote, “Unless students are able to use the feedback to produce improved work through, for example, re-doing the same assignment, neither they nor those giving the feedback will know that it has been effective” (p. 158). These results are supported by Toledo and Dubas

(2017), who stated that faculty and students can use instructional feedback to determine strengths and weaknesses in relation to learning outcomes.

As shared by Brody & Santos (2019), "Through the sharing of feedback and goals, students developed an enhanced camaraderie when they realized they all had strengths and weaknesses" (p. 111). A crucial step in maximizing the benefits of objective-aligned feedback is regarding grades on assessments or assignments as instructional feedback. This would ensure that students consistently receive grades that not only share a letter or an overall mastery percentage, but also clear guidelines to help the student understand how they can improve upon specific objectives on their next attempt.

In this context, educators may begin by mapping the learning objectives/standards to questions assessed on learning activities so that students may receive actionable feedback. As educators, our goal is to support students in becoming independent learners, bridging the educational gap, and helping students gain more knowledge each day. Many of our goals may be achieved by providing students with objective-aligned feedback on their learning activities.

Chapter Summary

The current chapter reviewed the results and findings from this Explanatory Sequential Mixed-Method Survey research study. The chapter concluded with a discussion of the findings and results, their relationship with current literature, and answers to the research questions. Chapter 5 will conclude the research study with implications for practice, limitations, and suggestions for future research.

Chapter 5 - Conclusion

Introduction

The purpose of this survey-based, practical action research, modified explanatory sequential mixed-methods study was to 1) determine the type of instructional feedback that high school students believe supports their learning; and 2) determine how high school students utilize feedback to support their learning. The results revealed that 32 out of 40 high school students who participated preferred objective-aligned instructional feedback to traditional instructional feedback, suggesting that high school students value instructional feedback when it is easy to read, easy to understand, and useful in furthering their learning. Additionally, it was revealed through the findings that students do, in fact, utilize instructional feedback to support their learning. Specifically, students utilize instructional feedback to prepare for reassessments of skills. With this brief summary of the study's findings, this chapter concludes with implications for practice, a discussion of the study's limitations, suggestions for future research, and concluding remarks.

Implications for Practice

The implications for practice that emerged from this study's findings include steps that educators from K-12 schools as well as higher education institutions may easily follow to provide students of all ages with clear objective-aligned instructional feedback. Implementing these steps will equip students from kindergarten through college with a deeper understanding of their academic strengths and weaknesses, thereby allowing them to take ownership of their learning. These steps would support educators with the necessary information to efficiently analyze and act upon their instructional data. Specifically, the findings offer three implications for integrating objective-aligned instructional feedback into daily teaching practice: transitioning from the use of traditional instructional feedback to that of objective-aligned instructional feedback; using

objective-aligned instructional feedback for reteaching and small group instruction; and using objective-aligned instructional feedback for the reassessment of student learning.

Steps for Transitioning to Objective-Aligned Instructional Feedback

The first implication for practice offered by this study is the proposed transition from the use of traditional instructional feedback to that of objective-aligned instructional feedback. I suggest that educators implement four simple steps to efficiently provide students with objective-aligned instructional feedback. First, educators should clearly identify for students the learning objective(s) of each lesson to be taught. Second, when developing assessments to measure student learning, educators should align each question or task within the assessment to a specific learning objective that was taught. Third, following the assessment, educators should provide students with objective-aligned instructional feedback in a timely manner. Finally, educators must provide students with opportunities to review or practice any learning objectives that were not mastered initially, as well as chances for reassessments so that students may demonstrate mastery after misconceptions have been addressed. Two strategies teachers can use to address misconceptions include reteaching and small group instruction.

Using Objective-Aligned Feedback for Reteaching

The second implication for practice is the adoption of objective-aligned instructional feedback for reteaching. According to Mozingo (2017), “Students benefit greatly from opportunities to revisit challenging content and clarify questions” (p. 1). The data gathered from the use of objective-aligned instructional feedback supports students and teachers alike. Just as objective-aligned instructional feedback allows students to clearly identify their strengths and weaknesses in relation to specific learning objectives, objective-aligned feedback also enables teachers to identify the strengths and weaknesses of the entire class. This, in turn, allows them to

gauge the effectiveness of their instruction in terms of students' mastery of specific learning objectives.

