Secondary Classroom Teachers’ Beliefs and Decision Making Regarding the Use of Feedback to Improve Student Learning

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Secondary Classroom Teachers’ Beliefs and Decision Making Regarding the Use of Feedback to Improve Student Learning

A DISSERTATION SUBMITTED TO THE FACULTY OF THE SCHOOL OF EDUCATION OF THE UNIVERSITY OF ST. THOMAS ST. PAUL, MINNESOTA

By Dale J. Stahl

2021
UNIVERSITY OF ST. THOMAS, MINNESOTA

Secondary Classroom Teachers’ Beliefs and Decision Making Regarding the Use of feedback to Improve Student Learning

We certify that we have read this dissertation and approved it as adequate in scope and quality. We have found that it is complete and satisfactory in all respects, and that any and all revisions required by the final examining committee have been made.

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ABSTRACT

This qualitative case study investigated the experiences of 16 Midwestern high school Social Studies and Language Arts teachers regarding the purposes and types of feedback used to promote student achievement. Semi-structured interviews conducted with participants illuminated teacher beliefs regarding the effectiveness of feedback provided to students and the practical considerations influencing their feedback delivery. Participants considered feedback a multi-purpose tool for building relationships, encouraging effort, probing learning gaps, and promoting self-regulated learning. Teachers deemed personal, in-depth conversations with students the most effective feedback method to accomplish all of these goals. Teachers lamented factors preventing them from widely engaging in these personal interactions. The challenges teachers faced resulted in negative emotions about providing feedback in general, though teachers celebrated occasions when feedback proved effective. The findings were analyzed through the lens of Vygotsky’s (1978) theory of the Development of Higher Psychological Processes, and Deci and Ryan’s (1985) Self-Determination theory. Teachers lacked control over factors, such as class size, calendar time, or curriculum standards, causing them to rely on feedback strategies they deemed inferior. These institutional structures likely impeded teachers’ ability to effectively diagnose students’ developmental level (Vygotsky, 1978). These conditions reduced teacher autonomy, an important factor in psychological wellness and intrinsic motivation (Ryan and Deci, 2000). Education stakeholders should emphasize effective feedback as a powerful teaching and learning strategy. Feedback should become a regular part of professional development and emphasized in teacher-preparation programs. Recommendations for further study include the ways teachers allocate time to provide more in-depth, personalized feedback for learning.
Keywords: feedback, teachers’ beliefs and practices, institutional factors impacting feedback, teacher autonomy, feedback costs and benefits, teachers’ emotions, feedback tradeoffs, informal and formal feedback
Acknowledgements

I begin by thanking my best friend and love of my life, Pamela, for her unwavering support. She inspired me to take on the challenge of educational research and earning an Ed.D. She believed in me during those times when I questioned myself and my progress. I simply would not or could not have done it without her.

I want to thank my advisor and chair, Dr. Sarah Noonan. Dr. Noonan is simply a force of nature, indefatigable in her support of students. Her wealth of theoretical knowledge and experience as an educator are unmatched. She is the type of teacher I strive to be. Further, I would like to thank my dissertation committee, Dr. Aura-Wharton Beck and Dr. Tom Fish. Earning their respect and approval motivated me throughout the process, and both were also fabulous instructors in the required courses they led. All three of these esteemed educators are representative of the quality of the Educational Leadership Department of the University of St. Thomas.

I congratulate my cohort members, and my friends in the 21 Club. I am grateful for all of our interactions and mutual support. I have learned much from their experiences and am a better person for having known them. I have been inspired by their scholarship, and I wish them all well. Similarly, I thank my colleagues in the Hopkins High School Social Studies Department. They are great sounding boards and discussion partners, as well as supportive friends.

I also wish to thank all my study participants, who willingly gave their time to share their experiences and beliefs about their teaching practice. They were generous with their time and opened a window into their classrooms and lives. It is my hope this work both honors them and is used to better inform decisions about educational policy and institutional practices.
Dedication

I dedicate this dissertation to my two children, Zach and Megan. It has been a joy to see them enter their young adulthood and continue to pursue learning and knowledge. Thinking of them gives me both comfort and hope for the future.
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Build Relationships to Discover Student Needs, Instill Confidence and Encourage Effort

Determining Students’ Developmental Level, Thought Processes, and Learning Gaps

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CHAPTER ONE: INTRODUCTION

The purpose of my study was to identify and describe the way teachers use affective, behavioral, and cognitive feedback to engage and support student learning and achievement in secondary schools. Feedback plays a central role in student learning (Black & William, 1998; Hattie & Jaeger, 1998; Hattie & Timperley, 2007; Kluger & DeNisi, 1996; Shute, 2008).

Providing feedback, an essential part of the daily work of teachers, takes skill, dedication, and time (Hattie & Jaeger, 1998; Hattie & Timperley, 2007). Feedback is not a universally understood concept. Some students, on some occasions, make dramatic improvements as a result of feedback, but at other times the use of feedback proves counterproductive (Hattie & Timperley, 2007; Kluger & DeNisi, 1996; See et al., 2016; Shute, 2008).

My interest in the use of feedback emerged from my experience as a teacher trying to provide it to students. Observing students’ who struggled to achieve academic success despite my best efforts to help them learn shook my confidence as a teacher. My idealistic attempts to facilitate learning for all students fell short. When students failed to master learning objectives, I questioned my teaching ability and wondered, “How could I have done things differently? Why didn’t my feedback help them understand and avoid the mistakes they made?”

My reflection on the ongoing educational challenge of raising student achievement through effective feedback continues today, even after 29 years of teaching. I hoped to gain more insights about the use of feedback after completing this study. My focus involved learning more about other teachers’ experiences and providing feedback to help students learn. I explored practicing teachers’ views regarding the type of feedback used, their perceptions of feedback effectiveness, and the reasons for the feedback choices they made. It interested me to learn why
some teachers diligently provided feedback despite feeling discouraged about its efficacy. A brief story illustrates this point.

On President’s Day, February 18, 2019, I went out to breakfast with my spouse. We ordered our coffees and found seats at the end of a long communal table. Coincidentally, the person seated next to us was clearly a teacher spending her non-student contact day grading a large stack of essays. She had a coffee, a collection of highlighters and red pens, a stack of prepared rubrics, and a smart phone set to the stopwatch function. I could not help noticing how our table mate completed her work. She pored over each paper, marked the rubric, added comments, moved the paper to a completed pile, and checked and reset the stopwatch.

When she paused to stretch, we introduced ourselves and I mentioned I was also a teacher. I asked her how the students were faring on their papers. She remarked that they were not doing as well as she hoped, but that it was nice to have the time to get the grading done. Our table mate described how she made note of the time needed to grade the papers:

“I don’t know if you noticed,” she said, “but I keep track of how long it takes to grade each of these. I have 90 students this semester, and it is taking me five and a half minutes each. It’s killing me to get through them all.”

Her remarks fascinated me. “You’ve got a full day ahead,” I observed, “and you’re diligent about making comments. Does it help them improve?” She sighed and shook her head, “I let them rewrite and hand them back in if they choose, but then I just have more work grading them again. But that isn’t too bad,” she added, “because most of them don’t even read my comments so only a few of them will do a rewrite.”

After we wished her well and paid our bill and left, my spouse and I spent the rest of the morning discussing the remarkable timing of this conversation and our experiences giving and
receiving feedback, me as an educator and she as a business executive. This chance encounter increased my desire to delve deeper into the experience of teachers giving feedback to students. I could not get this teacher and her stopwatch out of my mind. She planned to spend approximately eight hours grading papers and carefully adding comments she did not expect her students to read! I regretted not asking her why she devoted such time and effort providing feedback to students despite her beliefs about its efficacy.

I told my colleagues the story of the beleaguered teacher at the coffee shop and her dedication to providing feedback comments. The discussion sparked a nearly 90-minute conversation with my co-workers, filling almost the entirety of our common preparation period. The comments, focused on both practical implementation and beliefs about feedback, flew back and forth. We asked and discussed questions on feedback, such as: How much do you write when you give back an assignment?; How often do you talk with students individually?; For how long? How do you make the time during class?; Do you think students benefit?; and Are they using the feedback you give them?

I realized during this conversation with my fellow teachers that we often commented on feedback, but rarely delved deeply into the issue. Although numerous meta-analyses of feedback and student learning revealed feedback was one of the most important tools for learning (Hattie & Jaeger, 1998; Hattie & Timperley, 2007; Kluger & DeNisi, 1996; Shute, 2008), it was not an aspect of pedagogy we often discussed in detail. My conversation with colleagues furthered my desire to learn more about teachers’ use of feedback and their perceptions of its effectiveness.

One of my colleagues capped the discussion with an anecdote about an Advanced Placement History student.

I gave them a ton of written feedback on their DBQ [document-based question]
practice and they did worse the second time. So, I asked the student, “What’s going on? Help me understand why this didn’t help.” And the student said, “I saw all your writing and thought I am so bad at this I am never going to get it, so I just gave up!”

My random coffee shop encounter and subsequent office discussion mirrored the findings of See et al. (2016). They found simply providing feedback is difficult to do well, and without a strategy or guided practice there is no guarantee student performance will improve. Voerman et al. (2012) found teachers rarely provide the kind of feedback researchers identified as effective in improving learning during their interactions with students.

Although my study concerns secondary students, the same problem exists in higher education. Institutional audits found feedback is similarly lacking in efficacy in higher education (Quinton & Smallbone, 2010). Both high school and college teachers share the same difficulties in providing effective feedback. My experience, professional conversations, and review of research literature led me to conclude gaining knowledge about giving feedback and its effectiveness is an important educational issue worthy of investigation. The topic of feedback is important in educational research due to the rising climate of accountability for student learning.

**Statement of the Problem**

Feedback is widely accepted as essential to student learning (Brown et al., 2012; Hattie, 1999; Voerman et al., 2012). Feedback practices involve providing information about progress toward attaining a learning goal (Hattie & Timperley, 2007; Shute, 2008). Research on feedback indicates it can have a powerful impact on student progress.

Kluger and DeNisi (1996) culled through 3,000 studies on feedback and student learning to identify those meeting the following criteria: the studies required (1) the use of control and
treatment groups, (2) 10 or more participants, and (3) provided measures of performance. Researchers conducted a meta-analysis of 131 studies which met the criteria and found feedback interventions exerted a positive effect of 0.41 on task performance. Other researchers performing meta-analyses found similar results regarding the potential power of feedback on learning outcomes.

Hattie (1999) discussed the effectiveness of feedback in an inaugural lecture delivered at the University of Auckland. Hattie’s synthesis of meta-analyses involving 450,000 effect sizes from 180,000 studies representing 20 to 30 million students found an average effect size for feedback of 0.79, or roughly twice the average effect of other educational interventions. Hattie and Jaeger (1998) completed a synthesis of 87 meta-analyses and concluded feedback was the strongest factor for enhancing student achievement. Practical implementation of feedback strategies and experiments have also indicated positive results.

A formative feedback intervention program conducted in England with 24 teachers at six secondary schools resulted in an average effect size of 0.3, an improvement strong enough to move a school in the bottom 25% on national exam scores to well above average (Black et al., 2004). Butler et al. (2008) conducted an experimental study to determine the impact of feedback on retention of low-confidence correct responses and correction of meta-cognitive errors. Researchers found feedback benefitted both initially incorrect and initially correct responses. Without feedback, 79 percent of initially correct responses on a multiple-choice exam were reproduced, while 93 percent were answered correctly with feedback (Butler et al., 2008). Feedback has a powerful impact on student learning, although it is not clearly understood why, and the effect is not always positive.
Despite the available research on the power of feedback to improve learning outcomes, Shute’s (2008) review of 140 documents focusing on feedback and including experimental design and meta-analysis found there are few general conclusions about why and how teachers use feedback. Several studies pointed to inconsistent and contradictory results of feedback interventions (Shute, 2008). Sadler (1989) developed a theory of formative assessment and feedback to address both the lack of an available general theory and the conundrum of feedback not resulting in improved student work. Information provided by a teacher or other external source which does not result in closing a learning gap cannot be called feedback (Sadler, 1989).

Crisp (2007) reviewed a previous quality assurance exercise at Deakin University, Australia to assess the impact of written feedback on subsequent student work on a similar assessment task. Despite extensive written comments, Crisp (2007) found 66.7% of students received virtually the same score on the second essay as the first. A small number of students, 15.7% showed substantial improvement, while the remaining 17.6% earned a markedly lower score.

More than a third of feedback interventions negatively impacted student learning and performance, particularly when feedback focused students’ attention on the self (Kluger & DeNisi, 1996). Feedback regarding the self is ineffective and leads students to avoid taking challenging intellectual risks and decreases performance (Black & William, 1998; Hattie & Timperley, 2007). Shute (2008) found critical, controlling, vague, or normative feedback correlated with negative results. Despite teachers’ best intentions, feedback tailored to individual student needs can prove either ineffective or harmful to student performance.

Feedback does not always lead to increased performance because feedback’s power depends on what the learner does with it (Andersson et al., 2018). Passive students who struggle
with learning fail to understand or apply the feedback teachers give them (Havnes et al., 2012). Students will interpret and attend to feedback differently based on how they process information about the self and their individual beliefs about efficacy and self-esteem (Black & William, 1998; Hattie, 1999; Hattie & Jaeger, 1998). Teachers provide feedback to students differently based on teacher perception of student ability, or well-intentioned but misplaced efforts to meet student needs.

Teachers provided more detailed formative feedback to students perceived as motivated and engaged with the material (Havnes et al., 2012). Formative feedback supports incremental growth and improved performance on assessments (Black & William, 2009; Hattie & Timperley, 2007; Sadler, 2010; Shute, 2008). Teachers expressed doubts regarding the efficacy of feedback provided to academically weak students as opposed to confidence in the benefits of feedback to motivated and advantaged students (Havnes et al., 2012).

High achieving students received more feedback from teachers than academically challenged students, despite feedback intervention training (See et al., 2016). Engelsen and Smith (2010) conducted a case study in Norwegian primary schools and found stronger students were given almost twice as many feedback interactions as low achieving students. Yeager et al. (2014) found teachers tended to over-praise mediocre work or focus on the esteem of minority students, resulting in suspicion of being stereotyped and increased academic disengagement among those students.

Teachers deemed non-specific motivational comments such as “excellent” or “Good work” as feedback for low-achieving students even when performance was below standard (Engelsen & Smith 2010). The teachers further admitted avoiding critical feedback for low achievers in fear it would result in demotivation. Eriksson et al. (2018) found teachers
commitment to supporting individual students and providing feedback geared to meet individual academic needs resulted in less specific feedback, and general encouragement of effort for the lowest ability students for fear those students would be lost or give up hope.

Rubie-Davies (2007) contrasted teacher feedback for students based on the expectations teachers held regarding the anticipated level of students’ academic success. When teachers had high expectations for student success, they offered more instructions, connected current work to prior learning, and scaffolded learning to ensure students had a clear understanding of the concepts. Teachers with low expectations of students offered little to no feedback at all (Rubie-Davies, 2007). In fact, teachers’ use of feedback in classroom settings is generally sparing and inconsistent.

Although feedback plays an important role as a powerful learning tool, it seems surprising that there appears to be a limited amount of research regarding teachers’ conceptions and beliefs about feedback (Brown et al., 2012; Dessie & Sewagen, 2019; Irving et al., 2010). Hattie and Jaeger (1998) critiqued the extensive review of 578 publications conducted by Black and William (1998) and agreed the use of feedback in a typical classroom is extremely rare. Quinton and Smallbone’s (2010) study of written feedback revealed teachers dedicated insufficient classroom time to student processing and reflection of feedback. Despite evidence indicating feedback improves learning, educators continue to struggle with how to use it effectively (Paulson Gjerde et al., 2017).

Voerman et al. (2012) noted scarce available research on feedback in the classroom indicates it is employed only sparingly. During a review of 78 videotaped observations of teacher interactions with students, researchers found teachers provided an average seven feedback interventions in 10 minutes of classroom interaction, comprising less than 20% of all observed
interventions. Teachers often express confidence in their ability to use feedback which does not match their classroom practice.

The discrepancy between teachers’ beliefs about the importance of feedback and their implementation of feedback strategies remains unexplored. “Few studies have explicitly examined teacher beliefs about the nature and purpose of feedback” (Brown et al., 2012, p. 970). A survey of 192 teachers and 391 students combined with follow-up interviews of select focus groups conducted by Havnes et al. (2012) found an absence of systemic ongoing feedback procedures and connection of feedback to future learning. “Feedback … is one of the most powerful influences on student learning, too rarely occurs, and needs to be more fully researched by qualitatively and quantitatively investigating how feedback works in the classroom learning process” (Hattie & Timperley, 2007, p. 104). My study addresses some of the puzzling and contradictory value of providing feedback to students,

**Purpose**

The purpose of this qualitative case study was to investigate teachers’ beliefs about feedback. Specifically, the study explored how teachers defined feedback, the various types of feedback employed, teachers’ intended uses, and their views regarding its efficacy. Further, this study probed what factors teachers felt influenced their decision making around feedback.

The findings from my study offer insights into the practices and thought processes regarding the use of feedback by current teachers. Hundreds of articles about feedback and its connection to student learning and knowledge have been written, yet the effect of feedback on learning remains difficult to measure and is frequently inconsistent (Shute, 2008). This study addresses how teachers view feedback as an educational practice and includes the types and reasons why teachers offer feedback to foster academic success.
**Significance**

My study explored not only what teachers do regarding the use of feedback, but also why. Teachers are on the front line of public education and have the potential to facilitate dramatic improvement in learning through effective feedback practices (Hattie, 1999). My findings may provide a window into existing practices and expose areas of practice needing improvement. Teachers care deeply about student learning and have a strong desire to provide quality feedback, yet they are often frustrated by their inability to do so. My research findings offer insights into what influences teachers’ pedagogical decision-making and feedback practice.

**Research Questions**

I adopted the following questions to conduct my study:

1. How and why do teachers provide affective, behavioral, and cognitive feedback to students?
2. How do teachers make decisions about the types of feedback used to support student learning?

My sub-questions were:

1. How do teachers evaluate the effectiveness of various forms of feedback used to encourage student development and learning?
2. What are the factors that impact teachers’ decision making regarding how to provide feedback to students?

**Overview of Chapters**

In this study, I explored current teachers’ decisions regarding how and why they provide feedback to students and the factors which effect their decision making. This Chapter One explained the genesis of my interest in the issue, introduced the research topic, and explained the
connection between feedback and student learning. It highlighted the focus on practicing teachers’ feedback efforts, and outlined the problem, purpose, and significance of the study.

Chapter Two presents a review of the research literature regarding feedback, and introduces established theories related to feedback, learning, and psychological well-being and development. The chapter outlines a definition of feedback and explores meta-analyses of the impact of feedback on learning. Next, I contrast the characteristics of effective feedback with factors which render feedback, at best, ineffective, and, at worst, a detriment to student learning. I then explore research-based strategies for feedback implementation and outline a typology of feedback. Finally, I describe scholarly literature regarding secondary and higher education teachers’ use of and experiences providing feedback to students. The findings show the tension between the potential for feedback to improve learning, and the practical challenges teachers have effectively delivering it. Chapter Two identified an important gap in research on teachers’ beliefs about feedback and their rationale for the feedback decisions they make. This gap in the literature inspired the current research study.

Chapter Three describes the qualitative case study methodology I adopted to conduct my study. The chapter includes a general description of qualitative research and my rationale for using the case study approach. I describe the recruitment of participants and the specific techniques used to gather and analyze data. The chapter includes a reflection on my role as a researcher and concludes with a discussion of the ethical considerations of my study.

Chapter Four describes the findings regarding teachers’ beliefs about and use of feedback. This chapter lays out the three overarching themes which captured teachers’ descriptions of their feelings and practice with feedback. The themes included: providing feedback to students, definition and purposes, the logistics and processes of feedback delivery,
and the costs and benefits associated with constructing and delivering feedback. The chapter describes sub-themes in detail, illustrating the nuances of teachers’ beliefs, purposes, and practical considerations of feedback implementation.

Chapter Five describes and uses Vygotsky’s (1978) Theory of the Development of Higher Psychological Processes, and Deci and Ryan’s (1985) Self Determination Theory (SDT) to analyze the research findings from Chapter Four. Both theories involve psychological development and well-being. Both theories may influence educational practice and provide a new level of understanding regarding the receptiveness and efficacy of feedback. Vygotsky (1978) emphasized the role of the teacher as a more knowledgeable other in a unique position to influence learning with feedback, and SDT addressed the way basic psychological need fulfillment affects both students’ ability and willingness to use feedback, and teachers’ willingness and ability to provide it.