As an example, consider the support objective-aligned instructional feedback could provide in the context of reteaching. Suppose that a seventh-grade teacher employs objective-aligned feedback to assess five Student Learning Objectives (SLOs) and determines that 70% of the assessed students did not master Student Learning Objective #3. This would indicate to the teacher that only 30% of the students in the class mastered the learning objective or are approaching mastery of the learning objective. These percentages would also indicate that the class could benefit from additional instruction related to Student Learning Objective #3 to address student misconceptions. During reteaching, the educator would teach students the same learning objective in a different way. For example, if the educator taught the lesson using a standard lecture, they may reteach it using Cooperative Learning strategies or station teaching. Mozingo (2017) shared, "The power of re-teaching is to enhance student understanding and mastery" (p. 1). Using objective-aligned instructional feedback supports educators in implementing data-driven instruction strategies and reteaching to increase student mastery.

Using Objective-Aligned Feedback for Small Group Instruction

The third implication for practice is the suggested use of objective-aligned instructional feedback for small group instruction. In continuation with the previous example, an educator may decide to reteach content, concepts, or skills through small group instruction rather than reteaching them to the entire class. There are several iterations that the educator could use for grouping students. Since 30% of the students mastered Student Learning Objective #3, the educator may place those students in a small group to work independently on an activity at a higher level of Bloom's Taxonomy, which is focused on the same Student Learning Objective at a higher order of

thinking. In another iteration, the educator may allow the higher-performing students to work independently on the next lesson in the curriculum. Meanwhile, the educator would reteach the 70% of students who did not achieve mastery of Student Learning Objective #3 initially.

Another iteration of using objective-aligned instructional feedback to support small group instruction is to place students in small groups based on the Student Learning Objectives unmastered on the assessment. Students who require further practice on Objective #1 would be grouped together, those who require practice with Objective #2 would be grouped together, and so on. In this scenario, students would review their objective-aligned feedback from the assessment with their small group and determine their strengths and weaknesses in relation to their small group's targeted Student Learning Objectives. The educator would then offer mini-lessons of 15 minutes or less for each small group by shifting from group to group. When students are not receiving their mini-lesson, they could be working on an assignment to build foundational knowledge of content or skills to keep them engaged in learning. Alternatively, the educator could place advanced students who have achieved mastery of the Student Learning Objectives in each small group to support their peers while the educator reteaches the small groups.

Using Objective-Aligned Feedback for Reassessment of Student Learning

Ultimately, after educators utilize objective-aligned instructional feedback to reteach and/or re-engage students through small group instructional activities, they must re-assess student learning of the targeted learning objectives to monitor students' progress towards mastery. As Mozingo (2017) explains, "After re-teaching, re-assessment opportunities should allow students to demonstrate their growth in learning and understanding. Educators can use objective-aligned feed to track class and student progress over time on student learning objectives (SLOs). Ideally,

re-assessments should allow students different ways to show learning (e.g., oral explanations, graphic organizers, visual representations" (p. 2).

Utilizing Objective-aligned Instructional Feedback as an Official Grading Practice

Objective-aligned instructional feedback merges standard-aligned grading practices with traditional grading practices by clearly stating the student learning objectives being assessed and aligning them with the questions or tasks on a given assessment. I recommend that educators employ objective-aligned instructional feedback rather than standards-aligned instructional feedback or traditional instructional feedback since it would reduce the paradigm shift that stakeholders may need to undergo. Furthermore, transitioning to objective-aligned feedback over standards-based grading would be easier for educators to implement when switching from traditional grading. As shown by the literature and the results of this study, there would be significant challenges in completely shifting to standardized-based grading from traditional grading. However, this is not true for transitioning to objective-aligned instructional feedback.

I also recommend that educators use objective-aligned instructional feedback instead of traditional instructional feedback/letter grades because objective-aligned instructional feedback provides students with clear, actionable feedback aligned with instructional goals. Cornue (2018) shared that educators hesitate to address challenges with grading because they "don't know how to make the change, and second, they are afraid that making the change will negatively affect students because employers and colleges won't know how to interpret a new grading system appropriately" (p. 1414). I propose that objective-aligned instructional feedback be recognized as an efficient and effective form of grading student knowledge and performance in both K-12 and higher education institutions. Henderson, et al. (2019) stated:

> Feedback is more than educators just giving information to students. It is a process in which the learner needs to attend to, and make sense of, information about the quality of their performance to improve future work or learning strategies (p. 1414).

As suggested by the findings of this study, students prefer objective-aligned feedback to traditional feedback. Objective-aligned feedback provides students with clear, actionable instructional feedback aligned with the goals educators intend for students to achieve. Objective-aligned feedback produces opportunities for students to become independent learners, teachers to implement data-driven instruction, and educators to systematically bridge the educational gap.

As an experienced educator and administrator, I have used, and trained other educators to use, objective-aligned instructional feedback for both reteaching and small group instruction. Herein, I witnessed significant student growth. I believe that integrating objective-aligned instructional feedback into daily teaching practices with the implications suggested in this section would support students and educators in bridging the education gap.

Limitations

One limitation of this study was its generalizability. As the sample size of 40 students was small, generalizations could not be made for students beyond the sample participants. A second limitation of the study was noted during the data collection phase. Specifically, students at High School 1 expressed impatience as it took longer than expected to pick up the objective-aligned instructional feedback reports from the printer before the students completed the survey. This may have negatively impacted their responses to the survey, as some may have rushed to complete the survey. An additional limitation to this study could have been order effect researcher bias. “Order effects researcher bias can happen when the sequence order of a researcher's questions influences

an interviewee's answers" (Indeed Editorial Team, 2021). This may have occurred since the survey questions were not asked in a random order but were asked to support students with the analysis and reflection about each of their instructional feedback reports.

Suggestions for Future Research

I recommend that this study be replicated in various high school settings, higher education settings, and education settings with highly diverse populations so that a range of findings may be shared and compared across literature. Future studies may also include perspectives of classroom teachers and students regarding the use of objective-aligned instructional feedback. Future research should also focus on training students on how to effectively utilize objective-aligned instructional feedback and documenting their progress on student learning objectives over time.

Additional suggestions for future research include school-wide studies that train educators on using the steps shared among the implications for practice in this chapter. The schools could be equipped with necessary resources, such as Mastery Manager, to provide students with clear objective-aligned instructional feedback over an extended period of time – such studies would allow researchers to determine the feasibility and effectiveness of using objective-aligned instructional feedback in the long term.

Finally, to improve this study and support similar studies in the future, I recommend that student participants be asked more open-ended questions in order to gather rich qualitative data that fully represents their perspectives regarding objective-aligned instructional feedback.

Conclusion

Given the global state of education, it is noted that students and educators face various challenges, especially as they work to address the knowledge gaps created by the COVID-19 pandemic. Now is the perfect time for education systems statewide and nationwide to implement

objective-aligned instructional feedback to improve instructional effectiveness, increase students' mastery of learning, and support students in becoming independent and successful learners. Using objective-aligned instructional feedback, educators of today can ensure that all students, from kindergarten through college, are prepared to navigate their way through the twenty-first century. As educators, if we do not provide students with feedback that would help them to understand their progress in relation to the mastery of specific learning objectives, how can we claim that we are doing all we can to help our students? It is imperative, now more than ever, that we help students by frequently and consistently providing them with objective-aligned instructional feedback that furthers their knowledge and understanding.

erbs 4:7 of the Holy Bible reminds us, "Wisdom is the principal thing; therefore get wisdom: And with all thy getting get understanding" (King James Version).

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Appendix A Student Sample Assessment

Official Research Assessment.Effective Feedback

Answer Form Directions: Use #2 pencil or darker. Fill in the circle completely like this: (A)
If changing an answer, erase clearly, leaving no dark mark.

Building: (Carver)
Course: Physics (Physic 100-2)
Section: 2-Carver
Teacher: Sokoya
Student: Gabriel, Nicole (12345678)

Part 1: Sprint Races of Past Athletes: Use the prompt and the graph next to each question to answer questions 1-3.

Part 1: Sprint Races of Past Athletes

One of the most important parts of a pole vaulter's technique is the initial sprint down the runway. Chloe has decided to focus on improving her sprint to maximize her velocity before she plants the pole on the ground. Chloe's coach, Coach Jackson, has given her three possible training plans (A, B, or C) to do during her off season. In the first part of this task, you will evaluate which of the three training plans worked best for the past athletes.