Finally, Chapter Six includes a summary of the findings and describes potential implications for stakeholders. The findings may be useful for practicing teachers, professional development coordinators, school administrators, teacher preparation programs, and educational policymakers. This concluding chapter discusses the limitations of my study and provides for further research.

**Definition of Terms**

**Feedback:** Information provided by an agent regarding aspects of one’s performance or understanding (Hattie & Timperley, 2007). Feedback interventions are actions taken by an agent to provide information regarding some aspect(s) of one’s task performance (Kluger & DeNisi, 1996).
**Formal Feedback:** I defined this term based on participants’ description of their intentions. Formal feedback is information which accompanies a grade or evaluation against a standard and is intended to communicate the gap between current performance and mastery or excellence.

**Formative Feedback:** Information communicated to a learner that is intended to modify their thinking or behavior in order to improve learning (Shute, 2008).

**Formative Assessment:** All activities employed by teachers and/or students which provide information to be used as feedback to modify teaching and learning activities in order to close a gap between current performance and an identified standard of performance (Black & William, 1998).

**Informal Feedback:** I defined this term based on participants’ description of their intentions. Informal feedback is information which is provided before a final grade or assessment is assigned, and may be intended to improve learning, build stronger relationships, or offer encouragement and promote student self-confidence.

**Self-Regulated Learning:** Learners are capable of setting goals, evaluating strategies, changing course when presented with obstacles, and monitoring progress toward goal completion (Butler & Winne, 1995)

**Summative Assessment:** Methods employed by teachers to summarize and report the achievement status of a student. (Sadler, 1989).
CHAPTER TWO: REVIEW OF LITERATURE

My study concerns how classroom teachers implement feedback interventions, what factors influence their decision-making regarding types of feedback used and how they evaluate feedback’s effectiveness. Feedback is one of the strongest factors for improving student learning and academic performance (Black & William, 1998; Hattie & Jaeger, 1998; Hattie, 1999; Hattie & Timperley, 2007; Kluger & DeNisi, 1996; Shute, 2008). While studies show the importance and power of feedback for student learning, research also revealed the potential for feedback to negatively impact learning if not delivered correctly (Bangert-Drowns et al., 1991; Kluger & DeNisi, 1998; Shute, 2008). Scholarly studies focused on the effects of feedback on learning, theories of effective feedback practice, and the lack of consistency between teacher practice and literature on how to use feedback effectively. However, there appears to be a lack of studies on teachers’ beliefs and classroom practices regarding feedback (Brown, et al., 2012).

My review of the literature revealed an array of research articles from sweeping historical reviews of feedback research to the use of feedback in specific classroom settings. I organized my literature review into the following themes: (1) Feedback: definitions and general effects; (2) positive and negative effects of feedback; (3) qualities of feedback influencing positive vs negative responses in learners; (4) feedback models and suggested strategies; (5) teachers use of feedback in the classroom; and (6) teachers’ use of written feedback. After discussing the literature, I describe the gaps and tensions in literature related to feedback practices.

Feedback: Definitions and General Effects

Researchers have long sought to identify and define qualities of effective feedback and develop theories to explain the variable effects of feedback on learning (Bangert-Drowns, et al., 1991; Butler & Winne, 1995; Black & William, 1998; Hattie, 1999; Hattie & Timperley, 2007;
Kluger & DeNisi, 1996; Sadler, 1989; Shute, 2008). Researchers generally follow a consistent pattern including a sweeping literature review, discussion of effects, and a presentation of a theory regarding characteristics of effective feedback. For the purposes of my study, I selected research on feedback in the context of student learning. The first task in the research literature is devoted to specifically defining feedback within this context.

**Defining Feedback**

First and foremost, researchers agree feedback must provide information to a learner regarding task performance (Kluger & DeNisi, 1996), and unless a learner responds and uses the information to change their performance, the information communicated is not feedback (Black & William, 1998; Sadler, 1989). Feedback is information delivered by an instructor intentionally to inform students about the quality or correctness of their performance (Bangert-Drowns, et al., 1991). Kluger and DeNisi (1996) defined feedback intervention (FI) as an “action taken by an external agent to provide information regarding some aspect of task performance” (p. 255). Feedback is information provided to students regarding their comprehension of learning tasks and what they can do to improve. (Hattie, 1999).

Sadler (1989) reviewed studies and subsequently argued feedback is information about how successfully something is being done, and such information serves as feedback “only when it is used to alter the gap” (p. 121) between current performance and a desired goal. Black and William (1998) extended Sadler’s (1989) work in their foundational discussion of using assessment as a tool for providing formative feedback. Researchers initially identified 681 publications and they reviewed 250 papers which met their criteria on the use of assessment specifically to promote learning (Black & Williams, 1998). A key finding involved the use of feedback for formative assessment.
Black and William (1998) noted the lack of a universal definition of formative assessment, and thus undertook an effort to more carefully define and explain the process. Assessment is formative only if it provides feedback on differences between current level of performance and an identified standard, and if that information is used to close the gap. Researchers defined formative assessments as “all activities employed by teachers and/or students which provide information to be used as feedback to modify teaching and learning activities” (p. 7).

Feedback is thus an integral component of the formative assessment process. The use of formative assessment for learning (AfL) has begun to be widely adopted educational practice. Several studies I highlight later in this review specifically discuss teachers use of feedback as part of the AfL process (Black & William, 1998; Black et al., 2004; Brown, et al., 2012; Sadler, 1989).

Hattie and Timperley (2007) built on the definition of feedback previously developed by Kluger and DeNisi (1996) and Black and William (1998). They argued feedback is part of the learning process, and it occurs only after students have responded to initial instruction. Nicol and Macfarlane-Dick (2006) defined feedback as the process of teachers transmitting information to students regarding accuracy, strengths, and weaknesses of their work, while students use the information to make improvements. Feedback provides information about what a student understands and fails to understand, and what steps the student must take to improve (Hattie, 1999).

Researchers have sought to not only define feedback within an educational framework, but also enumerate the power of its effect on learning (Bangert-Drowns et al., 1991; Hattie, 1999; Hattie & Timperley, 2007; Kluger & DeNisi, 1996; Shute, 2008). I next discuss the
variable and surprising findings regarding the impact of feedback on learning. Meta analyses of feedback effects indicate it impacts learning, but not always for the better.

**Positive and Negative Effects of Feedback**

Feedback interventions (FIs) sometimes resulted in improved performance, but sometimes exerted a negative impact on performance (Kluger & DeNisi, 1996). A meta-analysis of available research on feedback interventions (FIs) conducted by Kluger and DeNisi (1996) scrutinized 3,000 studies using the following criteria: to be included in their sample, studies must have both a treatment group and a control group, contain measures of performance, such as memory retention or test scores, involve 10 or more participants, and contain enough information to calculate the effect size of a FI. From the resulting 131 studies reviewed, Kluger and DeNisi determined FI exerted a moderate positive effect (.41) on performance but noted FI resulted in worse performance 38% of the time. I examine reasons for the differences in a later section in this review.

Bangert-Drowns et al. (1991) used meta-analysis to analyze 58 experiments found in 40 studies of feedback and found a relatively modest mean positive effect (0.26 std dev), but a wide variety of effects ranging from weak to relatively strong. Like Kluger and DeNisi (1996), Banger-Drowns et al. (1991) found negative effects of feedback in one-third of experiments reviewed. Sadler (1989) developed a theory of formative assessment and feedback to address both the lack of an available general theory of feedback and the conundrum of feedback not resulting in improved student work. In subsequent research, Sadler (2010) found providing specific feedback has become common practice, yet again noted it seems to have little to no impact despite such efforts.
Results of feedback were found to be variable, inconsistent, and contradictory in a plethora of research reviewed on the subject (Shute, 2008). Most feedback research focused on large measures of performance and thus failed to capture the power of work in progress feedback (Butler & Winne, 1995). Hattie and Timperley (2007) agreed feedback effects could be variable, but Hattie and colleagues were the strongest proponents of the positive effect of feedback on learning.

Hattie (1999) is arguably the most widely cited modern champion of feedback as a powerful positive influence on student learning. In his inaugural lecture at the University of Auckland, Hattie (1999) stated “The most powerful single moderator that enhances achievement is feedback” (p. 9). A synthesis of meta-analyses involving 450,000 effect sizes from 180,000 studies representing 20 to 30 million students revealed feedback had an average effect size of 0.79, or roughly twice the average effect of other educational interventions (Hattie, 1999). Hattie and Jaeger (1998) completed a synthesis of 87 meta-analyses and concluded feedback was the strongest factor for enhancing student achievement.

While there are fewer quantitative experiments regarding feedback practices due to the requirements of human subjects’ research in the literature, two studies clearly indicated proper feedback implementation increases student learning. These studies incorporated specific twists or requirements not normally included as part of classroom feedback practice. I describe the wise feedback of Yeager et al. (2013) as well as the feedback on “low confidence correct responses” employed by Butler et al. (2008) to feature these notable examples of an experimental approach and how the studies revealed the potential effect of feedback on learning.

Yeager et al. (2013) conducted two double blind randomized field experiments to examine adolescents’ responses to critical feedback when combined with a strategy to restore a
sense of trust. Researchers review of literature indicated African American students have lower general trust than most other racial groups. Yeager et al. thus focused their study on the impact of developing a sense of trust between African American students and their White teachers during the process of providing and reacting to critical feedback.

Yeager et al.’s (2013) participants included 44 seventh-grade social studies students at a suburban public high school in the northeast United States. Students received written critical feedback by their teachers on a five-paragraph essay. Researchers randomly assigned 22 African American students and 22 White students to either the experimental group receiving wise critical feedback, or the control group receiving criticism alone. Students in the wise feedback condition received feedback along with a note from the teacher: “I’m giving you these comments because I have very high expectations and I know that you can reach them” (Yeager et al., 2013, p. 809). The control group note said, “I’m giving you these comments so that you’ll have feedback on your paper” (p. 810). The dependent variable in the experiment was whether students chose to revise their essays within a weeks’ time.

Students who received the treatment note were more likely to revise their essays (Yeager et al., 2013). Specifically, 71% of African American students in the treatment condition revised their essays, as compared to only 17% in the control group. Researchers found White students in the treatment group were also more likely to revise their essays, though the effect was not as statistically significant (87% > 62%; Yeager et al., 2013). The researchers also administered a survey to subjects in order to measure students’ level of school trust. Yeager et al. (2013) found the wise feedback note was most effective among students with the lowest levels of trust. Among low trust African American students, none of the control group students submitted a revised essay, whereas 82% of students in the treatment group did.
Yeager et al. (2013) identified three key steps for turning critical feedback into wise feedback which inspired a trusting relationship between students and teachers. First, critical feedback must be given as a reflection of teachers’ high standards. Second, students’ must be assured they possess the potential to meet such standards, and third students must be provided with the resources and feedback necessary to reach the standards demanded.

A second study conducted by Yeager et al. (2013) repeated the experiment the following year with a new group of 44 students. This time, instead of offering the opportunity to revise the essay, students were required to revise and re-submit their essay, and researchers measured changes in scores and the number of feedback suggestions incorporated in the revised essay. Students first and final drafts were scored by both their teachers and a group of experienced teachers selected for the experiment by the researchers.

Students who received the treatment note earned significantly higher scores on their revised essays than students in the control group, and the effect was most significant among African American students (11.91/15 > 9.45/15; Yeager et al., 2013). White student similarly improved their essay scores, but the effect was not statistically significant (12.21/15 > 11.25/15). Eighty-eight percent of African American students in the experimental condition improved their essay as compared to only 34% in the control group (Yeager et al., 2013). Yeager et al. (2013) found among White students, 100% in the treatment group improved their scores, compared to 80% in the control group. Students in the wise feedback condition incorporated twice as many corrections and suggestions as students in the control condition (Yeager et al., 2013). Feedback was clearly effective for improving learning in this study of essay writing. Another experimental study examined the use of feedback and retention of answers on multiple-choice tests.
Butler et al. (2008) conducted an experimental study to determine how feedback impacted students’ knowledge retention. Specifically, researchers investigated whether feedback strengthened student understanding of correct test answers when students indicated they were not confident about their responses. Butler et al. administered a general knowledge multiple choice exam to 30 undergraduate psychology students. Students were prompted to rate their confidence regarding whether they gave the correct answer after each test question. The control group received no feedback after answering other than whether they answered correctly or not, while the experimental group was given feedback as to the correct response (Butler et al., 2008). Both groups took the exam again after a five-minute period of distraction. Researchers performed conditional analyses on test results and found a large effect of feedback on recall on the final test. On the first test, subjects averaged 24% correct. The control group averaged 41% correct on the retest, while the experimental group achieved 87% correct on the retest (Butler et al., 2008). Clearly, receiving additional meaningful feedback led to greater retention on the retest.

The initial experiment was repeated on an additional 30 subjects with the addition of a two-day waiting period between exams (Butler et al., 2008). Butler et al. (2008) replicated the results of the first experiment in terms of improvement, and found when feedback was provided, participants were significantly more accurate in predicting percentage of correct answers compared to the control group. Importantly, researchers confirmed feedback improved retention of initially correct responses. Students who did not receive feedback only reproduced 79% of initially correct responses on the retest (Butler et al., 2008). Students who received feedback reproduced 93% of their right answers the second time around.

Butler et al. (2008) found clear evidence feedback improves retention of low-confidence correct responses and improves metacognitive judgments regarding participants’ current level of
knowledge. Multiple choice tests with more items and attractive lures (incorrect choices) may lead students to acquire misinformation during the testing process (Butler & Roediger, 2008). Students should always receive correct response feedback after testing because it helps students correct errors and enhances retention of initially correct answers selected without firm mastery of the content. Providing comprehensive feedback may ensure newly acquired knowledge is more likely to be retained (Butler et al., 2008).

A researcher interested in the effect of feedback is confronted with contradictory findings and a variety of claims regarding proper implementation. As Shute (2008) noted, research generally concludes feedback improves the learning process, but only if delivered appropriately. I next contrast the qualities of effective feedback identified by researchers with practices resulting in neutral or negative effects on learning.

**Qualities of Feedback Influencing Positive vs Negative Responses in Learners**

Feedback has a varied impact on student learning (Bangert-Drowns et al., 1991; Kluger & DeNisi, 1996; Shute, 2008). Researchers sought to not only define feedback within an educational framework, but also identify characteristics of feedback resulting in improvements in student learning. Table 1 summarizes the aspects of feedback associated with positive and negative learning outcomes for students. I next discuss the qualities of each type of feedback in detail.
Table 1

Characteristics of Feedback Exerting Positive or Negative Influence on Learning

<table>
<thead>
<tr>
<th>Feedback Characteristic</th>
<th>Positive Aspect(s)</th>
<th>Negative Aspect(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Task or Self Focus</td>
<td>Strategies to accomplish tasks, information on progress toward mastery</td>
<td>Personal qualities, normative comparisons, praise</td>
</tr>
<tr>
<td>Grades or Marks</td>
<td>Feedback comments alone</td>
<td>Feedback comments presented with grades</td>
</tr>
<tr>
<td>Specificity, Clarity, Complexity</td>
<td>Clear, attainable, specific</td>
<td>Unclear, not provided or made explicit, beyond student comprehension</td>
</tr>
<tr>
<td>Timing</td>
<td>Immediate for simple tasks</td>
<td>Delayed for complex tasks</td>
</tr>
</tbody>
</table>

The first characteristic of feedback involved whether correct answers were provided to learners. In their meta-analysis of 40 studies, Bangert-Drowns et al. (1991) found giving students feedback by providing the correct answer to something they got wrong exerted a strong positive effect on learning. As previously discussed, Butler et al. (2008) found providing feedback on correct answers improved the possibility of retaining information learned on a future test. Feedback effects are stronger when feedback provides both correct solutions and information on what made a response correct (Hattie & Timperley, 2007; Kluger & DeNisi, 1996). Shute (2008) found lower-ability learners particularly benefitted from elaboration regarding why a response was wrong and how to go about improving or solving similar problems in the future.

Conversely, Bangert-Drowns et al. (1991) found using a pre-test or otherwise having answers available before the feedback process was implemented reduced the effect size significantly. It is not effective to allow students to have access to answers before trying to solve
a problem on their own (Shute, 2008). Providing feedback regarding whether a response was right or wrong without also providing the correct answer resulted in reduced feedback effect (Bangert-Drowns et al., 1991). Merely telling students their answers were right or wrong without clarifying the correct answers and reasons for their being correct or incorrect reduced the potential positive effect of feedback (Butler et al. 2008; Hattie & Timperley, 2007; Kluger & DeNisi, 1996; Shute, 2008).

The second characteristic of feedback impacting learning was whether the feedback focused on the learning task or personal qualities of the student. Feedback centered on the specific requirements of the learning task and strategies provided to meet those requirements positively impacted student learning (Black & William, 1998; Hattie & Timperley, 2007; Kluger & DeNisi, 1996; Sadler, 1989). Feedback interventions which clearly highlighted strategies for completing the task increased positive effects (Kluger & DeNisi, 1996). Quality formative feedback provides scaffolding which simplifies and makes tasks manageable for learners and models ultimate learning expectations (Shute, 2008). Feedback is powerful if used to specifically provide information leading to greater possibilities for learning, more strategies for learning, and more detailed information regarding what is and is not understood (Hattie & Timperley, 2007).

In their feedback model based on a review of feedback literature, Oakes et al. (2018) focused feedback on suggestions for student actions rather than personal characteristics. Black and William (1998) agreed with the previous research of Kluger and DeNisi (1996) that feedback directing attention on the self and away from the task has a negative effect on performance. Lower performing students benefit from feedback when they receive feedback to help them learn, not to judge their ability relative to other students (Black et al., 2004). Feedback regarding the self is ineffective and leads students to avoid taking challenging intellectual risks and
decreases performance (Hattie & Timperley, 2007). Interestingly, feedback in the form of praise intended to motivate effort and improve learning may have the opposite effect.

Verbal praise should be used to support students’ effort and potentially increase students’ interest in and attitude toward the task at hand, not as a technique for increasing performance. Black & William, 1998). Praise, which places attention on student self-esteem and away from the task, has a negative effect (Black & William, 1998; Kluger & DeNisi, 1996). Yeager et al. (2013) addressed the potential negative impact of praise in their study of feedback provided to minority students. Educators often overpraise minority students’ work or focus on attempts to boost self-esteem in order to convey a lack of prejudice (Harber et al., 2010). Over praising mediocre work or focusing on esteem confirms minority students’ suspicion of being stereotyped and may increase academic disengagement (Yeager et al., 2013).

Whether to provide a grade along with feedback or use a grade as feedback is another decision which impacts its effectiveness. Feedback accompanying a final grade receives less attention from students than feedback alone (Black et al., 2004). Grades are likely to be perceived as reflecting personal ability, and feedback regarding personal characteristics has been found to negatively impact learning (Gibbs & Simpson, 2005). Black and William (1998) argued recorded grades are not useful as feedback specifically because students’ lack the ability to change the outcome.

Numerous studies described students receiving a grade and immediately discarding the work without further thought (Black et al., 2004; Crooks, 1988; Gibbs & Simpson, 2005). A grade or score does not represent feedback because it is a one-way designation of performance and cannot be used to close a learning gap (Sadler, 1989). Black et al. (2004) identified providing quality feedback without a mark or grade as one important process for school
improvement. Researchers found providing comments to students without a grade increased student and parent focus on learning issues. Comments should indicate to students where they stand in relation to the learning goal (Black & William, 1998).

Clarity, specificity, and complexity are interrelated characteristics of feedback influencing its effectiveness on learning. Research indicated when students, teachers, and tutors have different ideas about learning goals and criteria for quality, feedback is less effective (Hattie & Timperley, 2007; Nicole & MacFarlane-Dick, 2006; Sadler, 1989; Timperley & Parr, 2009). Nicole and MacFarlane-Dick (2006) noted incorrect assumptions and assessments of goals can render feedback useless. Sadler (1989) found feedback resulted in improvement only if the student understands the learning standard or goal and compares current performance accurately in relation to the goal.

Feedback is ineffective unless students clearly understand both expected learning goals and where they stand in relation to those goals (Hattie & Timperley, 2007). Goals must be specific and appropriately challenging, and feedback must support students’ drive to accomplish the goals (Hattie, 1999). Nicol and Macfarlane-Dick (2006) found limitations of traditional feedback effectiveness resulted from students’ inability to understand complex feedback messages. Students must be capable of making objective judgments of their performance against a learning standard, and it is likely students are not capable of understanding written feedback comments without further processing or assistance (Sadler, 1989).

Vague or unclear feedback may frustrate learners and negatively impact learning (Moreno, 2004; Shute, 2008). Based on an extensive literature review, Shute (2008) advised providing feedback in manageable units to minimize cognitive overload. Feedback should be
kept simple and focused, with only enough information to assist students on a specific task (Shute, 2008). Timing is another characteristic of feedback which influences its effectiveness.