After his past athletes had completed the three different training plans, Coach Jackson had them run a sprint race against one another and used motion tracking technology to record data on their sprint performance running down the 40 m runway. Graphs of the changes in distance, velocity, and acceleration over time for the three athletes are shown below.

1 1.Explain the patterns you see in the graph and how it helps you understand the training plans.

(A) As time increases, the distance the athlete travels decreases. Training Plan B reaches 40 m in 8.0 seconds, Training Plan C reaches 40 m in 8.7 seconds and Training Plan A reaches 40 m in 8.85 seconds.

(B) As time increases, the distance the athlete travels increases. Training Plan B reaches 40 m in 8.0 seconds, Training Plan C reaches 40 m in 8.7 seconds and Training Plan A reaches 40 m in 8.85 seconds.

(C) As time increases, the distance the athlete travels increases. Training Plan C reaches 40 m in 8.0 seconds, Training Plan A reaches 40 m in 8.7 seconds and Training Plan B reaches 40 m in 8.85 seconds.

(D) As time decreases, the distance the athlete travels decreases.

2

2. What the patterns do you see in the graph and how do they help you understand the training plans.

(A) **As time increases, the velocity of the athlete decreases until they reach their minimum velocity. Training Plan A reaches a minimum velocity of 10.0 m/s, Training Plan B reaches a minimum velocity of 9.2 m/s and Training Plan C reaches a minimum velocity of 9.0 m/s.**

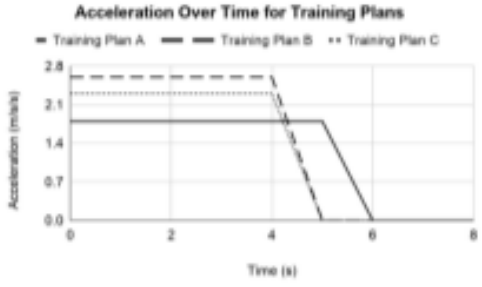
(B) **As time increases, the velocity of the athlete increases until they reach their maximum velocity. Training Plan C reaches a maximum velocity of 10.0 m/s, Training Plan B reaches a maximum velocity of 9.2 m/s and Training Plan A reaches a maximum velocity of 9.0 m/s.**

(C) **As time increases, the velocity of the athlete increases until they reach their maximum velocity. Training Plan B reaches a maximum velocity of 10.0 m/s, Training Plan C reaches a maximum velocity of 9.2 m/s and Training Plan A reaches a maximum velocity of 9.0 m/s.**