Shute (2008) found inconsistencies concerning the research on the timing of feedback. Timing is an issue which impacts the practical implementation of feedback strategies in the classroom (Hattie & Timperley, 2007). Immediate correction of errors is best when knowledge is first being acquired, but delayed feedback is preferable when students are experimenting with processes for learning (Hattie & Timperley, 2007). If students have not received feedback soon enough, they will focus on new content that will prohibit the ability to undertake actions to promote learning of the previous material (Gibbs & Simpson, 2005).

Delayed feedback promotes learning transfer and appears better for concept formation and meta-cognitive processing but may prove detrimental and frustrating to struggling learners (Shute, 2008). While immediate feedback may result in increased motivation to practice, it may also result in carelessness and inattention to process details which renders feedback ineffective (Bangert-Drowns, 1991; Shute, 2008). Crooks (1988) similarly noted feedback provided too soon enables students to avoid careful reading and deep processing of material.

In summary, research on feedback indicated multiple variables influence whether feedback positively influenced student learning. Feedback should clearly facilitate student judgment of performance in relation to a learning goal and focus on how to successfully close such a learning gap. Feedback which calls attention to the self in relation to others, or which is presented in conjunction with a grade or mark, negatively impacted student learning. Students must be given time to process feedback and have an opportunity to clear up any misunderstanding about feedback messages. Feedback should be presented sooner for more difficult new learning tasks. Delaying feedback on more complicated tasks and processes may
promote enhanced meta-cognition and self-regulation. I next discuss studies offering models with practical suggestions to implement quality feedback practices.

**Feedback Models and Suggested Strategies**

Researchers have synthesized literature on quality feedback and the characteristics of effective instruction, and then used the findings to develop models for effective feedback practices in classrooms. I first describe feedback recommendations in the context of the Assessment for Learning (AfL) movement, which emphasizes formative assessments with a recommended practice of providing immediate feedback concurrently with teaching to promote student self-regulation and focus future learning efforts (Brown et al., 2012). Assessment for Learning has become widely adopted and is referenced in several feedback studies from around the world (Black & William, 1998; Black et al., 2004; Brown et al., 2012; Hattie & Jaeger, 1998; Sadler, 1989; Volante & Beckett, 2011).

**Assessment for Learning**

Formative assessment involves the process of judging student progress or the quality of student responses against an identified standard and providing feedback information used to alter any gap between the two (Sadler, 1989). Andersson et al. (2018) recommended partnering with students to set clear learning goals and frequently monitoring progress toward achieving learning goals by using a variety of assessments. To be considered a formative assessment, the feedback information must be used (Black & William, 1998; Sadler, 1989). Tests and assessments, therefore, must provide information for students to use to improve performance on learning tasks (Hattie & Jaeger, 1998).

Hattie and Jaeger (1998) argued tests are typically used as a measure of learning, not as a tool for improvement, particularly in systems that rely on high stakes testing for accountability.
purposes. “Testing is valuable to the degree that it provides feedback, and to the degree to which this feedback is used to set more appropriate challenging goals and tasks” (p. 121). All methods of grading or evaluation emphasizing rankings or comparisons among students serve no formative purpose (Sadler, 1989).

Feedback comments should be provided without a grade because students are more likely to focus on improving learning strategies not the grade (Black et al. 2004). A grade or score does not represent feedback because it is a one-way designation of performance and cannot be used to close a learning gap (Sadler, 1989). Grades call attention to the self and are not useful in promoting further learning (Gibbs & Simpson, 2005). Black and William (1998) identified key strategies for implementing AfL reforms in classrooms, including providing clear learning goals and more.

Black and William (1998) argued there is no one best way to implement AfL into classroom practice; however, some key aspects of the program must be present. This included clear learning goals, applying appropriate learning tasks to meet those goals, and providing quality feedback on progress toward attaining the goals. Assessments are a tool used to provide such feedback, and teachers must be committed to involving students in self and peer analysis as part of a constructivist approach to learning.

Black et al. (2004) recommended teachers develop a classroom culture emphasizing a learning partnership in which students actively participate in learning. Teachers serve as facilitators by relinquishing some control of the classroom. Teachers should devote class time for student processing of feedback, such as requiring reference to teacher comments on subsequent assessments. To ensure students use feedback, Gibbs and Simpson (2005) recommended asking students what aspect of the work they would like feedback on, requiring self-assessment before
the teacher grades the work, and/or requiring a two-stage project in which feedback is provided on a first draft and must be incorporated as part of the final product.

Black et al. (2004) identified questioning strategies, peer and self-assessment activities, and active review and assessment practice as additional important steps in overall student improvement. The benefit of all these strategies was in providing feedback to challenge students to evaluate their own thinking and assumptions and critically analyze the quality of their arguments. Researchers called on teachers to provide oral questioning along with written comments to ensure students understood and used feedback (Black et al., 2004).

The emphasis on Afl in England has not resulted in a universal understanding of the role of feedback to promote learning. Two conceptions of assessment and learning are the linear pathway of attaining a learning objective, and the view of assessment as a learning opportunity for teachers to provide feedback for improvement (Hargreaves, 2005). Results of Hargreaves’ (2005) survey of 83 teachers indicated measuring student performance against learning objectives remained teachers’ dominant conception of the learning process despite the nationwide emphasis on AfL practices to provide individualized feedback to move students forward in their learning.

Feedback serves as a crucial component of AfL and teachers are challenged to make choices regarding how to provide feedback in the moment as part of daily classroom practice (Black & William, 2009). Larger class sizes and increasing emphasis on summative high stakes testing have exacerbated the challenges of providing effective individualized feedback. I next summarize the typology of feedback developed by Hattie and Timperley (2007) which is widely cited in research studies (Engelsen & Smith, 2010; Gamlem & Munthe, 2014; See et al., 2016; van den Bergh et al., 2013) and used as a template to measure feedback implementation.
A Typology of Feedback

Hattie and Timperley (2007) developed a model of feedback incorporating three major questions working at four possible levels. The model involves assessing student understanding to provide feedback students may use to answer the key questions: Where am I going?; How am I going?; and Where to next (Hattie & Timperley, 2007)? Because feedback is ineffective unless students clearly understand expected learning goals, they should be able to answer the question “Where am I going?” Hattie and Timperley (2007) described quality learning goals as specific, challenging yet attainable, and containing clear criteria for success. Feedback, according to Hattie and Timperley, must provide information regarding progress toward attaining the goal in question.

To answer the question, “How am I going?” researchers suggested teachers provide feedback regarding progress and how to proceed, which may also address the final question “Where to next?” Feedback is powerful if used to specifically provide information leading to greater possibilities for learning, more strategies for learning, and more detailed information regarding what is and is not understood (Hattie & Timperley, 2007). Assessments are used to answer the “how” question but are not useful as feedback unless students can take steps to improve performance.

Hattie and Timperley (2007) identified four major levels at which feedback might be directed and argued the ability to properly direct feedback has strong implications for its effectiveness. The four levels are the task (FT), the processing (FP), the regulatory (FR), and the self (FS). Effective feedback at the task, process, and self-regulatory levels is interrelated. Feedback task is most effective when it dispels incorrect ideas and leads to more efficient strategies for understanding the material. Feedback processing provides cues for searching or
strategizing, and FR is powerful if it leads to further engagement or investment of effort (Hattie & Timperley, 2007).

Hattie and Timperley (2007) identified issues related to practical implementation of feedback strategies in the classroom. First, researchers discussed the importance of timing and how timing requirements vary depending on the level of feedback used. Second, positive or negative feedback may be effective, again depending on the level at which it is aimed. Negative feedback leads to action when directed toward required tasks, while positive feedback increased motivation when students were committed to attaining a goal because they wanted to do it. Further, different students received feedback differently based on culture, gender, attribution, or feeling of connection to the teacher (Hattie & Timperley, 2007).

Feedback serves as a powerful tool for improving students’ comprehension, engagement, and development of learning strategies if it is skillfully administered at the proper level (Hattie & Timperley, 2007). This requires the design of assessments to provide information about learning as opposed to a snapshot of progress recorded as a grade (Hattie & Timperley, 2007). Assessments must be tools that provide feedback used to further enhance learning. Hattie and Timperley (2007) recommended teachers become more proficient at classroom tasks to allow more time to carefully monitor student learning and provide quality feedback. Next, I describe suggestions for implementing effective feedback practices identified and developed by scholars not specifically tied to AfL practices or the Hattie and Timperley (2007) typology.

**Recommendations for Effective Feedback Implementation**

Oakes et al. (2018) found dedicated feedback practices proved especially beneficial for students who struggle academically and behaviorally in school because feedback helps students to become self-regulated learners. The goal of feedback is to help students to internalize
standards to monitor or self-assess their progress (Gibbs & Simpson, 2005; Nicole & MacFarlane-Dick, 2006). The most effective learners are self-regulated, meaning capable of setting goals, evaluating strategies, changing course when presented with obstacles, and monitoring progress toward goal completion (Butler & Winne, 1995).

Feedback is an essential component of self-regulated learning (SRL), and students who become self-regulated use internal feedback to assess progress (Butler & Winne, 1995). External feedback enhances the learning progress and facilitates a transition to SRL. Nicol and Macfarlane-Dick (2006) defined good feedback practice as “anything that might strengthen the students’ capacity to self-regulate their own performance” (p. 205).

Oakes et al. (2018) argued good feedback practice begins with teachers clearly identifying academic, behavioral, and social skill learning goals and communicating these goals to students. Learning goals must be challenging yet attainable for the learner, and feedback should point out progress toward mastering a desired learning goal (Shute, 2008). Self-regulation is unlikely unless the student possesses a clear understanding of learning goals against which current performance may be measured (Nicol & Macfarlane-Dick, 2006). Criteria or standards of proficiency must be clearly understood by students or feedback will not achieve its intended purpose (Gibbs & Simpson, 2005). Similarly, Sadler called on teachers to make the learning goal or standard clear to students, allowing them to compare themselves objectively against the standard.

Gibbs and Simpson (2005) found feedback is incomprehensible if students did not have a clear understanding of the task at hand. Scholars argued teachers must spend time helping students understand what it means to learn and to know in relation to course standards, or feedback cannot possibly help students move toward such learning. Teachers, Gibbs and
Simpson urged, must assist students in developing a sophisticated understanding of learning as a change in personal knowledge or behavior, and a conception of knowledge as requiring evidence and justification relative to other possible answers. Butler and Winne (1995) recommended teachers implement learning strategy training sessions by providing feedback to students about their learning needs. Feedback is more effective when it provides a detailed description of how to improve (Bangert-Drowns et al., 1991).

Students must be provided exemplars and an opportunity to discuss and clarify standards (Nicole & MacFarlane-Dick, 2006). Sadler (1989) identified three key conditions under which feedback results in improvements: the student understands the standard or goal, compares current performance accurately in relation to the goal, and engages in appropriate action to close any gap in learning or performance. Teachers, Sadler argued, must provide feedback to students to assist them in taking appropriate actions, but the goal of the system is to facilitate students’ ability to self-monitor or self-regulate their own learning to close the gap.

Good feedback facilitates development of self-assessment (reflection) in learning. (Butler & Winne, 1995; Nicole & MacFarlane-Dick, 2006). Nicole and Macfarlane-Dick (2006) called for teachers to provide self-assessment tasks and structured opportunities for self-monitoring. Oakes et al. (2018) recommended teachers build time into their lessons for providing feedback and requiring students to act on the feedback received. Teachers must spend time helping students understand what it means to learn and to know in relation to course standards (Gibbs & Simpson, 2005). Unless students know what feedback means, they cannot learn. Sadler (2010) recommended teachers educate students in the art of appraising complex work to provide students with appraisal experience of a teacher so the students are capable of internalizing and utilizing judgments of quality.
Quinton and Smallbone (2010) developed a feedback reflection form for use by students upon receiving written feedback on coursework. Researchers reviewed 167 feedback reflection forms completed by undergraduate students. Quinton and Smallbone found students were interested in and valued feedback, and willingly took class time to complete the feedback reflection forms when teachers provided class time to complete the task. Reflection is key for learning, and currently not enough class time is allocated for student reflection on feedback received (Quinton & Smallbone, 2010).

Whether in conjunction with assessments or general lesson planning, feedback should provide information to students about their progress in relation to a learning goal and provide strategies for reaching the goal (Black & William, 1998; Hattie & Timperley, 2007; Sadler, 1989). Feedback should direct student focus on the task at hand as opposed to the self (Kluger & DeNisi, 1996). Teachers should interact with students to ensure feedback is clearly understood and provide time for students to implement feedback suggestions (Gibbs & Simpson, 2005; Quinton & Smallbone, 2010). These general guidelines may lead to increased student achievement. I next describe studies which evaluate the extent to which teachers implement quality feedback practices in classrooms.

**Teachers’ Use of Feedback in the Classroom**

Studies of teachers’ use of feedback practices reveal teachers care about their students and want to provide quality feedback to improve learning (Brown et al., 2012; Dessie & Sewagen, 2019). Brown et al. (2012) surveyed 518 teachers in New Zealand and found teachers’ conceptions of feedback were strongly linked to Hattie and Timperley’s (2007) typology. Teachers in New Zealand also expressed a strong belief in providing feedback to students to help them improve their learning (Brown et al. 2012; Irving et al., 2011). Havnes et al. (2012)
surveyed 192 teachers from five Norwegian upper secondary schools and found 97% of teachers felt their feedback was useful for further learning.

Eriksson et al. (2018) interviewed 13 primary school teachers in Sweden and discovered teachers’ two main concerns and rationales for the utilization of feedback in the classroom were to provide academic encouragement to motivate struggling students, and tailor feedback to specific individual learning needs. Researchers found teachers were deeply committed to supporting individual students and providing feedback geared to meet individual academic needs. Likewise, Dessie and Sewagen (2019) found 98.4% of teachers they surveyed highly valued feedback to improve learning. Volante and Beckett (2011) found teachers in Ontario placed a high value on providing feedback without grades on a regular basis, but consistently remarked on the challenge of providing formative feedback along with the challenge of administering summative assessments.

Research on teachers’ conceptions of feedback is limited (Brown et al., 2012; Dessie & Sewagen, 20190; Irving et al., 2010; Shute, 2008). What literature is available indicated teachers care about student learning and want to provide quality feedback. What teachers consider quality and why, however, is not well understood.

Literature on teachers’ classroom practices regarding feedback indicated a gulf between good intention and effective implementation (Dessie & Sewagen, 2019; Havnes et al. 2012; See et al. 2016; Timperley & Parr, 2019). Poor implementation includes a relative lack of meaningful feedback (Voerman et al. 2012), a reliance on practices which fail to meet the standards of quality feedback identified in the research literature (see Gamlem & Munthe, 2014; See et al. 2016), and disparate use of feedback based on teacher perception of student ability (Rubie-
Davies, 2007). I next describe studies on why teachers do not regularly provide quality feedback to students.

**Limited Use of Feedback**

Studies revealed teachers lacked strategies or a plan for implementing formative feedback despite their genuine concern for students and learning (Havnes et al. 2012; Dessie & Sewagen, 2019). Students in Norwegian upper secondary schools indicated they were not given time to use or reflect on feedback provided on the graded assignments in Norwegian or English classes (Havnes et al. 2012). Similarly, Gamlem and Smith (2013) conducted semi-structured interviews of 11 randomly selected students in Norwegian schools and found students felt frustrated by the lack of feedback interactions provided by teachers despite implementation of national education policy in Norway emphasizing AfL practices.

Studies incorporating classroom observations and other triangulating data confirmed findings of limited feedback used by teachers. Voerman et al. (2012) used an observation instrument to identify feedback interventions during 78 filmed lessons in secondary schools in the Netherlands. After analyzing the observations, researchers found teachers provided an average of seven feedback interventions in 10 minutes of classroom interaction, comprising less than 20% of all observed interactions. Voerman et al. found most observed feedback interventions were non-specific, and about half of all teachers provided no specific feedback during the observation period.

Analyses of written comments on student work by Dessie and Sewagen (2019) showed similar lack of feedback. Researchers found 98.4% of teachers surveyed reported they valued feedback to improve learning, but a review of written comments on student work revealed mainly non-specific marks and final grades. Likewise, only 33% of 2208 written
communications from teachers analyzed by Ruiz-Primo and Li (2013) were comments rather than grades, numbers, or symbols. Further, 14% of the comments were descriptive, and only 4% were prescriptive, offering advice for how to improve (Ruiz-Primo & Li, 2013).

According to Timperley and Parr (2009), the limited use of prescriptive (feed-forward) comments by writing teachers in New Zealand was “striking” (p. 53). Van den Bergh et al. (2013) found teachers’ feedback was twice as likely to be directive as facilitative, meaning teachers generally provided guidance for students as opposed to facilitating student metacognitive processing regarding how they should move forward or whether they should alter their learning strategies. Researchers found only 1% of feedback was meta-cognitive in nature (van den Bergh et al. 2013).

Even when educational policy specifies the use of a specific feedback strategy, research literature shows teachers struggle to implement effective feedback practices (Gamlem & Smith, 2013; See et al., 2016; Timperley & Parr, 2009). See et al. (2016) conducted a quasi-experimental study of teachers’ ability to incorporate Hattie and Timperley’s (2007) feedback typology into their classroom practice. The feedback intervention was designed by teachers and administrators at nine primary schools in England, with a goal to identify gaps in student learning and appropriate feedback strategies to eliminate those gaps (See et al., 2016).

Researchers found lessons were weak in terms of feedback implementation. Rather than specific levels of feedback, teachers relied on lesson objectives and provided limited feedback on task or process skills (See et al. 2016).

One reason for the relatively limited use of quality academic feedback observed by researchers is the propensity for teachers to employ non-specific behavioral or classroom management feedback in classroom settings (Engelsen & Smith, 2010; Eriksson et al., 2018; Van
I next discuss the prevalence of this type of feedback interaction found in the literature, along with other examples of low quality or ineffective feedback which does not improve student learning. Unfortunately, ineffective feedback practice is the most common type identified by researchers in the field.

**Low Quality, Non-Specific Feedback Interventions**

One of the challenges of observing teacher-student interactions and coding for feedback is the high percentage of interactions which relate to task and classroom management. In a case study of nine Norwegian primary school teachers, Engelsen and Smith (2010) found teacher interactions were primarily concerned with establishing a positive class climate as opposed to providing specific feedback for learning. In interviews of 13 Swedish primary school teachers, Eriksson et al. (2018) found teachers put a strong emphasis on maintaining order, claiming without order there can be no learning.

Teachers must become adept at managing classroom practice to find time to deliver feedback for learning (Hattie & Timperley, 2007). Eriksson et al. (2018) found a prevalence of teachers’ use of feedback to maintain order, including giving specific directions to keep students on task, or redirecting students to get back on task. Teachers in this study also relied on pointing out peers who worked quietly as models in hopes of inspiring others to imitate desired behaviors. Teachers believed peer modeling would be inspirational and motivating for students, though ironically, earlier research by Kluger and DeNisi (1996) emphasized the dangers of calling attention to the self in comparison to other students.

Questioning and discussion strategies may provide an opportunity for teachers to monitor student progress and provide feedback (Black et al. 2004). Eriksson et al. (2018) found teachers relied on steering discussions with the goal to maintain order rather than fostering a free flow of
ideas and providing feedback. Teachers were more likely to sacrifice fostering deeper meta-cognitive thinking to try to interact with as many students as possible on a shallower level.

Van den Bergh et al. (2013) filmed 32 teachers who conducted active learning lessons in sixth, seventh, or eighth grade classes in the Netherlands. Researchers hoped to discover characteristics of teacher feedback during active learning. Active learning in this study meant students were collaborating with a small group of peers on an independent project (van den Bergh et al., 2013). Researchers identified and coded feedback interactions during a 20-minute segment of each videotaped lesson. Feedback occurred in roughly half of the interactions, although 95% of the feedback was not related to a specific learning goal.

The lack of clear learning goals makes providing effective feedback nearly impossible (Hattie & Timperley, 2007; Nicole & MacFarlane-Dick, 2006). Van den Bergh et al. (2013) found most teachers did not identify specific learning goals beyond vague concepts, such as “finding a lot of information.” Gamlem and Smith (2013) similarly found rather than specific learning goals, teachers relied on negative, non-specific comments such as “work harder.” Frustratingly for students, students reported they could not work harder because they did not know what they were supposed to work on doing (Gamlem & Smith, 2013).

Gamlem and Munthe (2014) analyzed the quality of formative oral feedback interactions between teachers and students using a preexisting and validated observation instrument (CLASS) developed at the University of Virginia. The researchers filmed 56 lessons taught by 28 teachers in four Norwegian lower secondary schools serving students in 8th through 10th grade. Using the CLASS framework, Gamlem and Munthe coded student-teacher interactions as emotional support, classroom organization, or instructional support, and rated the quality of each variable on a Likert-type scale, with 1 being low and 7 being high.
Gamlem and Munthe (2014) found either teachers provided predominantly low-quality feedback, or an absence of teacher-student interactions, except to establish a positive climate. A positive climate is critical if feedback has any chance of being attended to and used by students (Hattie & Timperley, 2007). The relatively high positive climate score (mean 5.48) compared to lower scores in other feedback quality variables (means ranged between one and two for instructional support) indicated feedback was more encouraging than learning centered (Gamlem & Munthe, 2014).

Most of the feedback found in research of teacher classroom practices is focused on non-specific behavioral or social cues. Researchers identify these practices as feedback, although I noted classroom management does not fall under the definition of feedback developed by the most cited researchers (Bangert-Drowns et al., 1991; Black & William, 1998; Hattie & Timperley, 2007; Kluger & DeNisi, 1996; Sadler, 1989). Further, there is limited research available regarding teacher perceptions of feedback to understand what teachers believe about the effectiveness of their feedback practices (Dessie & Sewagen, 2019).

Another common teacher practice which renders feedback ineffective is providing feedback along with assignment or assessment grades or relying on grades to provide feedback (Black & William, 1998; Black et al., 2004; Gibbs & Simpson, 2005). There are misconceptions about feedback by teachers, including the idea returning graded work with correction is effective feedback (Dessie & Sewagen, 2010; Tuck, 2012).

Feedback Provided with Grades

As previously noted, grades are not feedback and grades presented with feedback lead students to disregard feedback comments (Black & William, 1998; Black et al., 2004; Sadler, 1989). Havnes et al. (2012) found teachers in Norway primarily gave feedback on completed and
graded tests and assignments. Overwhelmingly, researchers found 97% of teachers felt their feedback was useful for further learning, but nearly half of the students reported they did not find the feedback useful (Havnes et al. 2012). Students receiving a grade may immediately discard the work without further thought (Crooks, 1988).

Teachers used grades to provide students with an indication of the value of their performance but did not provide information regarding how to improve (Gamlem & Smith, 2013). Researchers interviewed students who reported they believed grades were given in part based on a reward for effort or punishment for lack of effort or engagement. Even students who received a top grade indicated frustration regarding lack of comments for improving or moving forward (Gamlem & Smith, 2013).

Teachers equate providing feedback with marking or scoring completed assignments (Tuck, 2012). Teachers’ feedback primarily focused on errors as well as scores in English language classes in Hong Kong (Lee, 2014). Students ignored the voluminous red inked comments and focused primarily on their scores (Lee, 2014). Educators in New Zealand have widely adopted AfL practices and strongly identify formative assessment feedback with student learning (Irving et al. 2011). Even with the strong belief in AfL, the 11 teachers surveyed disagreed about whether grades and marks could be used formatively.

Dessie and Sewagen (2019) found 55.7% of teachers surveyed indicated a belief grades or marks were feedback, and 52.4% said they provided no feedback without it being part of a final grade. The researchers noted 98% of teachers said they believed in the power of feedback, but triangulating data analysis of teacher marks on assignments revealed a reliance on non-specific comments such as “good” along with final grades. Dessie and Sewagen found most
teachers in their study considered returning exam sheets and assignments with total marks and correct answers effective feedback.

Next, I describe research on the differentiated way teachers provide feedback to students based on teacher perceptions of student ability. Teacher expectations influence student perception and motivation which results in a self-fulfilling prophecy of performance (Brattesani et al., 1984). Studies show teachers provide low quality feedback to students viewed as lacking ability or motivation, and then, unfortunately students meet their low expectations by continuing to struggle with their learning (Engelsen & Smith, 2010; Gamlem & Smith, 2013; See et al., 2016; Yeager et al., 2013).

The Role of Teacher Expectations on Feedback

Teachers provide feedback to students differently based on their perception of student ability and expectations for student academic effort and achievement. In their study of Norwegian schoolteachers, Engelsen and Smith (2010) found stronger students were given almost twice as many interactions as low achieving students. Low achieving students, researchers found, were given far more positive non-specific praise, such as “good work,” than high achieving students, even when their performance fell below standard.

Students reported receiving more feedback when their work was either exemplary or poor, and little feedback if they were considered in the middle or average (Gamlem & Smith, 2013). Havnes et al. (2012) found teachers offered more detailed feedback to students perceived as motivated and engaged in the material. Researchers found teachers expressed doubts regarding the efficacy of feedback provided to academically weak students as opposed to confidence in the benefits of feedback to motivated and advantaged students (Havnes, et al. 2012).
Teachers relied on praise for low achieving students because they believed it would keep low achievers motivated to participate and prevent them from disrupting the lesson (Engelsen & Smith, 2010). Erikkson et al. (2018) found teachers believed low achieving students needed praise and encouragement or they would be lost or give up hope. Lower ability learners need verification of correctness and immediate elaboration of specifically their mistakes to benefit from feedback (Shute, 2008). Teachers admitted to avoiding critical feedback for low achievers for fear it would result in reduced motivation for those students (Engelsen & Smith, 2010). The most common feedback provided for students perceived to be academically weaker by teachers was praise directed at the self (See et al., 2016).

Praise, which places attention on student self-esteem and away from the task, exerted a negative effect on learning (Black & William, 1998; Hattie & Jaeger, 1998; Kluger & DeNisi, 1996). Educators may rely on praise of minority students to appear unbiased (Yeager et al., 2013). Over praising mediocre work or focusing on esteem confirms minority students’ suspicion of being stereotyped and may increase academic disengagement (Yeager et al., 2013).

Teachers with high expectations for students offered more instructions and scaffolded learning to ensure students had a clear understanding of the concepts in question (Rubie-Davies, 2007). High expectation teachers provided students with regular feedback by indicating current progress in relation to the end goal (“How am I going?; Hattie & Timperley, 2007), and options for what steps to undertake next to build on the skill or develop a new skill (“Where am I going?; Hattie & Timperley, 2007). Likewise See et al., (2016) found despite recent feedback intervention training, teachers still provided more specific feedback to the students they deemed academically stronger. Teachers with low expectations for students offered so little feedback, the observer concluded feedback was an uncommon practice (Rubie-Davies, 2007).
The research literature on teachers’ use of feedback indicates it is limited (Gamlem & Munthe, 2014), vague (van den Bergh, et al. 2013), and rendered less effective due to accompanying grades or assignment marks (Dessie & Sewagen, 2019). Further, teachers who perceived students as struggling provided lower quality feedback to those students (Engelsen & Smith, 2010; Erikkson et al. 2018; Rubie-Davies, 2007). Teachers also relied on non-specific praise to motivate those students despite research finding such praise is less effective for promoting learning (Kluger & DeNisi, 1996; See et al. 2016). The combined findings show a discouraging and ineffective practice associated with feedback. I next describe the specific challenges and research findings related to teachers’ provision of written feedback.

**Teachers Use of Written Feedback**

Larger class sizes and institutional factors, such as budget cuts and student feedback surveys have resulted in less interpersonal feedback interactions and more written feedback on papers and other assessments in both higher and secondary education (Gibbs & Simpson, 2005; Tuck, 2012). Providing written feedback is viewed as an onerous burden by teachers. Institutional pressure requires the frequent use of written feedback.

Frequent provision of detailed feedback on assignments is a traditional characteristic of higher education in the United Kingdom (Gibbs & Simpson, 2005). Researchers noted the ability to provide frequent feedback has been limited by reduced resources and increasing class sizes. As student numbers and class sizes increase, the ability of teachers in higher education to effectively provide timely feedback to individuals has been constrained (Crisp, 2007; Gibbs & Simpson, 2005; Nicole & MacFarlane-Dick, 2006).

Crisp (2007) found scant research evidence to support the claim formative feedback assisted students in evaluating progress and improved future learning despite professional
development and institutional policy which treats the power of feedback as an incontrovertible truth. In a study reviewing student scores on subsequent essays at Deakin University in Australia, Crisp found despite extensive written comments, 66.7% of students received virtually the same (within 4%) score on the second essay as the first. A small number of students, 15.7% showed substantial improvement, while the remaining 17.6% earned a markedly lower score (Crisp, 2007).

Tuck (2012) interviewed 14 higher education teachers from six different universities in the United Kingdom as part of an ethnographic study of the specific culture of UK higher education teachers’ practices and beliefs regarding feedback on student writing. Tuck discovered three central findings regarding the use of feedback described by the higher education teachers interviewed. First, teachers viewed feedback as a process determined by institutional policy and framed by rules, regulations, and university-determined procedures (Tuck, 2012). Faculty in the UK are required to submit graded assignments to a moderator who scored written feedback according to university guidelines. Tuck found teachers’ decisions about what and how many words to use in written feedback was shaped by institutional pressure. Teachers’ described pressure to conform to institutional expectations, and to provide feedback that would result in students’ conforming to institutional style requirements.

Teachers viewed feedback as an overwhelming and unproductive process (Tuck, 2012). Teachers who provide extensive written feedback found the process labor intensive and cognitively draining (Sadler, 2010). Crisp (2007) noted teachers complained about the amount of work they put in providing feedback resulting in little improvement by students. Time saving measures, such as rubrics, employ discrete marks which may inhibit development of skill and holistic quality appraisals by students (Sadler, 2010).
Teachers universally complained about the number of essays they had to evaluate, the lack of time during the regular workday to complete evaluations, and the utter lack of concern regarding this workload expressed by university administration (Tuck, 2012). “A sense that feedback-giver's effort was often not reciprocated by students was a common theme” (Tuck, 2012, p. 216). Teachers most enjoyed discussing feedback with students but had no confidence they could find dedicated time to regularly engage in such dialogue (Tuck, 2012). Teachers in Hong Kong complained about the shortage of time to provide feedback to students, their dissatisfaction with the results of feedback, and the huge amount of time invested in the process without a corresponding payoff of improved learning (Lee, 2014).

Reflecting on and engaging with feedback is an essential learning process to help students attending a university, however this rarely occurs (Quinton & Smallbone, 2010). Quinton and Smallbone (2010) found feedback comments from tutors were rarely reflected in subsequent student work. Tutors' intentions when providing feedback may not be understood and acted upon by students, rendering it ineffective (Orsmond & Merry, 2011). Good feedback encourages teacher and peer dialogue around learning because students often do not understand the feedback they are given (Nicole & MacFarlane-Dick, 2006).

The importance of quality feedback for learning cannot be divorced from the practical logistics of providing it in higher education (Sadler, 2010). Teachers compose feedback with the assumption students convert feedback into actions to improve learning. However, learning improvements due to feedback are impossible if students do not process or understand feedback appropriately (Sadler, 2010). Feedback must help students understand the learning goal, instead of a list of criteria to be ticked off with a rubric. The exclusive use of rubrics impedes a holistic quality effort (Nicole & MacFarlane-Dick, 2006).
The research literature on feedback revealed teachers believe feedback is important. However, teachers struggle to provide quality feedback to improve student learning. In the next section, I explore the gaps and tensions in the literature related to feedback for learning and discuss the reasons why my research question may contribute to the literature on effective teaching.

**Gaps and Tensions in the Literature**

Although there is a substantial amount of literature which describes teachers use of feedback (Engelsen & Smith, 2010; Gamlem & Munthe, 2014; Havnes et al., 2012; See et al., 2016; Voerman et al., 2012), there is a lack of research regarding teachers’ conceptions of feedback and the rationale which underpins their decisions about feedback use. Dessie and Sewagen (2019) stated they found no thorough research study on both teacher perceptions and practice of feedback. Likewise, Irving et al. (2011) noted few studies have examined how teachers understand feedback.

Brown et al. (2012) developed a survey of teacher perceptions because they found no such instrument existed. Black and William (1998) called for additional research on assumptions about learning underlying pedagogy. van den Bergh et al. (2013) specifically called for future research to investigate “teachers’ knowledge, concerns, and beliefs regarding feedback provided during active learning sessions” (p. 358). My research questions address a gap in the literature, including the limitations of studies concerning teachers’ conceptions of feedback and their criteria for evaluating its effectiveness.

One of the primary tensions in the literature is the lack of universal consensus regarding the impact of feedback on learning. Shute (2008) found a lack of general conclusions on specific mechanisms connecting feedback to learning, and feedback results are variable, inconsistent, and
contradictory. Some researchers claim feedback has the most powerful effect on learning (Hattie & Timperley, 2007), while others found feedback could negatively impact learning under certain conditions (Bangert-Drowns et al., 1991; Kluger & DeNisi, 1996). Feedback’s effectiveness is impacted by a wide variety of variables such as timing, complexity, and student receptivity (Bangert-Drowns et al., 1991; Black & William, 1998; Butler & Winne, 1995; Gibbs & Simpson, 2005; Sadler, 1989; Shute, 2008). There is simply no agreed upon universal theory of best feedback practice implementation to ensure positive effects on learning, a situation which has persisted despite a plethora of feedback research (Kluger & DeNisi, 1996; Nicole & Macfarlane-Dick, 2006; Sadler, 1989; Shute, 2008).

Another tension in the literature regarding feedback is the fine line regarding the use of praise. Black and William (1998) recommended teachers use verbal praise and support of students’ effort, but only to potentially increase students’ interest in and attitude toward the task at hand. Good feedback encourages positive motivational beliefs and self-esteem because student perceptions and emotions impact how feedback is processed and understood (Butler & Winnie, 1995; Nicole & Macfarlane-Dick, 2006). Praise, which calls attention to the self or otherwise focuses on personal qualities, can have unintended negative consequences on student performance (Black & William, 1998; Hattie & Jaeger, 1998; Kluger & DeNisi, 1996; Oakes et al., 2018; Shute, 2008, Yeager et al., 2013).

Scholars focused their research specifically on feedback in relation to student learning and performance (Kluger & DeNisi, 1996; Shute, 2008), not the practitioner emphasis on feedback to encourage positive relationships (Erikkson et al., 2018; van den Berg et al., 2013). I have spent time illuminating how feedback is defined in the research specifically in relation to student learning and performance. Feedback must be presented in a trusting class climate in
order to be received (Hattie & Timperley, 2007; Yeager et al., 2013). Efforts to establish climate, social cues, and classroom management comments are included in research descriptions of classroom feedback. I argue such efforts are a critical component of the whole and must be the foundation upon which specific feedback to address learning gaps and promote higher level thinking and performance must be built.

Multiple studies found teachers use praise and encouragement as feedback, particularly for academically challenged students (Engelsen & Smith, 2010; Eriksson et al., 2018; Gamlem & Munthe, 2014; See et al., 2016; Yeager et al., 2013). The research literature offers limited specific guidance regarding how to differentiate encouragement from feedback, or how to praise students without calling attention to the self.

I next present the theories I used to analyze the literature about characteristics of effective feedback and teachers’ classroom practices. Theories included are Vygotsky’s (1978) Theory of the Development of Higher Psychological Processes, and Deci and Ryan’s (1985) Self-Determination Theory. I selected Vygotsky’s (1978) theory because it describes the importance of the close and interrelated relationship between feedback provided by a more knowledgeable other and learning. I added Deci and Ryan’s (1985) theory of self-determination to interpret the literature on feedback in relation to meeting psychological needs. Intrinsic motivation to improve and maximize personal development is enhanced to the extent basic psychological needs for autonomy, relatedness, and competence are met (Ryan & Deci, 2018). The selected theories helped me to interpret my review findings and proved useful in analyzing the data collected in my study. I begin with a summary of the key tenants of each theory, and then use the theories to analyze the content review of literature.


**Analytical Theory**

**The Development of Higher Psychological Processes**

Vygotsky (1978) believed the psychological analysis of teaching required a sophisticated understanding of the difference between learning and development. Vygotsky criticized theories offered by Piaget and others which claimed a child must pass through a maturation process to arrive at a stage of mental development making learning possible. Instead, Vygotsky argued learning resulted in mental development which makes sophisticated psychological function possible.

Vygotsky (1978) defined school learning as the process of assimilating the fundamentals of scientific knowledge (p. 84). Students begin the school year at some level of actual development resulting from previously completed learning and development cycles. Vygotsky argued tests and other measures of learning explain what he called a child’s mental age. In other words, tests are useful for measuring what a student can currently do and currently knows. These assessments, however, fail to accurately capture the true level of development because they cannot measure what a student can do with the assistance of others (Vygotsky, 1978).

The difference between a child’s actual development level and their potential for problem solving with adult guidance or peer collaboration is the zone of proximal development (ZPD) (Vygotsky, 1978). The ZPD defines mental functions which have not yet matured and require guidance from a more knowledgeable other to emerge. Higher mental functions are enabled via social interactions (Hausfather, 1996). Hattie and Timperley (2007) explained how feedback is part of the learning process because it provides information about students’ task performance,
and may come from teachers, parents, peers, or students themselves. Feedback thus creates an interaction which may facilitate the development of more sophisticated mental processes.

Two children in the same grade or at the same mental age at the beginning of a class or school year may likely be in different zones of proximal development. Vygotsky (1978) challenged educators to carefully identify the specific ZPD and provide interactions with teachers or peers which resulted in the demonstration of mental abilities the child or student could not perform alone (Hausfather, 1996). Feedback, however, must be tailored to the individual student in relation to task performance as opposed to comparison with peers which calls attention to the self (Bangert-Drowns et al., 1991; Black & William, 1998; Hattie & Timperley, 2007; Kluger & DeNisi, 1996; Shute, 2008).

Clearly, instruction and feedback presented by the teacher to students must be directed in such a way as to connect with students in the ZPD. To accurately connect with students in the ZPD, feedback must be a process based on deep and mutual understanding of objectives and processes to meet them (Smagorinsky, 2018). Formative assessment feedback, Black and William (1998) argued, is only possible when interacting with learners to compare progress in relation to both what they have already learned and where they stand in relation to the learning goal.

Feedback which is beyond the learner’s ZPD would be impossible to understand. Feedback which is overly complex is ineffective in promoting learning (Nicole & MacFarlane-Dick, 2006; Shute, 2008). Sadler (1989) argued students must be capable of making objective judgments of their performance against a learning standard. Students are capable of such judgments if provided guidance, or feedback from a more knowledgeable other, and if the information meaningful within the ZPD (Vygotsky, 1978).
Scholars have debated the meaning of the zone of proximal development and how to use education to best meet the learning needs of the child. Clarà (2017) summarized the two schools of thought regarding the ZPD. One school argues the goal of instruction is to assess a child’s mental abilities so as to reveal the ZPD. From this perspective, educators then tailor assistance to facilitate student understanding of the instruction provided.

The second view of Vygotskys’ ZPD emphasizes the tasks and mental constructs a child is capable of demonstrating with adult assistance (Clarà, 2017). Instruction according to these scholars must focus on adult and child interactions which create and move the child through the ZPD to a more mature mental level. The notion of instructional scaffolding comes from this perspective.

Scaffolding is a metaphor for teaching, typically associated with Vygotsky, referencing temporary support built to meet the specific needs of learners to help them complete or master learning tasks (van de Pol et al., 2010). The support provided by the teacher varies with the type of task and the current level of mastery displayed by the student (van de Pol et al., 2010). Scaffolding research has supported the efficacy of an adult offering a lot of assistance based on individual needs at the beginning of the learning process, and gradually reducing assistance as the child becomes more competent (Clarà, 2017). The child or student is able to internalize the advanced processes and transform the knowledgeable other’s language into their own inner speech (Hausfather, 1996).

The concept of a scaffold to learning a discrete task does not capture the full potential of development in Vygotsky’s theory. Scaffolding should move the student through the ZPD to a fundamentally different and advanced level of development and thinking (Smagorinsky, 2018). Good feedback promotes self-regulation, and the most effective learners are self-regulated
learners (Butler & Winne, 1995). Self-regulated learners are capable of setting goals, evaluating strategies, changing course when presented with obstacles, and monitoring progress toward goal completion (Butler & Winne, 1995). From the viewpoint of Vygotsky’s (1978) theory, feedback scaffolding would result in a learner progressing through the ZPD to a higher state of mental function in which they are capable of sophisticated self-regulation.

Vygotsky (1978) noted properly organized learning leads to mental development and the emergence of a variety of more advanced mental processes. Learning activates a variety of mental functions which operate only with guidance from others. Feedback is inseparable from guidance and formative practice because such guidance is not formative if it does not close a gap or advance them in the ZPD (Black & William, 1998; Sadler, 1989). Vygotsky (1978) claimed permanent development was completed when those processes became internalized.