(D) None of the above

3

3. Explain the patterns you see in the graph and how it helps you understand the training plans.

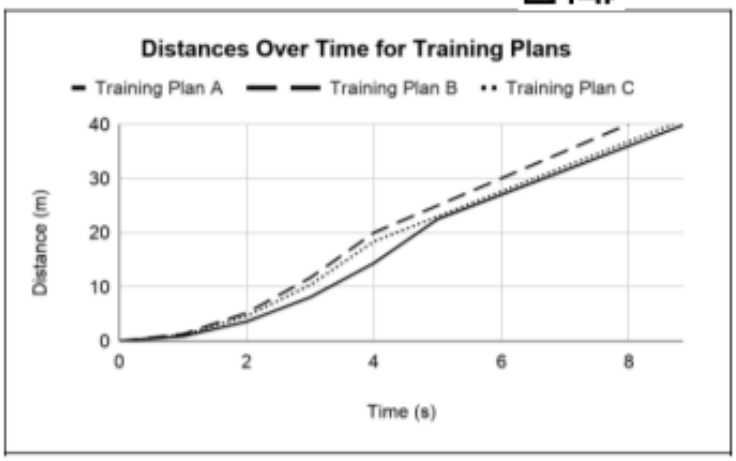


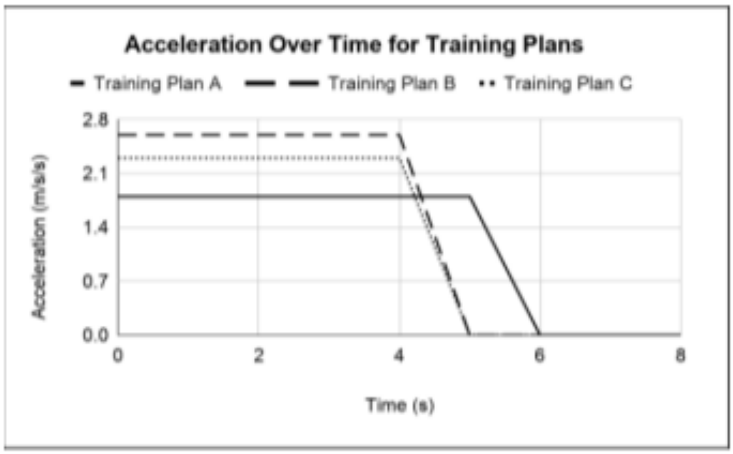
(A) **As time decreases, the acceleration of the athlete stays the same until 4 or 5 seconds then they stop accelerating. Training Plan B has an acceleration of 2.6 m/s2, Training Plan C has an acceleration of 2.3 m/s2 and Training Plan A has an acceleration of 1.8 m/s2.**

(B) **As time decreaases, the acceleration of the athlete stays the same until 7 or 13 seconds then they stop accelerating.**

(C) **As time increases, the acceleration of the athlete stays the same until 4 or 5 seconds then they stop accelerating. Training Plan B has an acceleration of 2.6 m/s2, Training Plan C has an acceleration of 2.3 m/s2 and Training Plan A has an acceleration of 1.8 m/s2.**

(D) **As time increases, the acceleration of the athlete stays the same until 4 or 5 seconds then they stop accelerating. Training Plan A has an acceleration of 2.6 m/s2, Training Plan B has an acceleration of 2.3 m/s2 and Training Plan C has an acceleration of 1.8 m/s2.**





Official Research Assessment.Effective Feedback

Set: 18069486 | Page: 4 of 6

Student: Gabriel, Nicole (12345678)

4 4. Which training program should Chloe choose based on the data in the graphs? Select one answer choice that states your claim and supports the claim with accurate evidence and reasoning.

(A) **Chloe should choose Training Program B. Training Program B allows Chloe to have the greatest acceleration of 2.6 m/s2 which causes her maximum velocity at the end of the 40 m runway to be the highest (10 m/s). If Chloe has a greater maximum velocity, it will allow her to jump higher.**

(B) **Chloe should choose Training Program C.**

(C) **Chloe should choose Training Program A. Training Program A allows Chloe to have the greatest acceleration of 2.6 m/s2 which causes her maximum velocity at the end of the 40 m runway to be the highest (10 m/s). If Chloe has a greater maximum velocity, it will allow her to jump higher.**

(D) All Training Programs are the best option.

5 5. How many players are there on a basketball team when they are playing on the court?

(A) 3 (B) 10 (C) 5 (D) 15

6 6. What country has the most people?

(A) Canada (B) China (C) Australia (D) New York

7 7. Which famous author wrote "Romeo & Juliet"?

(A) Charles Dickens (B) Mark Twain (C) William Shakespeare (D) Drake

8 8. What language do people speak in Germany?

(A) French (B) Russian (C) Mandarin Chinese (D) German

9 9. A car starts from rest and accelerates at a steady 6.00 m/s2. How far does it travel in the first 3.00 s?

(A) 9.00 m (B) 18.0 m (C) 27.0 m (D) 36.0 m

10 10. **True or False:** If the acceleration of an object is zero, then that object cannot be moving.

(T) True (F) False

11 11. **True or False:** If the velocity of an object is zero, then that object cannot be accelerating.

(T) True (F) False

12 12. Which of the following quantities has units of a velocity? (Select all that apply)

(A) 40 km southwest (B) -120 m/s (C) 9.8 m/s2 downward (D) 9.8 m/s downward

13 13. $-2(x + 7) = 14$

(A) x= -14 (B) x= 0 (C) x= -1 (D) x= 7

14 14. $-9(6m - 3) + 6(1 + 4m) = 11$, simply your answer.