The primary connection between studies of feedback and Vygotsky concerns the role of feedback in closing learning gaps and improving student performance. Feedback must be tailored to the individual student in relation to the gap between their current abilities in the ZPD and proficiency or mastery of the task. Quality feedback provided by a knowledgeable instructor may move students to a higher level of mental functioning in which they are capable of self-regulated learning. I next discuss the connection between basic psychological needs and motivation described in self-determination theory.

**Self-Determination Theory**

Self determination theory (SDT) focuses on a person’s internal psychological needs and growth tendencies which shape their motivation as well as the factors which foster positive internal motivation and personality development (Ryan & Deci, 2000). Self-determination theory also examines environmental factors which inhibit self-motivation. Negative environmental
factors included those which threaten or prevent three innate human psychological needs from being met: the need for competence, the need for relatedness, and the need for autonomy (Ryan & Deci, 2000).

Psychological need satisfaction promotes motivation to engage in current tasks as well as long-term psychological health and development (Ryan & Deci, 2000; Ryan & Moller, 2017). These psychological needs are shared by all people, though there are a variety of ways they may be satisfied (Ryan & Moller, 2017). What follows is a brief description of each of the basic psychological needs discussed in SDT.

People seek out challenges and find the experience of mastering challenges intrinsically rewarding out of a basic psychological need for competence (Ryan & Moller, 2017). The level of challenge is important from the perspective of SDT. People do not enjoy completing easy tasks, no matter their level of competence or mastery (Ryan & Moller, 2017). When students can complete school learning tasks they demonstrate competence (Niemiec & Ryan, 2009).

The second basic need is autonomy. Having autonomy means having a sense of choice and ownership of one’s actions without a sense of being forced or controlled into actions (Ryan & Moller, 2017). Interestingly, extrinsic rewards offered to incentivize people to action have the reverse effect of reducing intrinsic motivation, specifically because such rewards reduce a person’s sense of autonomy (Deci et al., 2001).

The third basic need is relatedness. A feeling of relatedness exists when a person has a sense of connection with others based on mutual trust and concern for well-being (Ryan & Moller, 2017). Self-determination theory posits people are drawn to internalize values and practices shared by those with whom they have a sense of relatedness (Ryan & Moller, 2017). Feedback research indicated teachers tend to focus on meeting this need more frequently,
particularly among students they perceive as less intrinsically motivated or academically successful (Engelsen & Smith, 2010; Eriksson et al., 2018; Gamlem & Munthe, 2014; Havnes et al., 2012; Rubie-Davies, 2007; See et al., 2016).

Teachers do not meet the needs for competence and autonomy among all their students, rendering feedback ineffective. Multiple studies highlighted the use of feedback for maintaining order or directing student behavior (Eriksson et al., 2018; van den Bergh et al., 2013; Voerman et al., 2012). Engelsen and Smith (2010) found teachers deemed non-specific motivational comments such as “excellent” or “good work” as feedback for low-achieving students even when performance was below standard. All three needs must be met for a person to experience self-authored intrinsic motivation (Ryan & Deci, 2000).

Ryan and Deci (2000) asserted intrinsic motivation is inherent in individuals, and thus their SDT focuses on conditions which foster or inhibit this innate characteristic. They defined intrinsic motivation as the “inherent tendency to seek out novelty and challenges, to extend and exercise one’s capacities, to explore, and to learn” (p. 70). Intrinsic motivation is characterized by strong satisfaction of both the basic needs for autonomy and competence (Ryan & Moller, 2017). Intrinsically motivated people engage in activities freely, without constraint, coercion, or reward other than self-determination (Deci & Ryan, 1985).

Self-determination theory highlights the importance of learners developing intrinsic motivation rather than being externally controlled or forced into action from an educational perspective. When autonomy is low due to the cause of behavior being external, even when accompanied with a reward, the work done is likely to be of moderate quality and the learner is unlikely to stretch or push themselves to improve (Ryan & Moller, 2017). Further, all three needs
must be met before a person can truly maximize intrinsic motivation to learn and grow (Ryan & Deci, 2018).

Ryan and Moller (2017) described feedback as an informational element which correlates directly with satisfying a person’s need for competence. They argued the importance of providing refined and responsive feedback. Goal setting and feedback are mutually supportive in that the greater the challenge, the more likely students are to openly receive and implement feedback information (Hattie, 1999). Feedback which focuses on task performance and offers specific information in regard to closing a learning gap is most effective in promoting student learning (Bangert-Drowns et al., 1991; Butler & Winne, 1995; Black & William, 1998; Hattie & Timperley, 2007; Kluger & DeNisi, 1996; Shute, 2008). Feedback which communicates pressure to conform to a desired outcome reduces the sense of autonomy (Ryan & Moller, 2017).

As previously noted, feedback research literature emphasized the negative impact of focusing attention on the self (Kluger & DeNisi, 1996). Self-determination theory explains normative information calling attention to the self invites comparison to others which results in ego involvement and self-esteem concerns (Ryan & Moller, 2017). The controlling nature of the feedback pares away the needed sense of autonomy.

Under the umbrella of SDT, Deci and Ryan (1985) presented a sub-theory of motivation to explain different types of motivation and the factors which facilitate an internalization of initially external goals. This is particularly important in education as learning standards and curricular goals are determined by forces external to the student. Deci and Ryan (1985) described a continuum of motivation, from amotivation to intrinsic motivation, which is impacted by perceived autonomy, competence, and relatedness.
Amotivation is a lack of intention to act because the individual places no value on the activity (Ryan & Deci, 2000). Scholars describe how motivation proceeds along the continuum, from externally regulated extrinsic to the intrinsic state of performing an activity because it is satisfying, and one has the autonomy to pursue competence. Extrinsic motivation can result in effort and action depending on the degree to which the individual identifies with and internalizes the goals. Ryan and Deci (2000) noted the states of identified and integrated regulation, where a person has accepted and valued the extrinsic behavioral goal, result in similar action to the state of full intrinsic motivation.

Self-determined, or intrinsic motivation, is linked to positive academic performance, conceptual understanding, and affective benefits such as positive emotions and enjoyment of academic work (Deci et al., 1991). An educational setting in which teachers are responsive to basic psychological needs for competence, autonomy, and relatedness provides a structure under which students can maximize their inherent self-actualizing tendencies (Ryan & Deci, 2000). Primarily, the connection between feedback and SDT is the extent to which feedback fulfills the basic psychological needs of autonomy, relatedness, and competence. Guiding students with feedback which enables autonomy and self-direction fosters intrinsic motivation to master not only interesting, but also mandatory complex learning tasks.

I selected Vygotsky’s (1978) Development of Higher Psychological Processes and Deci and Ryan’s (1985) Self-Determination Theory as theories to use to analyze the related literature. I selected these theories for their connection to the conceptions and use of feedback by classroom teachers to improve student learning. The review of literature and theory enabled me to develop a framework for analyzing teachers’ feedback practices. In the next chapter, I describe the methodology I adopted to conduct my study.
CHAPTER THREE: METHODOLOGY

My research study concerned the lived experience of teachers providing feedback, which included their beliefs about feedback as well as the reasons for their feedback choices. To answer my research questions, I employed a case study approach under the umbrella of qualitative research. The qualitative approach lends itself to studying issues in depth (Patton, 2015) and facilitates an examination of a complex process from the perspective of those who experience it (Creswell & Poth, 2018).

The effect of feedback on improving student learning depends on the perception and experience of both the giver and the receiver as well as the context and the nature of the subject (Havnes et al., 2012). Shute (2008) described the wide variation in feedback effects on student achievement. Feedback is potentially a powerful influence on student learning (Hattie, 1999; Kluger & DeNisi, 1996; Shute, 2008). Yet, there appears to be a limited amount of research regarding teachers’ conceptions and beliefs about feedback and the factors that influence their decisions regarding how to use it (Brown et al., 2012; Dessie & Sewagen, 2019; Irving et al., 2010). I initially conducted an exploratory study employing qualitative research methods to confirm my suspicion regarding the need to examine what feedback means to teachers and how teachers use feedback as a teaching strategy.

I interviewed two colleagues to “test” my research topic and data collection methods. I conducted semi-structured interviews using seven questions. I learned feedback was not a topic discussed in-depth among colleagues and discovered more disparate views of the topic of feedback than I anticipated. While some common themes emerged, such as a strong preference for in-person verbal feedback, teachers expressed individual preferences and practices. The
unique experience of these two close colleagues influenced me to adopt a qualitative inquiry approach to study the use of feedback.

My study provides an in-depth analysis of how teachers think about feedback and examines the factors which influence teachers’ decisions about how they provide feedback to students. Too frequently, differences exist between teachers’ intentions and student’s perceptions of feedback (Hattie & Timperley, 2007). Understanding what actions teachers take and the reasons for their choices may facilitate understanding of how teachers use feedback and why. A plethora of studies on feedback do not appear to have translated into consistent and effective implementation of research-based feedback practice. I next discuss why I selected qualitative research and a case study approach to explore teachers’ use of feedback.

**Qualitative Research**

Patton (2015) argued qualitative inquiry reveals the variety of practitioners’ experiences and enables a discussion of the importance of the variations discovered. My study concerned the classroom teacher’s experience using and evaluating the effectiveness of feedback on student learning. The significance of this inquiry lies in the meaning teachers make of feedback. Qualitative research allowed me to explore teacher perceptions and use of feedback.

Qualitative inquiry captures what happens among real people in the real world in their own words (Patton, 2015). Feedback, or any pedagogy, is only effective if it is considered important and effective by those who use it. The goal of using feedback is to improve student performance, but whether it accomplishes this goal or leads to unintended consequences is an open question (Hattie & Timperley, 2007; Havnes et al., 2012; Kluger & DeNisi, 1996). Patton (2015) argued qualitative inquiry proves particularly useful for ferreting out whether programs and practices result in intended outcomes or lead to unexpected effects.
Qualitative research allows a more detailed and complex understanding of an issue (Creswell & Poth, 2018). Whether teachers find feedback a meaningful tool or how well they apply the research in their own context is not standardized. Qualitative research is an essential inquiry method to evaluate how feedback is used by individuals in the field. The only way to get these details and personal experiences is to talk to people at their places of work (Creswell & Poth, 2018).

My study sought to illuminate the lived experience of teachers in the field. A survey might offer an overview of the number of teachers who use feedback, but it cannot express whether the feedback process is meaningful for those involved. Qualitative inquiry emphasizes free flowing, open-ended interviews that result in a rich depth of knowledge and understanding (Patton, 2015). While it is important to know what teachers do regarding giving feedback, it is also essential to know why they do what they do. The qualitative approach allowed me to dig deeper into the stories of individuals to learn their motivations and influences (Patton, 2015).

I previously described my encounter with a teacher I met in a coffee shop who devoted a significant amount of time and energy giving feedback. She provided the feedback even though she had no expectation her work would impact students’ learning. I wanted to know more about that, how common it is, and why she made that choice. My interviews conducted for an exploratory study revealed different uses and outcomes of feedback even among close colleagues. Qualitative inquiry allowed for a deeper and richer exploration of these experiences (Patton, 2015).

Patton (2015) argued the qualitative approach of in-depth interviews and observations gives the researcher a chance to get close enough to the people involved to capture their inner perspectives. He added the qualitative approach allows great depth, attention to detail,
exploration of nuance, and the ability to incorporate unanticipated findings that contribute to an understanding of human experience. The case study approach within the qualitative research tradition allowed me to conduct an in-depth study of teacher beliefs and practices (Creswell & Poth, 2018; Patton, 2015).

**Case Study Research**

Yin (2018) argued case study research answers “how” and/or “why” questions about contemporary events over which a researcher has little to no control. My study asked how and why teachers use feedback. An instrumental case study has the intent to understand a specific issue or concern (Creswell & Poth, 2018). My intent was to understand teachers’ specific rationale for and implementation of feedback for learning. Case study research allows in-depth exploration of an issue as it plays out in real life (Creswell & Poth, 2018). By using the case study method, I investigated the phenomenon of feedback in-depth and in context of real-world application (Yin, 2018).

Limited research exists on teachers’ conceptions of feedback (Brown et al., 2012; Dessie & Sewagen 2019; Irving, et al., 2010). The case study approach allows the analysis of multiple sources of in-depth information to promote a deeper understanding of feedback practice (Patton, 2015). A study of teachers’ beliefs and practices in the classroom allowed me to enlighten understanding of the important contextual conditions relevant to the case of feedback practice (Yin, 2018).

Practical considerations as well as quality research protocol require decisions about the appropriate units of analysis (Patton, 2015). As a result, the case must be a “real-world phenomenon with concrete manifestation” (Yin, 2018, p. 31). My case study was bounded by my focus on feedback implemented by high school social studies and language arts teachers in a
Midwestern urban area. To conduct my study, I followed recommended approaches for conducting qualitative research, beginning with the protection of participants involved in human subject research.

**Institutional Review Board**

Ethical considerations inherent in working with human subjects required careful planning to protect the human subjects in my case study (Yin, 2018). I submitted my research proposal to the University of St. Thomas Institutional Review Board (IRB) upon receiving approval of my proposal from the dissertation committee. The IRB application spelled out my commitment to gaining informed consent, protecting my subjects from harm, and maintaining their privacy and confidentiality (Patton, 2015; Yin, 2018).

Participants were informed about their rights to privacy and right to withdraw from the study at any time throughout the research process. I presented each participant with an informed consent letter (see Appendix A) which spelled out my research purposes and all the protections inherent in an IRB approved study. I took care to protect the anonymity of participants and secured the research data. I next discuss why my personal experience and background allowed me to succeed in this work, as well as potential pitfalls and biases I avoided while conducting this research.

**Role of the Researcher**

My perspective as a researcher undoubtedly influenced my findings. Patton (2015) called the researcher an “instrument of qualitative methods” (p. 70). Creswell and Poth (2018) argued written work reflects and is influenced by the culture, gender, social class, experience, and political orientation of the researcher. Patton (2015) further stated self-awareness and mindfulness proves critical for success in qualitative inquiry due to the inevitable influence of
the researcher on the selection, interpretation, and responses of the participants. I am thus intertwined and inseparable from the research process and findings. So, who am I to make these claims?

I served as a classroom teacher and high school basketball coach for 29 years. I care deeply about students and take great professional pride in helping them master complex academic and athletic skills. I have also failed to help some students master complex skills, and those failures stand out more than the successes. I believe education has intrinsic value and is extremely important for success in society. My parents instilled in me a belief about the value of education.

I am the first member of my extended family to earn a bachelor’s degree. My mother graduated from high school and my father quit school to join the navy before later earning a general education diploma. Both parents, however, made it clear they regretted not having achieved more academically, and insisted I succeed in school and pursue a college education. In our working-class household, obeying my parents and pleasing them was a primary obligation.

The blue-collar work ethic I learned from my parents helped me succeed in overcoming academic challenges and influenced my view of education to this day. I believe all students can succeed if they work hard and are given the support and feedback to guide their efforts. I had to carefully avoid judging the process of feedback through my own frame of reference as to what I have found worked or did not work for me as a teacher and a learner. Further, I explored the wide variety of factors influencing teachers’ interpersonal interactions and professional decision making.

My study concerned how and why teachers use feedback, and whether they believe in the efficacy of the feedback they offer. As a researcher, I asked questions without implying how I
felt those questions should be answered, and without emphasizing values I believe underlie quality teaching practices. I heeded Yin’s (2018) advice to be a good listener not trapped by preconceptions. My experience as a teacher and coach was a blessing and a curse in this regard. I empathize with teachers, but I had to consciously avoid judging their actions based on what has worked for me. Next, I discuss how I selected and recruited a population sample to participate in my study.

**Recruitment and Selection of Participants**

The first step in the research process is to find, gain access to, and establish rapport with participants (Creswell & Poth, 2018). Qualitative inquiry emphasizes smaller sample sizes in order to explore an issue in-depth (Patton, 2015). I targeted a purposeful sample of participants capable of providing the detail and data required to understand the issue at hand (Creswell & Poth, 2018). It is important to carefully bound a case to ensure data adequately and carefully connects to and explains the phenomenon in question (Yin, 2018). My boundaries were high school social studies or language arts teachers at large, urban or suburban public schools in the Midwest.

I selected the boundaries above for three reasons. First, by working with teachers from different schools, I minimized the influence of feedback policies which may be endemic to one institution and not common in others. While it was important to identify and explore how school policies influence feedback practice, it was equally important to avoid emphasizing a unique case as representative of teachers’ feedback practices. As a result, I interviewed teachers from five different schools. I explored factors that affect teachers’ decision making at multiple school sites to determine if there were commonalities which could be highlighted.
Second, larger, more diverse schools expose teachers to a wider variety of students. My review of the research literature indicated teachers’ expectations of students led them to provide differentiated feedback to students based on those expectations (Erikkson et al., 2018; Rubie-Davies, 2007, Yeager, et al., 2013). Without incorporating schools with a diverse student body, I would not be able to discover if such trends existed among the teachers in my study. A diverse school is defined as having no more than one race comprise more than 75% of the student body (Rabinowitz et al., 2019). All of the schools in the current study meet or exceed this standard, ranging from 25% minority enrollment to 62% minority enrollment. The smallest school in my study has 892 students, and the largest 2,080 students.

Finally, practical considerations made a large suburban school setting most accessible for me. Of my 29 years of experience, 28 of them are at large suburban high schools in the Midwest. This experience, coupled with my review of the research literature, gave me insight into large high school institutional norms and feedback practices. As Yin (2018) noted, I am a capable detective, keenly aware of clues or hints which reveal insights about the case.

While there is limited research in the literature on teachers’ use of feedback, studies I found tended to focus on math, science, or second language learning classes. Because of the lack of previous research, and because my area of expertise is social studies teaching, I recruited primarily social studies teachers. Philosophically, however, I was also open to language arts teachers because both subjects emphasize writing and written assessments which require feedback.

I began my recruiting efforts by contacting school administrators, two principals and the superintendent of schools, in districts with high schools which met my criteria and who I knew personally. I also reached out to teachers I had met at conferences or workshops from other
districts, and asked my own colleagues if they had teaching friends or acquaintances from other schools they could introduce me to. I shared my research questions, guaranteed human participant protections under the IRB, and outlined the predicted time requirements for a semi-structured interview (see Appendix B).

Sixteen teachers participated in this study, 13 social studies teachers and three Language Arts teachers (see Table 2). Six of the 10 teachers identified as women, and the remaining 10 as men. Each teacher was assigned an alias corresponding with their subject area. The pseudonym chosen for a social studies teacher, for example, was a historically important figure, and the pseudonym for an English teacher was an author. All of the participants are current high school teachers whose experience ranges from a low of eight, to as many as 34 years of teaching. The teachers taught in a variety of courses and programs, including International Baccalaureate (IB), Advanced Placement (AP), regular or standard high school classes, and two classes with cohorts of new English language learners (ELL).
Table 2

*Study Participants*

<table>
<thead>
<tr>
<th>Participant Alias</th>
<th>School</th>
<th>Experience</th>
<th>Subject</th>
<th>Grades</th>
<th>Levels</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tolkien</td>
<td>1</td>
<td>15 years</td>
<td>English</td>
<td>11, 12</td>
<td>IB, Standard</td>
</tr>
<tr>
<td>Eliot</td>
<td>1</td>
<td>26 years</td>
<td>English</td>
<td>9, 11, 12</td>
<td>IB, Standard</td>
</tr>
<tr>
<td>Steinbeck</td>
<td>1</td>
<td>8 years</td>
<td>English</td>
<td>12</td>
<td>IB, Standard</td>
</tr>
<tr>
<td>Yellen</td>
<td>2</td>
<td>23 years</td>
<td>Social Studies</td>
<td>9, 12</td>
<td>Standard, Online, ELL Collaborative</td>
</tr>
<tr>
<td>Alexander</td>
<td>2</td>
<td>7 years</td>
<td>Social Studies</td>
<td>10, 11</td>
<td>Standard</td>
</tr>
<tr>
<td>Parks</td>
<td>2</td>
<td>21 years</td>
<td>Social Studies</td>
<td></td>
<td>Standard</td>
</tr>
<tr>
<td>Abbot</td>
<td>2</td>
<td>10 years</td>
<td>Social Studies</td>
<td>12</td>
<td>AP, Online, Standard</td>
</tr>
<tr>
<td>Hayek</td>
<td>2</td>
<td>26 years</td>
<td>Social Studies</td>
<td>9, 12</td>
<td>Standard</td>
</tr>
<tr>
<td>Thatcher</td>
<td>3</td>
<td>10 years</td>
<td>Social Studies</td>
<td>11, 12</td>
<td>IB, Standard</td>
</tr>
<tr>
<td>Earhart</td>
<td>3</td>
<td>8 years</td>
<td>Social Studies</td>
<td>9, 11</td>
<td>Standard</td>
</tr>
<tr>
<td>Malthus</td>
<td>3</td>
<td>22 years</td>
<td>Social Studies</td>
<td>9, 10</td>
<td>AP, Standard, ELL</td>
</tr>
<tr>
<td>Aldrin</td>
<td>3</td>
<td>11 years</td>
<td>Social Studies</td>
<td>9, 11</td>
<td>Standard</td>
</tr>
<tr>
<td>Keynes</td>
<td>4</td>
<td>11 years</td>
<td>Social Studies</td>
<td>10, 11, 12</td>
<td>AP</td>
</tr>
<tr>
<td>Friedman</td>
<td>4</td>
<td>16 years</td>
<td>Social Studies</td>
<td>11, 12</td>
<td>AP, Standard</td>
</tr>
<tr>
<td>Ostrom</td>
<td>4</td>
<td>24 years</td>
<td>Social Studies</td>
<td>11, 12</td>
<td>AP, Standard</td>
</tr>
<tr>
<td>Smith</td>
<td>5</td>
<td>34 years</td>
<td>Social Studies</td>
<td>11, 12</td>
<td>AP, Standard</td>
</tr>
</tbody>
</table>

One building principal I contacted connected me directly to three teachers from the school’s language arts department. For two other districts, the principal and the superintendent referred me to the district central administrators responsible for coordinating research, teaching and learning, and academic excellence. I submitted a letter outlining my research, along with my IRB approval from, and received permission to contact teachers. One of these central
administrators reached out directly to the building principal, who contacted the social studies department lead. Three social studies teachers were willing to participate from this school. I provided an informed consent letter to each potential participant in my study and obtained voluntary agreement to participate.

At the other school, after receiving permission to conduct research, I sent an email to each of the 15 social studies teachers in the department, introducing myself and highlighting my connection to the principal and the approval I received from central administration. I made it clear participation was voluntary. Their principal did not require them to participate, and I mentioned him only to get a foot in the door, as it were. I hoped the fact I knew him would provide a level of comfort in talking to a researcher about their personal teaching practice. Further, I explained the participant protections and anonymity guaranteed by the IRB would prevent me from revealing whether they participated, or any of their responses to the administration. Ultimately, I met with and interviewed five teachers from this school. My remaining participants were recruited through introductions from colleagues and snowball sampling.

Snowball sampling begins with one or more participants and asks them for introductions and contacts to other possible participants (Patton, 2015). A colleague provided an introduction to a teacher at a school which fit my case boundaries perfectly. I had a rewarding interview with this teacher, who subsequently introduced me and my study to three other social studies colleagues who agreed to participate. My final participant was a personal friend of one of my colleagues. This teacher appreciated the opportunity to meet virtually and explore online meeting technology due to the unexpected forced distance learning resulting from the Covid-19 pandemic.
I began this study interviewing participants in person at locations of their choice, and I completed the final five interviews using online Zoom and Google Meet platforms due to the forced distancing under Covid-19 protocol. I found it helped if I offered to meet participants at their convenience, whether during a prep hour, or before or after school, at locations of their choosing. I also offered to provide lunch or coffee for busy teachers who were willing to give their time. When it was possible before the pandemic closures, I met five participants at local cafes, and six others at their school buildings. After the closures, I found teachers appreciated the chance to experiment with the online meeting technology, and it was easy to share a recording of the meeting with them for their review.

The participants represented five different high schools, four grade levels, and two academic disciplines. Despite the diversity of schools and classes taught, the teachers’ description and discussion about feedback revealed similarities regarding motivation and intentions, as well as obstacles and challenges to effective feedback utilization. I next describe my process of data collection and analysis.

**Data Collection**

The current research collected data from qualitative, semi-structured interviews. The interview consisted of 10 questions designed to allow teachers to expand on their beliefs about and decisions regarding how they use feedback (see Appendix C). The open-ended nature of the questions allowed follow-up questions and additional discussion on the topic. Interviews ranged from 30 minutes to two hours in length. I recorded the interviews, and took notes throughout, making note of teacher emotions, levels of animation, or topics teachers seemed to especially stress. I usually listened to recordings while driving home from interviews while the discussion
was fresh in my mind, and if applicable made additional notes about the interview. It was during one of these rides home that it occurred to me to add a question to my survey.

After the third interview, a common response pattern regarding the challenges and constraints of feedback emerged. The teachers all lamented a lack of time and large number of students which prevented them from providing adequate feedback for all students. It occurred to me to explore what teachers would change if they had the autonomy to control these factors. As a result, I added a question for the remaining 13 participants: If you had more time or fewer students, how would you see yourself using feedback differently? I submitted this follow-up question to the first three participants and received a response from one. Once an interview was completed, I transcribed it either using Rev.com, or working by hand.

Rev.com is a transcription service with clearly proscribed security and confidentiality procedures. As I reviewed the first three interview transcriptions, I found it helpful to listen to the interview concurrently to check for accuracy. As I listened, I noticed occasional words that were dropped, and also noticed emotion cues such as sighs or laughter were not indicated. I corrected the transcripts and added these emotion cues to these first three transcripts and decided to transcribe the rest of the interviews by hand. Transcriptions were stored on word documents in the University OneDrive system for safe keeping.

I erased and deleted all original recordings and Zoom or Google Meet interview videos after completing the transcriptions. I stored hard copies of transcriptions and informed consent documents in a personal safe in a secure, locked storage area in my apartment building. I will destroy and delete all of the remaining research data in accordance with the three-year time window designated in the university IRB approval.
Once the transcriptions were complete, I conducted member checks by sending a thank you email with a summary of their responses, and any follow up questions which occurred to me after listening to the interviews. After I completed data analysis, I sent a second member check to all participants. This email provided a summary of the themes and findings identified in the study, and asked participants if they felt the summary accurately reflected their feelings and beliefs about feedback (see Appendix D). None of the participants indicated concern regarding the data collected or conclusions drawn, and several congratulated me on my work. Once all interviews were completed in March of 2020, I proceeded to analyze the data collected.

Data Analysis

The process of data analysis involves organizing the data, coding and organizing themes, and interpreting the findings (Creswell & Poth, 2018). Qualitative data analysis relies on the researcher’s judgment to transform data into findings (Patton, 2015). The first step is to play with the data, searching for patterns and insights (Yin, 2018). I used NVivo data analysis software to organize my initial coding, and later to note repetitions and patterns which ultimately coalesced into themes and subthemes. Repetition of words or ideas reveal larger ideas that should be coded (Bazeley, 2013). Repetition occurred both within and across interviews, as teachers from different schools related similar descriptions of their thinking about feedback. These patterns emerged after a series of coding cycles, beginning with a broad review of the data and first cycle coding.

The current research employed in-vivo coding during the first cycle, breaking the text into broad categories using the participants own words (Bazeley, 2013). “Phrases that are used repeatedly by participants are good leads; they often point to regularities or patterns in the setting.” (Miles et al., 2020, p. 65). Initially, I identified and created 103 in-vivo codes which could be further reduced and codified during a second level of focused coding.
Focused coding is designed to review initial codes to identify the story being told by the data (Bazely, 2013). After reviewing the codes, similar concepts were grouped into more general coding categories. The categories broadly consisted of values, emotions, processes, and attributes.

Values coding is appropriate for studies that explore participant experiences, actions, and feelings about the importance of the topic (Miles et al., 2020). Values coding reflected the ways participants thought about feedback, and their personal experience providing it. Many of the participants referred to the reasons for feedback and what they hoped to accomplish by providing it. Teachers often expressed emotions as they described their feedback efforts or shared the emotions they experienced as they evaluated the effectiveness of their feedback to students.

Emotion codes, which capture the feelings experienced by participants (Miles et al., 2020), were evident and eminently relatable. As a teacher, I intuitively understand words like “frustrating,” as it relates to teachers expressing their feelings regarding the challenges of delivering adequate, timely feedback to students. Emotions were also evident in the sighs, shoulder slumps, or sudden smiles which accompanied verbal responses. The values and emotions resulted from and coincided with decision making and implementation of the feedback process.

Process codes captured the actions participants took and the reasoning underlying such actions (Miles et al., 2020). Participants described the actions they typically took to provide feedback, such as holding quick verbal interactions, or writing comments, and how those actions and decisions are impacted by variables such as class size, student level, available time, and type of assessment or assignment. These codes captured the institutional factors teachers indicated influenced and limited their decisions and options regarding how to provide feedback. Teachers
also described how their feedback changed based on the type of student or class they were teaching.

Attribute coding differentiated the participants by the level of courses taught, whether IB, AP, or regular education levels. Each program has specific curricular and evaluation demands which influenced participants thinking about feedback. Comparing the experiences at each level revealed commonalities and differences which could be teased out to reveal patterns. Features of select attributes and the resulting patterns can lead to identifying a possible explanation (Bazely, 2013).

Figure 1 illustrates one example of data analysis moving from in-vivo codes, through values, emotions, processes, and ultimately the theme and subtheme pattern the current research teased from the data. Participants described their use of technology and LMS platforms in various ways. Teachers would usually attach a value or emotion along with the description, explaining why using the technology was useful or helpful, and the generally positive feelings they either experienced themselves or observed in their students. The pattern of using technology to provide in-progress feedback was consistent enough among the majority of participants to be classified as a theme discovered during the current research.
Analysis of teachers’ beliefs and practices providing feedback progressed from first level in-vivo coding through focused second round coding until no new concepts were discovered. Saturation is achieved when no new categories or patterns are emerging from the data (Bazely, 2013). Yin (2018) advocated studying multiple cases to look for similarities and differences in the data. I intentionally interviewed multiple teachers from different sites to accomplish this goal. Next, I discuss how using multiple cases adds confidence in the reliability of a qualitative research study.

Reliability

Reliability refers to the extent to which the current study was undertaken with integrity and suitable care (Miles et al., 2020). Miles et al. (2020) spelled out several criteria which can be used to establish reliability. The criteria include clear research questions, connection to...
established analytic paradigms, data quality checks for bias and deceit, and forms of peer review (Miles et al., 2020, pp. 305–306). Yin (2018) cautioned it is important to carefully document procedures to maximize credibility.

The research questions which underlie my study were crafted with the clear intent to discover teachers’ beliefs about, and practical implementation of, feedback strategies. Further, the question probed the factors which impacted teachers’ decisions about feedback processes. The methods of data analysis followed established procedures for coding and pattern seeking in qualitative data. Conclusions were analyzed according to well-established psychological theories with clear applications for education. Finally, the summary results were shared with both peer colleagues and study participants for their review. Such review is important to establish the validity of the study.

The important question to ask when reviewing findings is whether the findings ring true for the participants and the audience (Miles et al., 2020). Yin (2018) cautioned construct validity requires avoiding subjective judgments which confirm the researchers preconceived biases or ideas regarding the answers to the research questions. One means of avoiding this error, Yin (2018) argued, is to encourage participant review as a means of corroboration.

I compiled my findings as a summary report and shared it with all participants, thanking them again for their participation and inviting their comments and criticism. None of the participants raised any objections or concerns, and several offered congratulations on the work. Further, I shared conclusions with close teaching colleagues who agreed the conclusions matched their own experience with feedback. When the audience demonstrates or expresses agreement or affirmation, the researcher can be reasonably confident the conclusions ring true (Miles et al., 2020).
I used established qualitative research protocols to maintain the reliability of my study. I was cautious to avoid analyzing responses through the lens of my own practices, and let the data speak for itself. I used member checks both during the study and when the data analysis was concluded to ensure I captured participants thoughts and feelings accurately. Further, I used established qualitative coding and data analysis procedures to find patterns which could be analyzed using established theories. Finally, I address the ethical consideration related to my study.

**Ethical Considerations**

One ethical concern related to my study was the potential impact on teachers of participating in interviews. As Patton (2015) made clear, interviews are emotion inducing processes for people. Patton further noted interviews spark a process of reflection revealing self-knowledge that may have been previously hidden from conscious awareness. I asked teachers to reflect on their use of feedback, and that reflection, at times, led to stories of interactions with young people which may or may not have been pleasant or successful.

At the start of each interview, I reminded teachers their participation was voluntary and shared the established IRB protocol for guaranteeing their anonymity. Because of my own teaching experience, I had a level of relatability the participants could trust to understand their answers and empathize with any challenges they described. Still, I reminded participants throughout they could decline to answer questions and were free to change their minds about participating.

All case studies are about human affairs and the researcher has an obligation to protect participants by acting with care and sensitivity (Yin, 2018). I made the purpose of my study clear and ensured teachers were comfortable answering my questions. Finally, I met with teachers at
times and locations of their choosing to ensure they were comfortable participating and confident about having their responses shared in a published research study.

**Summary**

In this section, I described my qualitative case study methodology and explained how I adhered to the ethical principles and standards required of a researcher working with human subjects. I explained my qualitative data analysis process and detailed how I sifted through the data to formulate categories and themes. As the instrument of inquiry, I carefully considered how my own experience and background influenced my interpretation of data (Patton, 2015). Throughout the process, I strove to honor the privacy, integrity, and commitment of participants who were willing to give their time and insights.
CHAPTER FOUR: FEEDBACK, WHAT? WHY? HOW? and WAS IT WORTH IT?

I investigated teachers’ beliefs about the purposes and use of feedback to improve student learning. I adopted qualitative research methods, including semi-structured interviews to query current high school teachers regarding the intended purposes, techniques, and experiences related to the use of feedback to facilitate student learning. The goal of this study involved understanding how teachers used and evaluated the effectiveness of providing feedback, including the factors influencing their decision making regarding how and why they provided feedback to students. The purpose of this chapter is to describe and explore the common themes which emerged from data coding and analysis related to my research question.

The process of initial coding and focused second-round coding revealed similarities among participants’ responses regarding three distinct themes. The consistent themes which emerged from the analysis included: (1) providing feedback to students—definitions and purposes; (2) the logistics and processes involved in the delivery of feedback; and (3) the costs and benefits associated with constructing and delivering feedback. Participants defined feedback in different ways, often referring to the purpose of the feedback. Sometimes, for example, building relationships and at other times to give specific information. Quite often, the teacher felt a time crunch due to the labor associated with individual feedback. Because feedback is labor intensive, teachers discussed the perceived value, efficacy, and attendant emotions associated with their feedback effort and the payoffs associated with student learning. I begin by defining feedback and describing four reasons teachers identified for providing it to students.

Providing Feedback to Students—Definitions and Purposes

Participants defined feedback as the process of providing information to students for various purposes, and by describing examples of its purpose in facilitating student learning and
achievement. Participants descriptions regarding the purposes associated with student learning included: (1) communicating information about progress and achievement; (2) building relationships to discover student needs, encourage effort and instill confidence; (3) determining students’ developmental level, thought processes, and learning gaps; and (4) encouraging students to advance cognitively and develop improved academic skills (see Figure 2).

**Figure 2**

*A Nested Target Pattern for the Analysis of Participants’ Purposes in Providing Feedback*

**Communicating Information About Progress and Achievement**

Feedback practices involve providing information about progress toward attaining a learning goal (Hattie & Timperley, 2007; Shute, 2008). Figure 2 above details the optimal purpose and effect of feedback as described by participants. Teachers described feedback as both an action and an intention. Communicating information, for example, is an action, while building relationships was an intentional feedback strategy. The participants’ provided feedback to help students acquire skills which would allow the students to demonstrate excellence on summative
assessments of learning. Ideally, teachers hoped students would become self-regulated learners who could diagnose and address their own learning gaps. If students did not achieve excellence on their first attempt at a summative assessment, participants provided formal feedback along with a grade. Teachers hoped students would use the feedback to demonstrate improvement on a reassessment. When students submit work and teachers evaluate it, a feedback loop is created. Unfortunately, not all students used the feedback to improve and resubmit their work. Some students took the reassessment opportunity but would often ignore instructor feedback. Other students accepted a less than exemplary mark, effectively breaking the feedback loop. When asked directly, “What is feedback?,” teachers first and foremost described giving students information.

All of the participants offered reasons for feedback, including: providing information about the quality of work to help students improve and progress as learners, eliminating misconceptions about task requirements, and explaining where they stood in relation to a standard of excellence. Friedman, for example, defined feedback as, “Any information I provide to them which may guide them in the future, change their approach to learning, or change their understanding of work they’ve already done.”

Similarly, Thatcher defined feedback as, “providing critical responses to student work so they know how to improve their work.” Alexander focused on feedback as information, stating it, “includes any information about how they’re doing.” And Keynes noted, “I think of feedback as ways for the students to improve upon what they did. So, the purpose of feedback is so students can improve upon their knowledge, their skill.” Some participants admitted they devoted less time to providing feedback than might be necessary to help students learn.
The amount of information provided by participants varied. Hayek provided little information beyond a grade or score and described this lack of information as a “self-admitted weakness on my part.” Hayek explained their thoughts and procedures:

I really don't give any general feedback. I … expect students could look at an [exemplar] and if you didn't get the score, expecting or assuming the students can self-assess a little bit. So, when a kid doesn't do well on an assignment or their grade is low, I would say their feedback is their formative grading [they see in the online Learning Management System; LMS] every day or their summative grade of, “I didn't do well.”

Similarly, Abbot relied on a rubric with a score to tell the student where they stood because feedback is, “definitely one of the hardest areas. I think it’s everyone’s weakness. And I think that’s why I choose to do rubrics. The feedback’s already on there, you know what I’m saying?” Malthus, however, captured the essence of feedback for the majority of participants by stating, “Feedback is just how I communicate with students as far as whether or not they’re learning and what could help them learn better.” The information about learning progress often accompanied a check to ensure students correctly understood the task at hand.

Eight of the participants specifically equated feedback with checking students’ understanding of task requirements. Yellen described a feedback staple, asking students, “Do you guys understand what’s going on? Do I need to explain or reteach?” Similarly, Earhart made a point of explaining one aspect of feedback meant starting the day with a check for understanding.

I start every class with my five-minute warmup, and it's not so much about the warmup as like, I can go around and talk to everybody … [asking a quick set of questions]: “How’s
your day?,” “What’s going on?,” “Do you understand what the assignment was?,” “Do you know what we're doing?”

Parks described gathering feedback from students about their understanding of the task. “So, as we're doing assignments, you know, ‘What part of this does not make sense?’ ‘What questions can I answer for you?’ ‘Is this clear?’” Furthermore, Malthus added,

Well, I mean, at a very simple level, I think I can redirect misconceptions. So primarily I want the student to be learning the correct material or getting their misconceptions cleared up, so they get back on the right track.

Aldrin agreed with Malthus, explaining it was important to discover, “if they missed a big part of the assignment or are going the wrong direction.” Tolkien agreed, describing feedback as a spot check on student progress: “I would say, just the spot check that we all do as teachers to see if kids are tracking.”

Even when students indicated they understood the task, teachers emphasized the importance of feedback as a mechanism to ensure they tackled the learning task correctly. Yellen actively worked to catch students before they ran too far off into the learning weeds. “I'm also walking around and giving them feedback asking them, ‘Do you know what you're doing?’” Similarly, Alexander stated, “I’ll try to clear up confusion … when they’re researching. They’re looking at the wrong sources, they’re not getting the right information.” Ostrom made a clear connection between feedback and task conception, explaining their idea of connecting feedback and clarifying questions:

For me, it's that I very strongly believe that good directions lead to more constructive feedback. It's not that you have failed to demonstrate you can do something, it's that you didn't even understand that I was asking a particular question.
Assuming students correctly understood the task, teachers described using formative, or in-progress feedback to guide students before they administered a final summative assessment to determine their level of mastery.

Twelve of the participants described providing informal formative, or in-progress feedback to students. Formative feedback is information communicated to a learner that is intended to modify their thinking or behavior in order to improve learning (Shute, 2008). Smith addressed shaping student thinking when they stated, “You know, so I think, that’s our role as teachers, [it involves] trying to help them figure out [the task], but I think that feedback, whether it’s individual or general, [it] gives them things to think about.”

Participants used the term informal to represent feedback that did not accompany a summative evaluation of mastery. Eliot and Steinbeck, for example, share similar classes and a similar teaching philosophy. Eliot described the benefits of formative guidance, explaining, feedback on practice work is helpful for students to master the basics. We put 20% of the grade on formative work, so students do it, but we allow unlimited reassessments until they get it. It’s important to get that basic stuff.

And Steinbeck added, “The practice work they do incorporates feedback until it meets expectations.”

Further practice with feedback comes in the form of formative quizzes. Friedman emphasized the benefits of immediate feedback on formative electronic quizzes.