(A) m= -22/35 (B) m= 11/15 (C) m = -11/34 (D) m = 6

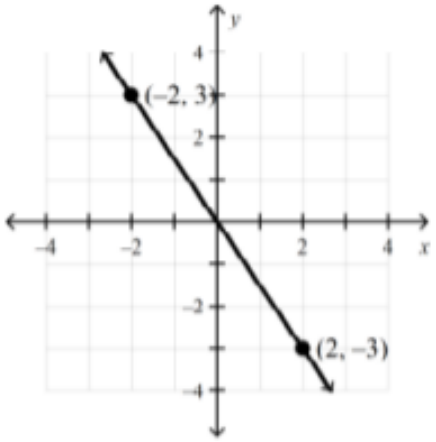
15 15. In the equation below identify the slope and the y-intercept?

$y = -1/3x + 21$

Ⓐ m = -1/3 and b = 21 Ⓑ m = 21 and b = -1/3 Ⓒ m= -1 and b = -3 Ⓓ none of the above

16 16.

Find the slope of the line.



Ⓐ 2/3 Ⓑ 3/2 Ⓒ -2/3 Ⓓ -3/2

17 17.

To make a bakery's signature chocolate muffins, a baker needs 2.5 ounces of chocolate for each muffin. How many pounds of chocolate are needed to make 48 signature chocolate muffins? (1 pound = 16 ounces)

Ⓐ 7.5 Ⓑ 10 Ⓒ 50.5 Ⓓ 120

18 18.

If a 3-pound pizza is sliced in half and each half is sliced into thirds, what is the weight, in ounces, of each of the slices? (1 pound = 16 ounces)

Ⓐ 4 Ⓑ 6 Ⓒ 8 Ⓓ 16

Student: Gabriel, Nicole (12345678)

19 19.

In the 1908 Olympic Games, the Olympic marathon was lengthened from 40 kilometers to approximately 42 kilometers. Of the following, which is closest to the increase in the distance of the Olympic marathon, in miles? (1 mile is approximately 1.6 kilometers.)

Ⓐ 1.00 Ⓑ 1.25 Ⓒ 1.50 Ⓓ 1.75

20 20.

The density of an object is equal to the mass of the object divided by the volume of the object. What is the volume, in milliliters, of an object with a mass of 24 grams and a density of 3 grams per milliliter?

Ⓐ 0.125 Ⓑ 8 Ⓒ 21 Ⓓ 72

Appendix B- Student & Teacher Handout with Steps to Complete Research Study

aditional Grades or Objective-Aligned Instructional Feedback: Which Type of Instructional Feedback do High School Students Prefer, and Why?

Agenda	
A	**ents complete the Assessment- (20 minutes)**
chers will print student score reports and distribute both reports to students(10-15 minutes)	
B	**ents complete the survey after the assessment- (15 minutes)**
Student Dismissal	

1: All students will need a laptop or computer to complete the assessment and survey.

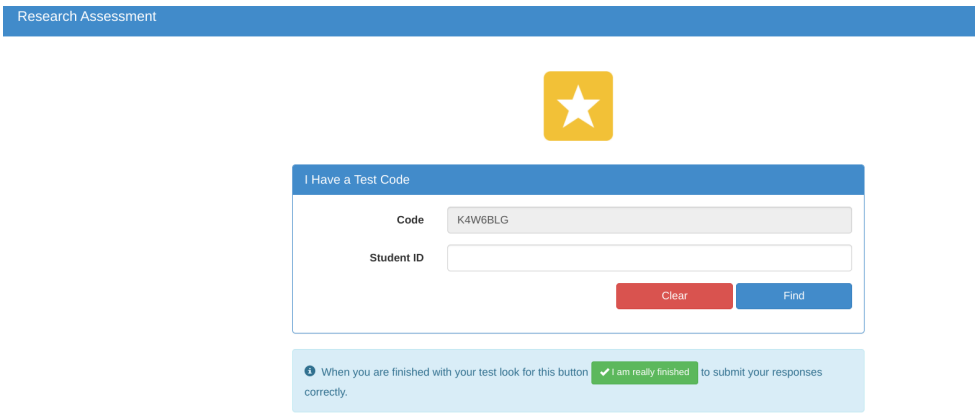
2: Students will log in to Google classroom to access the link for the research assessment online.