Specifically, if you get something right, it goes, yay you got it right, which is itself a form of feedback. But more detailed, where if you get something wrong, it's like, ‘Well remember this … ’ so they don't have to wait until the next day at school.
Ostrom, who has a similar teaching situation to Friedman, added “They can retake the same quiz immediately after they see the feedback. The average of the two quiz scores is part of their formative grade.” Malthus also emphasized formative quizzes, explaining the importance of formative assessment. “I have formative assessments, which are to see if the student learned generally, electronically or on paper. And I can check those formative assessments. And then we have formative quizzes, so we have these multiple check-in points.” Aside from formative quizzes, participants used informal feedback to influence the quality of student work before they submitted the work for evaluation and a grade.

Alexander agreed catching mistakes and guiding students’ progress played an important role in improving student learning skills. “A lot of times it's informal, communication ahead of time before they turn something in, changes they can make. When it's informal, it's something that they can directly apply immediately to the assignment they're working on.” Parks monitored student work by, “walking around the classroom and … providing feedback and reviewing student work in the moment.” Parks said, “As I see them working, I can do formative [feedback] on the spot.” Yellen concurred, “I'm reading over their shoulders, [and commenting to students], ‘I don't see where you're going with this.’” Similarly, Tolkien stated, “It's an opportunity to, on the continuum of informal to formal, give that immediate in the moment formative feedback of … [asking students about their choice of words], you're connecting to the screenshot, like just that quick conversation.” Quick formative comments were delivered both in person and electronically.

Aldrin described how they provided informal feedback on a working document.
I'll pop in [on the computer screen] and put some comments about how things are going, places they can add. I'd rather give more feedback at the beginning than a real long written report about the ups and downs of your project at the end.

Earhart explained that providing earlier feedback benefitted both the teacher and the student.

Earhart stated:

It's nice [on an essay]. The kids ask, “Can you just do this while I'm writing it, so that I don't have to keep coming up and asking you questions?” You can do that throughout the process of writing instead of waiting till the end. So, it's nice to be able to give feedback just right there while they're doing work.

Participants differentiated informal, formative feedback from formal feedback accompanying a summative or final assessment and grade.

Tolkien explained their formal feedback communicated to students how well they mastered the learning objective, whether it was a lower order task, such as understanding discrete facts, or higher-level argumentation and use of evidence.

If we use the sports or performance metaphor, I mean it is [on] the final scoreboard that you know what happened. So, it's like you need that. It'd be weird if we just spent all year together and there was never an indication of what you achieved.

Abbot agreed and emphasized the importance of justifying the final grade with formal feedback to quell potential student challenges of the mark. “To get a four (exemplary on Abbot’s schoolwide grading standard), you have to have these things in place [as explained on a rubric]. I don’t get as many arguments. They can’t question me.”

Similarly, Steinbeck described using formal feedback to justify the final grade they assigned.
I give them a few comments throughout their paper, and then at the end I give them an oral commentary that says this is why you specifically got this score. It holds me accountable for giving them that score, and then they can see why they got it.

Likewise, Alexander stated, “They're getting information they need. They're getting clarification they need, they're [gaining an] understanding of how they achieved. Understanding of the material, but also understanding of achievement and score.” In addition to explaining a final summative grade, many of the teachers hoped students would use the formal feedback to improve their grade and increase their level of mastery.

All of the teachers in the current study work in schools with grading policies which allow students to improve their grade by repeating a summative assessment. Teachers intended their formal feedback to inform students about how to raise their score on a reassessment of the same learning targets. Earhart, for example, explained their hope students would take advantage of feedback. “On summatives, I always want them to go and see where the mistakes were or where changes could happen and try to do something with it.” Similarly, Eliot described formal feedback as,

my advice on how to improve, how to revise, steps they can take to improve their score.

They can reassess. If they get 4 or 5 [on the rubric], a score equivalent to a C+ or B-, here is some pretty specific feedback about what you can do … to raise that grade.

Steinbeck described their feedback as information students could use to “pinpoint areas where they need specific improvement.” Aldrin provided formal feedback specifically intending students would use it to improve because they described a test as a part of the learning and feedback loop rather than the end of the line.
At the end of a test, like that's not the last chance to look at this test, so [Aldrin told students they should], take this test and see what you missed, study and try it again. So, I guess the strength of the feedback is that it's meant to be useful and then used to do better.

Whether it was delivered informally as students worked, or formally as an evaluation of a completed assessment or activity, participants described feedback as information provided to clarify the task and inform students about their learning and academic progress. Participants’ believed it was important to have a personal connection with students to make the information as accurate and palatable as possible. I next discuss teachers’ beliefs about the importance of using feedback to build relationships with their students.

Building Relationships to Discover Student Needs, Encourage Effort, and Instill Confidence

All 16 participants referenced their belief in the importance of using feedback to build relationships with students. The interview with Keynes occurred just after schools were closed for the remainder of the school year due to the outbreak of Covid 19. During the conversation, Keynes reflected on the importance of relationships and the challenge for teachers to connect with students while practicing distance learning.

This is where developing a relationship with a kid matters. The minute relationships aren’t in education I want out. In the end I do think it comes down to have you developed that relationship with a kid and figured out what type of feedback is important to them? And so personalizing feedback through the relationship, if I were to sum up everything [we have talked about regarding feedback] as I’m mentally processing, that’s kind of where I would go.
Earhart also described building relationships as the foundation of their approach to education in general, and feedback in particular. “The philosophy background of my teaching is all about that relationship [with students]. I think that’s how I’m successful in the classroom a lot, is showing that I care, you know?” Similarly, Parks described how feedback established relationships which were the foundation for further work with students in all their classes, whether they be elective or required. Parks explained, “I mean in my electives, [feedback is] intentional at the very beginning and very structured but it turns into a much more conversational relational feedback almost. And in [a required class] I still am very intentional about building relationships.” Participants focused their feedback effort on building confidence and offering encouragement to students.

Smith explicitly expressed their concern for students and a strong desire to instill confidence. Smith explained they provided feedback out of concern for the students well-being. “I think one thing kids know is … that I care. And that’s why I’m offering the feedback and spending time. Sometimes that feedback is just being positive. You can do this. It was something that somehow sparked their confidence.” Likewise, Eliot equated informal feedback with actions taken to boost a student’s confidence. Eliot explained, “You can give informal even just encouragement in class, just a nod, a smile, that type of [encouragement] can be informal feedback that they’re on the right track.”

Steinbeck concurred, and went on to explain how the relationship building aspect of informal feedback laid the groundwork for effective feedback to improve learning. “Informal feedback is about getting students engaged, using encouragement to build a relationship, build trust. The informal builds to formal, and hopefully results in students being more willing to accept and use formal feedback.” Alexander expressed a desire to use feedback to, “spur kids on,
keep them going.” Malthus described the importance of combining feedback for relationships with critical feedback to improve learning. Malthus explained:

I always put in a message of belief in the students if I give them longer feedback. I'm only telling you this because I know that you can do it and I have faith in you. And I don't want the student to ever be in the position where they feel overwhelmed or like it's an impossible task or no matter what they do, they're not going to succeed. I want them to have the opposite feeling.

Even for those teachers who described feedback as a personal weakness or a challenge, responses revealed a strong desire to connect with students.

Hayek, who described feedback as “a self-admitted weakness,” bemoaned the various obstacles limiting their ability to connect. If they had fewer barriers and competing obligations, Hayek wistfully shared, “The students would be less numbers. They would be human again.” Hayek emphasized the importance of letting students know they had been noticed and regretted his inability to communicate that through feedback. “I think it's one of the things I'm becoming more and more aware, like do kids even feel seen?”

Similarly, Abbot worried about their inability to connect. Abbot lamented, “I can easily have a kid in my class all [term] and not speak to them once.” Participants felt an intrinsic desire to connect with young people and hoped a strong relationship would encourage students to use feedback. In addition, teachers explained providing effective feedback required an understanding of how each individual student would process the feedback.

Friedman explained one intention of feedback was getting to know students to make all feedback more effective. Friedman stated, “If I don't know one from another well enough … [I may not realize] some students will need more encouragement, more positive
words. But in reality, I don't want to try to guess who those are.” Teachers’ described
their effort to meet students’ needs and care for students’ emotional well-being.

Ostrom, for example, stated, “Part of feedback, I think, is helping reduce anxiety and
encourage a sense of confidence.” Tolkien echoed the concern about student mental health:
I just am overwhelmed this year with the number of students who are so anxious about
producing work and really so harsh on themselves even before they’ve produced
something. And I think that's a tough one because that fixed mindset is mixed
with some students’ legitimate diagnosed anxiety issues. [While] it is good to be critical
of yourself, it's also good to take pride in what you do. And I feel like going back to that
feedback philosophy of [combining encouragement with constructive criticism],
saying [to a student] “Hey, this is what you do really well. Let's leverage that to help you
improve something else that you're working.” That to me is ideal because again, that's
sustainable once they leave our classroom.

Aldrin similarly emphasized the importance of encouraging student effort with compliments
while also delivering critical feedback. Describing a student who had been particularly struggling
with their writing, Aldrin stated,

Of course my goal for him is totally different. That was his best essay, so [my] feedback
was very different. I made sure I emphasized all the great stuff in there … emphasized
what [the student] was doing right and [telling them] to keep it going.

Understanding student needs is a clear positive byproduct of building a strong relationship.

Thatcher described how the need to connect with students influenced all aspects of their job, including planning the length of a course. When Thatcher’s department debated shortening a
course to allow more content, the driving force for retaining the status quo was, “the student
relationship piece is so critical. We really have decided that even though it would be easier in terms of our planning, it's easier in terms of building community to stay the same.”

Similarly, Yellen described how their department made a conscious effort to encourage students’ effort in all classes, not simply their own. “I felt it was really important that we need to sit down [with students] so these kids can look up their grades and know somebody's watching over them. That’s the purpose of Friday feedback, looking at their grades.” In addition to the affective purpose of offering encouragement, instilling confidence, and promoting effort, participants described feedback as a tool used to determine students’ current developmental level.

**Determining Students’ Developmental Level, Thought Processes, and Learning Gaps**

The educational practice of facilitating student progression to a higher cognitive level is not unlike the plot of a well-crafted mystery novel. The student at the start of a course represents a case to be solved. The mystery is not, fortunately, a murder, but rather discovering who the student is as a learner. A teacher is a detective trying to solve the mystery by looking for clues. Some clues are gleaned from the evidence of student work, and others from eyewitness accounts of student affect and effort. But great detectives in great detective stories do not rely on the obvious clues. They understand how such clues can be misleading red herrings. Thus, like any great detective, a teacher who really wants to solve the mystery of student learning needs to interview the suspects personally. In other words, they start by asking questions.

Ten of the participants in the current study emphasized their use of feedback as a sleuthing technique to determine students’ thought processes and cognitive level. Keynes commented:
So, if they’re struggling with something, I like to ask them questions to try to figure out where that deficit is and then just go into that specific deficit. It allows me to personalize the feedback based on where they are.

Yellen, similarly, described feedback as a means to discover students’ thought processes with questions.

I think the biggest thing is I like to ask them questions. I have to figure out how they think. Ok, “Why did you use that piece of evidence?,” “What were you thinking here?,” “Some of your logic’s wrong … we have to work on this.”

Ostrom, capturing the essence of the teacher as detective, referenced a particularly memorable presentation they heard. While Ostrom could not recall the speakers’ name or exact date, what stuck with them was the lesson:

As an educator, my job is to figure out how [students] got to the wrong answer. Not because they can’t understand how to get the right answer, but because I can’t help them if I can’t understand the path they went through to get to the wrong one.

Tolkien further emphasized the importance of focusing on student thinking and probing their thought processes and complexity. Tolkien stated it was essential to, “think about how they think, how they learn, how they process. I feel like feedback should be doing that because that’s going to have a sustaining effect versus a grade only.” Smith agreed when they stated, “So, I think even asking … ‘What are you doing?’ ‘What are things I can help you with to push you?’”

Friedman similarly explored and challenged student thinking. “In [class], a lot of my feedback is to probe depth of thought and encourage people to second guess assumptions.” Teacher learning detectives gleaned further clues to student thought processes and learning deficits by evaluating disparate evidence such as student work and non-verbal communication.
Even with sustained feedback questions, Malthus characterized the challenge of correctly diagnosing a student’s thought processes:

Well, I think you always have an imperfect knowledge of another human beings’ thought process. There are so many possible interpretations. You can check back in for clarification, but at some point in time, you have to kind of go on your impression of that student’s thought process, which might not be correct. I have to go with the information that I have and that’s a pretty serious limitation.

Thus teachers, like detectives, use feedback to search for corroborating evidence to go along with their hunches about student learning.

Earhart described trying to interpret student work to discover learning gaps. “I spend a lot of time where I’m talking to them about, ‘You said this, what about this line?’ ‘What do you think this means?’” Likewise, Thatcher carefully considered their evaluation of student work as evidence of learning and learning gaps. “Knowing them as a writer … takes a long time. Every time [I score an essay] I’m commenting on the disconnect between [the current score] and the next level of the rubric. Trying to identify what’s missing for the student.”

In a classic detective story, the mystery is eventually solved, and the guilty party is discovered and brought to justice. The detective’s work is done. In education, the work of the teacher detective is only partially complete when the mystery of identifying the learner’s development and learning gaps is solved. The next phase of the job entails attempting to use the information to encourage and gently nudge students to an advanced level of processing and cognitive understanding.
Encouraging Students to Advance Cognitively and Develop Improved Academic Skills

The most effective learners are self-regulated, meaning capable of setting goals, evaluating strategies, changing course when presented with obstacles, and monitoring progress toward goal completion (Butler & Winne, 1995). Of all the participants in the current study, Tolkien most passionately articulated their vision of using feedback to help students become self-regulated learners:

For me [feedback] is first and foremost a conversation, and hopefully what it's sparking, and what I love seeing in students, is the ability for them to take over that conversation. It’s equipping them with the tools for pushing their own self-reflection so that they're not just waiting on me to tell them whether or not what they did was, in my case, a good piece of writing or a good presentation, but to spur them to ask those next questions so that they're able to self-score, self-reflect. But I feel like the purpose of feedback is to equip students with the ability to take the ownership because they're going to eventually not have you there. The more students take ownership of it, the quality and then the level of critical thinking increases.

In total, eight of the participants specifically described using feedback to facilitate growth in student cognitive ability and improved academic skills. Like Tolkien, Parks referenced students taking ownership of the learning conversation. “I always like to think that students should be … the experts in the learning and, as much as possible, [are able to] facilitate that conversation. So, ‘How do we put them in the seats as being the experts?’”

Smith prioritized providing feedback which would enable students to become an expert at their own learning and study strategies. Smith stated, “You know I think students, whether they are juniors or seniors, they’re still developing as learners. And, so … I think trying to give them
that guidance … study tips, review ideas, strategies, that’s where that feedback is.” Comparably, Malthus described helping students internalize the value of study strategies as an important learning skill. Malthus explained,

If you’re below the class average [on a formative assessment], I check in and I ask them, “Did you take notes?” And I’ll give the student a mnemonic or an acronym to help them or find some way for them to remember to help them out.

Beyond study habits, participants emphasized the value of feedback on skills that transcended a specific course or discipline.

“I’m a pretty process-oriented person,” stated Keynes. “I care way more about the process than a specific answer.” Keynes explained their focus changed from emphasizing content to helping students strengthen their writing. “I put way more value on writing feedback than I ever did before. Because [writing] is more skill based, and developing skills with feedback is, in my opinion, more worth the time than content-based feedback.”

Alexander hoped feedback would expand students’ thinking about how they completed their work as opposed to whether they got the correct answer. Feedback, Alexander described, might be “a challenging thought. ‘Hey, you did really well on this, but I wonder could it have been better if you went this direction?’” Alexander described how “feedback for me has changed, to try to involve more creativity … to get them to think, not just about one right way to do it, but what other alternatives [there were].” Thatcher emphasized the importance of nudging students beyond their current level of development. Thatcher stated their feedback was “very growth focused, not just here's where you are, but here's how you get to the next level.”

Participants hoped students would use feedback to internalize a growth mindset.
Earhart described moving students from an extrinsic grade focus to an intrinsic learning and skill focus. Earhart explained tailoring feedback to inspire intrinsic motivation required a certain amount of marketing and salespersonship.

So, it's just, how do you streamline [the feedback message]? How do you make it feel like it's actually valuable to them? Not just, “Your grade will go up,” but [helping them realize this feedback] will actually improve your writing. If every time, for example, [the student] remembered to write a hook at the beginning of their essay, this will improve [your writing and grade] in other classes too. It's almost getting that buy in as well, but over the years, I've had to figure out what's the slickest way to get the buy in. It's like tricking them almost.

Yellen also hoped students would embrace the importance of improving their academic skills. Teachers often modify feedback based on the classes and students they teach. A key difference worth noting here involves the perception of different needs of students at different stages of their education. When discussing working with first-year students as opposed to seniors, for example, Yellen stated,

They [first years] don't get that option [of choosing to focus on passing the class versus truly learning] because I have to establish some skills, some expectations of what I want [students] to do to be a good student so [they] don't suffer in all of their other classes.

Participants clearly defined what feedback meant. Providing feedback meant taking action to communicate information about progress and achievement to students. Participants also explained why they used feedback strategies. Teachers framed feedback as an intention to meet students’ affective needs by building relationships, instilling confidence, and encouraging effort. Teachers hoped the end result would be improved student scores on specific class assessments.
Further, participants sought to use feedback to determine students’ developmental level and thought processes. Half of the participants had the ultimate goal of encouraging students’ metacognition and developing improved academic skills. I next discuss *how* participants said they provided feedback to students by describing the logistics of feedback delivery.

**Logistics and Process of Feedback Delivery**

The participants’ description of how they delivered feedback were grouped into the following conceptual sub-themes: (a) written informal, leveraging technology; (b) written formal, rubrics and comments; and (c) verbal, large group and individual. Figure 3 illustrates the primary mechanisms participants used to deliver feedback to students. Teachers explained they were forced to make decisions about how to provide feedback within the confines of their professional duties and limited work and personal time. Teachers also felt an obligation to give feedback to all of the students in their charge. Thus, teachers balanced their beliefs about quality feedback against the practical constraints on their time and energy. The teachers preferred delivering feedback verbally and in person, but often relied on written feedback comments they could provide using technology due to the limited time and large numbers of students they worked with.
As previously described, participants viewed informal or formative feedback as information students could use to improve their work before a summative assessment was administered and scored. Although it was not standard practice for all participants, nine of the teachers specifically described how they leveraged technology for this purpose. Participants provided written informal feedback via the LMS and used other technology applications.

Earhart enthusiastically described multiple benefits and opportunities of using a technology platform to provide informal formative written feedback:

It's nice if [students are working on] essays. I like to use [electronic documents], just because it's really easy to give them feedback, just typing it right in. You can do that throughout the process of writing instead of waiting till the end, whereas sometimes if you're doing it just by hand, turning it in, handing it back, turning it in, handing it back … gets really messy. [Some of] the students ask, “Can you just do this while I’m writing it, so that I don't have to keep coming up and asking you questions?” And for some of those quiet kids who don't always self-advocate or just fly under the radar, it allows me to see
where they’re at without them having to do the work of coming to me. There’s a handful of kids who just try to stay quiet. I don’t know if it's comfort level or what but coming to you isn't always their first idea. If you [can click right into their doc], you don't make them feel that pressure. I'd say that’s a positive.

Other participants similarly lauded the ability to provide real time formative feedback via technology. Parks explained, “When they submit it online and we have [the LMS] … I can provide formative feedback right there.” Aldrin reflected on how technology changed their formative feedback practice. Aldrin explained,

I have gotten smart. I don’t want to wait until the end to [review the students’] project. I usually share the electronic document (doc) with them … and then I can poke into it at regular set times. I can see it all throughout the process. I [can constantly provide] feedback.

Likewise, Tolkien described how their experience allowed them to anticipate students’ most common errors and take corrective action. Tolkien explained,

I’ve done this [frequently enough] that I figured out the best way to get students thinking early, is to really chunk it out and to give them very concrete immediate feedback on what I call their pre-writing. I give them feedback in a doc, comments on the side.

Likewise, experience and technology go hand-in-hand for both Eliot and Steinbeck. Eliot explained in terms of feedback, sometimes, “less is more when you give advice.” Eliot described writing comments on a doc as “a one-sided conversation where you give comments or suggestions on a piece of writing.” Eliot’s feedback suggestions prompted students to “think more about this,” or “work on that aspect of your writing. Even if it’s just spelling, [I] don’t go through and fix all their mistakes … only a few, and I [encourage them to] work on the spelling.”
Steinbeck concurred, and added they found the possibility of ascertaining whether students even accessed the formative written comments to be one of the largest benefits of technology. “The tech allows you to see if kids have listened to or viewed the feedback,” Steinbeck explained. “During practice work, formative work, it is especially helpful to give quick feedback using tech, and to see if students actually looked at it.” In addition to formative comments on writing assignments, participants leveraged technology to provide formative feedback on quizzes and other homework assignments.