ı School 1 Student Assessment: https://www.examlogin.com/#/login/?code=8VQZZR5

ı School 2 Student Assessment: https://www.examlogin.com/#/login/?code=4D4GGX6

How will students log in to complete the assessment?

3: Students will click on the assessment link in Google Classroom and enter their student ID number to complete ıssessment. There are 20 questions for students to complete.



4: After students have completed the assessment they should raise their hand to let the teacher know they have hed part A of the research. Assessment should take 20 minutes or less. (Teachers will print students the general ent score report and the objective aligned score reports.)

5: Once students have their traditional feedback and objective aligned feedback. They will log in to Google
sroom again to complete the student survey via Google Forms.

ent Survey: (Students should answer the survey questions honestly using the assessment reports.)

s://docs.google.com/forms/d/e/1FAIpQLSfD9Lnh4swnIPvkQ-cqtYxVX9r3T3SFY_zB5dydCOvE-y9Htg/viewfor
sp=sf_link

6: When students are finished with the survey they have finished the study.

Appendix C: Student Survey

Traditional Grades or Objective-Aligned Instructional Feedback: Which Type of Instructional Feedback do High School Students Prefer, and Why?

Section 1: Foundational Information

Directions: Hello Scholars! I would like to thank you for completing the sample assessment and this survey to support my graduate research. Keep in mind that your answers are anonymous. Please answer all questions honestly and provide additional commitments and feedback at the end if you would like. Refer to both forms of feedback provided by your instructors as you complete this short survey. If you have any questions let your teacher know. For the purposes of this research grades and feedback are the same. They are both a resource to support students with improving their academic performance.

1. Did you receive your assessment feedback as a traditional grade report and as an objective-aligned grade report? (If you did not receive both let your teacher know immediately.)
___ Yes
___ No

2. Do you currently use instructional feedback (grades) to support you in accomplishing your academic goals?
___ Yes
___ No

3. On average, how often do you receive feedback on your assignments or assessments at school?
___ Every week
___ Every two weeks
___ At least once a month
___ A few times each semester
___ Never

4. Do you believe clear instructional feedback (grades) can support student learning?
___ Yes
___ No

5. What does a grade or instructional feedback mean to you?

Section 2: Interpreting Instructional Feedback to Support Academic Growth

Directions: Answer the following questions using your score reports.

6. What was your overall score on the assessment?
___ 90% - 100%
___ 80% - 89%
___ 70% - 79%

___ 60% -69%
___ 59% or less

7. Which objectives from the sample assessment did you master, earning an 80% or higher? Check all that apply.
___ Student will be able to solve SAT math and science "Conversion" word problems.
___ Students will be able to use given information to solve for velocity, distance, and/or time.
___ Students will be able to solve multi-step equations.
___ Students will be able to interpret, analyze and draw conclusions from graphs, tables, and charts.
___ Students will be able to apply general knowledge to answer questions.

8. Which objectives did you NOT accomplish mastery on from the sample assessment? Check all that apply.
___ Student will be able to solve SAT math and science "Conversion" word problems.
___ Students will be able to use given information to solve for velocity, distance, and/or time.
___ Students will be able to solve multi-step equations.
___ Students will be able to interpret, analyze and draw conclusions from graphs, tables, and charts.
___ Students will be able to apply general knowledge to answer questions.

9. What assessment feedback helped you clearly identify the objectives you mastered on the sample assessment?
___ Objective-aligned feedback Report (grades)
___ Traditional feedback (grades)

10. If you learn that you have not accomplished mastery on an assessment or assignment, what do you typically do next?
___ Nothing
___ I attend office hours and ask to retake the assessment.
___ I review my notes independently and ask to retake the assessment.
___ I do nothing and try to do better on the next test or assignment.
___ I usually don't check my grades in detail.

11. Do you find objective-aligned feedback reports (grades) beneficial? Why or why not?

12. After reviewing both forms of feedback (grades). Do you prefer traditional feedback or objective aligned feedback (grades)?
___ I prefer traditional feedback where I get only an overall percentage and letter grade.
___ I prefer objective aligned feedback where I get to see my percent mastery overall and on each individually tested objective.

13. Would you like to continue receiving objective-aligned feedback on your regular assignments and assessments?
___ Yes

___ No

14. Thank you so much for participating in this study. Please leave any additional questions, comments, or concerns.