Friedman and Ostrom are colleagues who teach similar classes. They are self-described early adopters of technology as a formative assessment tool. Friedman, discussing the benefits of the integration of technology, explained the effort on the front end was labor intensive. “The way we're doing it, I don't know if anyone else has put the time to build the infrastructure that we have. Most of our assignments are electronic and we've worked hard.” Once the assignments were created and loaded, however, the technology enabled Friedman and Ostrom to provide immediate feedback.

Friedman described how, “on a homework assignment, anything they get wrong, [the technology message will] ask [a thought-provoking question such as], ‘Did you think about this?’” Every lesson in Friedman and Ostrom’s classes concluded with an electronic formative assessment, and the technology allowed students to receive immediate feedback on their answers. Ostrom explained how the LMS provided immediate, individualized feedback to students:

Well, I think the [LMS)] … the immediacy, [feedback] is to a degree individualized in that the students aren't getting the same feedback. They're getting feedback based upon which ones they missed. And they can take the quiz again immediately after they see the
feedback. So, it is sort of automatically customized. It's certainly helpful [for providing more timely feedback]. Certainly, just switching to all online homework.

Similarly, Malthus administered multiple electronic formative assessments to provide feedback and eliminate student misconceptions. “I have formative assessments. And then we have formative quizzes that check it again.” Malthus added a large group, “review for the summative assessment,” and one additional technology based, “progress check on [an app]. So, there are multiple check in points before they get to a summative assessment.”

Whether teachers were already leveraging technology, the onrushing development of available apps and platforms coupled with the increased demand for online classes will likely result in more incorporation of technology into feedback practices. All the teachers in the current study, and in most of the nation, were forced into an involuntary technology experiment due to the outbreak of Covid-19 and the resulting unexpected mandatory distance learning. While technology can be useful, it also has potential drawbacks and limitations.

In terms of written formative feedback, participants experienced both positive and negative results when forced to rely more heavily on technology. Ostrom, already a regular user of online formative feedback, described some of the challenges of teaching entirely via distance learning after the onset of Covid-19. One significant challenge of teaching from a distance was the difficulty of reading student comprehension in the moment, or, as Ostrom put it, not being able to “get the pulse of the room.” In addition, Ostrom commented on the “strain of having to create even more online content to replace the in-person [teaching and feedback] that would have happened.”
Abbot and Yellen are colleagues who began teaching a new online only course before the onset of the pandemic. Yellen described the challenge of understanding how to tailor feedback to meet student needs when communication occurred only through the LMS:

I was telling teachers that were interested in doing it online, by six weeks in, I had over 300 emails. 300 communications with kids because that is the only way to communicate, through [the LMS]. And it was interesting because it was all in writing, but in a [student’s] text message format. They don't write a complete sentence so trying to figure out what it is that they're really getting at [was a real challenge]. Is it a technology problem? Is it they don't understand the material? Is it both? It was really interesting. I was a little overwhelmed. You know how you can stand up in front of the class and you can feel the room and go okay, we’re not getting it? You can’t do that while online, so the feedback is super, super important.

Abbot commented they formerly used the LMS only as a means to communicate a student’s grade and whether they had any missing work. Teaching online, however, has forced a change in their thinking because it resulted in “hundreds and hundreds of emails. And we are still having meetings about how to do feedback when it comes to online.”

Another challenge occurred when students failed to submit assignments, thus making it impossible to provide feedback. Abbot noted even before the pandemic,

we decided for feedback on online [classwork], if the assignments were not turned in on time, [students] don't get feedback anymore. If you don't get it on time, you don't get feedback. [A teacher can’t provide feedback] for assignments that are turned in weeks later.
Similarly, Alexander explained in the pandemic world, “The challenge of course is how to constantly provide feedback when students do not all complete [assignments] at the same time.”

On the other hand, despite the challenge of the Covid-19 induced unplanned online teaching, some participants noted being forced to use technology resulted in more written feedback opportunities. Hayek, for example, who struggled to provide detailed feedback on a regular basis in their day-to-day work, shared they were, “actually taking more time for feedback now. [I’m] finding new tech to grade assignments so kids get faster feedback … I am definitely following up more with students.”

Alexander described the importance of providing timely feedback. While some students were not completing work at all, others were able to submit assignments at irregular intervals. As a result, Alexander stated:

I think the biggest impact [forced distance learning] has had on me is just re-instilling the need for immediate feedback. Many students, as they received immediate feedback and constant reminders to complete work, have [responded by] putting in a decent amount of work to make quality products or to go back and fix errors.

Teachers who were already proponents of leveraging technology to provide feedback noted they relied on it even more heavily due to the pandemic. Eliot explained since the onset of distance learning, “I feel like I have been giving much better feedback overall. I think that my feedback has become much more directed and thorough.” Friedman commented, “We’re relying more heavily upon automated feedback to students, much of which, fortunately, we’d already built, and much which we’re building still.”

Similarly, Malthus renewed their emphasis on written comments provided using technology. “Feedback has become even more important during these times. I have to make
more in-depth and supportive comments in writing in order to make up for a lack of face-to-face learning.” Steinbeck echoed the emphasis on supporting students with feedback. Steinbeck explained their written comments on the LMS, or docs had transformed from an academic to an affective focus:

Giving feedback has become much more personal, I think. I have been trying to just give students much more positive feedback instead of more constructive feedback. I think students are going through a lot right now, so I have been trying to help them on a more personal level than academic level. Basically, I have been using [a technology platform] only and have been giving private comments to each student, and most students actually write back, so it creates a dialogue between me and the student. I have really enjoyed giving this feedback, and I feel like I am getting to know my students much differently than before.

In summary, managing written formative feedback comments with the uncertainties of the pandemic has presented both challenges and opportunities for participants. Clearly, leveraging technology to provide formative feedback will be an increasingly important feedback delivery mechanism for teachers in the future. Written feedback, as described by participants, under normal teaching conditions included informal formative comments designed to facilitate improvement and advances in the level of students' work. I next discuss participants use of formal written feedback to evaluate student achievement.

**Written Formal, Rubrics, and Comments**

In one form or another, all of the participants described how they used formal written feedback to explain and justify a summative, or final evaluation of the quality of student work. “Formal” and “written” feedback were synonymous in the minds of participants, as were
“formal” and “final.” Participants clearly communicated a sense of completing an important act of evaluation or judgment when providing formal written comments.

Alexander described formal feedback as, “anything that’s written down, or put on an assignment. Informal is a thing that happens where there is not a written record to follow.” Similarly, Parks contrasted informal feedback, which happened in the moment, with formal feedback. Parks stated formal feedback was, “written as they submit assignments, using the LMS.” Aldrin, likewise, emphasized formative feedback throughout the process of completing projects and other assignments as well as differentiated formative and formal final feedback. Aldrin stated, “[when] you said you were doing something about feedback, I instantly thought of what you provide when you've given a graded assignment and you give it back to them.”

Tolkien described a continuum of feedback, from informal to formal. Formal feedback came after students “had time to process [informal comments] and produce a finished product. And whether it's in comments on a doc, I do still like … to give just written feedback in the margins or whatever.” Smith similarly connected written feedback with a final product or summative assessment. Smith stated, “I think in terms of specific feedback, that would be on tests, maybe not so much quizzes, writing the comments, you put the work into writing those.”

Eliot differentiated informal from formal feedback. Eliot explained, “I think a lot of feedback needs to be informal too, but when I’m thinking of writing it’s a much more formal sort of feedback.” Steinbeck furthered Eliot’s description, “Piggy backing off of what [Eliot] said, the writing piece tends to be much more formal feedback I think, more written.” One of the most common formal written tools used was an assignment rubric. The rubric itself was designed to provide feedback to students about how their performance measured against a standard of excellence.
Abbot’s immediate response to a question about the meaning of feedback was “rubrics.” Abbot explained, once the rubric was created, “the feedback’s already on there. I can [provide feedback] faster.” Abbot also commented on the importance of communicating with absent students using detailed information on rubrics. Abbot explained, “So, rubrics are my way of getting them feedback, even if they weren't in class.”

Parks described their use of rubrics for providing feedback on both the quality of student written work and student contributions to class discussion. Parks’ school used a standards-based grading system on a 4-1 scale. To explain a score, Parks stated, “I provide a writing rubric, and I break it down. Discussions, I have a rubric and then we have to go through and practice that too.”

Similarly, Alexander noted,

I use a lot of rubrics that allow me to grade quickly, while at the same time giving them specifics and letting them see where they land in achievement. I like the fact that it's clear, but it's also quick to give feedback, without having to rewrite the same things.

Participants used rubrics to communicate with students. The rubric described a student’s current level of achievement. Participants also combined rubrics with written comments to explain why students fell short of a higher score.

In a class which required more student writing, Friedman provided a rubric and added written comments to clarify a final grade. Friedman explained:

In [this class], it's all process and trying to get them to think a little bit more. There are rubrics … and [students are given] written responses, generally brief, but to say, “To get a perfect score, this is what you might have done differently.”
Likewise, Ostrom added comments to the rubric to explain the reason for the grade they assigned student work. Ostrom described how students often asked about their essay or short answer score if it was below an A, or exemplary level.

One thing I do is when I have a free response question, in [this class], it’s so plug and chug, especially on these types of questions, so I will very specifically have a rubric where I’ll say, “Here’s what you did, here’s what you did not do,” as a way to give feedback that’s much more specialized and more precise.

Abbot likewise emphasized the benefit of a rubric to justify a final grade or mark. Abbot stated, “I guess the results of [using rubrics is] that they can’t question you, because [it indicates their deficiency]. To get a four [exemplary] you have to have these [additional] things in place.”

Hayek, on the other hand, expected students to self-assess the reasons for their score. Hayek explained “It’s not rocket science. Once again, my assumption or maybe a rationalization is [if the students] aren't doing well, [they can ask themselves] why?” Hayek described how a student should be able to, “figure that out. I tend to probably give kids too much credit or just assume … my belief is if [a student] can drive a car and potentially kill me, [they] should be able to figure this stuff out.”

In contrast, Thatcher went an extra mile to make sure students understood the reasons for their evaluation against a standard. Thatcher doggedly provided written comments to explain their rationale for marking a student score on a rubric provided from a nationwide academic program adopted by their school:

Like for example, right here I’m grading [essays] which are the internal assessments for [the program] right now. That’s their independent research paper. And the program provides a rubric. And so largely what I do is I have the rubric with me next to each
paper, I'm grading it, I'm making comments and every time I'm commenting on where is the disconnect between where you are in the rubric and the next highest level of the rubric. What's missing? And trying to identify that for the student. I think that I make it very personal and specific. And so, for example, I do have some colleagues who just circle on the rubric or highlight on the rubric and that's it. They're not writing additional comments or things like that. I feel like I'm very growth focused, not just [marking] here's where you are, but here's how you get to the next level. I think that is a positive. It takes me longer, but I think that's a positive thing.

Thatcher also embodied the iconic image of the teacher with a stack of papers to grade, much like the young teacher in the coffee shop I spoke with in the introduction to my study. Thatcher explained:

Even though I am relatively young, I am so old school, I like to have the hard copy paper in my hand and take it with me and my son plays all sorts of sports and so it's like if I get there early and I'm waiting for his game to start, I can scramble and do a paper.

Tolkien had a similar mindset of providing formal feedback to promote student growth. Tolkien, however, also leveraged technology to include verbal comments. Tolkien described how, “I'm going to give them that formal feedback in the voice comments and those will be a lot of questions, it’s really a question driven class. I'm going to really push them.”

Likewise, Eliot and Steinbeck used a combination of verbal and written formal feedback with a rubric. Eliot explained how the rubric itself was specifically tied to standards. “The standards-based grading piece is huge, because when you grade a paper, you’re actually looking, on a scale of 0-8, with 7-8 exceeding expectations, 5-6 meeting expectations, etc. We think the criteria are very specific.” Along with the rubric, Eliot added formal written or verbal comments.
“Often [the feedback is in] writing, or we use [the technology application] to record our comments.” Steinbeck appreciated how the technology allowed them to personalize formal feedback based on student preference:

I mean, the [app] allows voice feedback, which is really nice. I’ve even… passed around a sheet with all their names on it and I’ve had them check whether they want oral or written feedback, to try to differentiate for them. That was fairly successful. I like trying to do a mixture too, where I give them a few [written] comments throughout their paper, and then at the end I give them an oral commentary, an overall explanation that says this is why you specifically got this score. It holds me accountable for giving them that score, and then they can see why they got it.

Formal feedback, in the minds of participants, was primarily written communication accompanying a grade or evaluation of performance against a standard of excellence. The comments were presented as a mark on a rubric, written explanations for the rubric score, or a combination of the two. Most participants viewed providing formal written feedback as an important way to explain or justify a rating of a student’s level of performance. Teachers’ preferred method of providing feedback, however, was verbally and in person.

**Verbal, Large Group and Individual**

Participants provided both informal formative and formal summative feedback to students via verbal interactions, sometimes with the whole class, and other times in individual conversations. Given the nature of classroom teaching, participants found it convenient to use large group discussions to meet both formative and summative feedback needs. Eleven teachers specifically explained how they provided verbal feedback to the whole class as a large group.
In terms of informal formative feedback, Malthus stated, “Oh, there are a lot of ways that we give feedback, orally in the classroom in the moment that we're having a discussion. Or I have call on cards to ask students questions.” Abbot, likewise, described informal in the moment feedback meant “answering questions during class would be probably my feedback when it comes to that smaller stuff.” Parks used the large group discussion format to both answer questions and to determine what roadblocks students faced when assignments were not completed. Parks explained:

If I do an assignment and I'm going to correct it and I look at it and [I notice] I have several people that didn't submit their work; that tells me something. That's feedback for me. Then I can go back to class and say, “Let's talk about this. I'm noticing that 10 people did not submit this assignment. It was for homework, let's talk about this. What got in your way of doing it? Was it because we're busy? Was it because it wasn't engaging? It wasn't meaningful? Was it because it was too hard? What's going on? Let's break this down and let's talk about it.”

Smith focused larger group discussion on review and study habits. “Actually,” Smith stated, “most of my feedback I would say is verbal to the class. Giving specific comments, [asking questions like], ‘How do you study?’ [Telling them thing like], ‘Let me give you an idea how you use [the review packet].’” Similarly, Ostrom described how they presented exam review study strategies to the large group.

And then I take questions. I will say we have extra credit packets that students do in advance of the test that includes sample [short answer] questions. We'll go through the same scoring system together as a class in advance of them doing the test.
Other participants described providing formative feedback to the large group regarding specific learning targets or assignments.

Aldrin used a large group discussion format to provide a last formative feedback opportunity before submitting an assignment. Aldrin explained,

The feedback in class is generally class discussions. And with this last project, they brought their project and presented to the group before they handed it to me to get some feedback from them. But also, just so I'm making sure they're getting it done.

Alexander emphasized the importance of checking in-progress work to track common errors that could then be addressed with the large group. Alexander described how noticing a pattern, “helps me with feedback, because I can see in the moment which questions they really struggled with the most.” Alexander then addressed those common errors with the large group. “Before they leave that day, I can bring those questions up. That [can be our closure activity]. I can say, ‘I've seen a lot of people get these wrong. I want to make sure we clarify this before you go.’”

Yellen used a large group check to determine where to focus feedback by relying on an end of day, “thumbs up, thumbs down” question and, “reading the room.” Keynes similarly sought to address common errors and misconceptions for the whole class. Keynes asked students to self-assess their understanding with the same thumbs up, down, or sideways lesson closure activity Yellen employed. Keynes then used feedback questions to verify students’ self-perceptions. Keynes stated they needed “to see if [students] actually are truly at the thumbs up level. And if not, [we have to] talk about this, either in a large group or small group.”

Ostrom similarly referenced addressing inaccurate self-perceptions by using feedback as a “mirror.” The mirror analogy, Ostrom explained, was intended to show students those, “times where students think they know everything, or they think they know how to do a particular task
and they don't. Or maybe they only know parts of it. So, mirroring as in, really helping them get an accurate perception.” Participants also used the large group discussion format to provide feedback on summative assessments.

Teachers led large group discussions to identify and explain the most common errors on exams. Participants also clarified what was needed to earn the highest marks on the scoring rubric. Friedman, for example, selected and displayed an exemplary answer from a student after each exam they administered. Friedman described their process,

I take a picture of one example of student work from that specific hour with the name redacted and put that up on the board. That's my exemplar. So, it's not like, “Look the teacher can do it.” It's like, “One of you did it.” I try to get everybody in there once, if I can, over the course of the year, or the semester.

Ostrom reversed the idea of the post-exam exemplar by offering what they called “preemptive feedback.” Ostrom described the process.

When I was trying to teach how to construct a good thesis statement, what I would do is take past essays I'd gotten in previous years and pull out … I would show them a five, a three, and a one.

Interestingly, Thatcher, a teacher at a different school, mentioned a desire to do something similar.

One of the things that I'd like to do, that I always tell myself I'm going to do, but I don't, is create a cheat sheet of common things that come up regularly, which I think would actually save me time if I put in the time upfront to do that.

Instead, Thatcher spent time with the large group reviewing common mistakes after the assignment was graded. “If there are commonalities that I see amongst a majority of papers or a
significant number, before I pass it back, I put together a [slide presentation to show] the common [mistakes]. And we can talk about those in more depth.” Likewise, Smith discussed how they reviewed an exam essay question with the large group. Smith stated, “I think oftentimes in class there could be … kind of class feedback. If I’ve given a quiz, kind of talking about what are some generalizations, going back to studying, that apply to everybody.”

In contrast to a conscious effort to deliver verbal feedback to the class, some of the participants recognized the importance of intentional or unintentional non-verbal feedback. Malthus, for example, recognized the power of non-verbal actions. “We’re always giving our students feedback. Right? My non-verbals give them feedback, how I’m feeling that day gives them feedback. They’re very tuned into their teachers.” Friedman concurred, “I have to be aware that I may be providing feedback unknowingly in things like my tone, where I’m making eye contact, how I’m responding to them. So, there might be unintentional feedback as well.”

Eliot described the power of offering non-verbal encouragement with “just a nod and a smile, that type of stuff.” And Ostrom reinforced,

Well, I always jokingly tell students that the first requirement that they have when a student is presenting is to smile and nod. Part of it is even sending the energies out …

“Yes, you have my attention, you're doing good, keep going.”

The majority of teachers employed intentional verbal feedback to the large group to address common questions and mistakes, demonstrate or highlight exemplary work, and establish a sense of class community. In addition to the attempts to address the group as a whole, participants described how they provided verbal feedback on an individual basis. Whether in passing or in a more focused conference, teachers strove to personalize their verbal feedback.
Participants identified holding individual conversations as their preferred feedback delivery method. Keynes, for example, flatly stated, “In an ideal world, I would give all of my feedback verbally in the form of a conversation like we’re having.” Smith, likewise, put it simply when they said, “What I would like to do is one-on-one feedback.” Yellen succinctly captured their perception of the need to connect individually. “You teach each kid differently. It's an individual point, it's an individual curriculum. It's an individual job. It's an individual feedback.” Further, Earhart shared their strong desire to meet with each student individually. Earhart remarked, “Some people have a harder time with class size because of behaviors or whatever. That's not an issue to me. More, to me, is I want to be able to have that one on one with everybody.”

The purpose of these one-on-one meetings and conversations, as previously discussed, may vary. Teachers addressed both students’ affective and specific learning needs. Whichever the case, the holy grail of feedback for participants was clearly having one-on-one conversations with students. Participants used a variety of techniques to logistically arrange such interactions. One of the basic “how” questions they needed to address was when and where to meet?

Enticing a student to come in for a one-on-one meeting outside of class time was viewed as somewhat akin to a fishing expedition. Teachers offered a lure of clarifying feedback and a reassessment opportunity to raise a grade and hoped they could get students to bite. Eliot, Steinbeck, and Tolkien, teachers at the same school and in the same department, all offered a chance for students who viewed summative feedback to attempt a reassessment and raise their score. To earn the opportunity, however, they required students to arrange a one-on-one meeting with the instructor before winning a second chance.

Steinbeck described their process and meeting time and place.
Usually if a student wants to reassess, I have a conference with them. They come in during our lunch and have a conference with me about what they specifically did wrong, because, you know, comments written out can only go so far.

Tolkien similarly described their schools’ open lunch structure when teachers had to be available to meet with students. And Eliot explained the importance of discussing a student’s performance before allowing a retake to ensure students processed the feedback. Eliot stated, “It makes a big difference if you can sit down and have a conversation one-on-one with them.”

Smith described the multiple ways they attempted to connect with students individually, I’ll try to catch kids in the hallway, you know after class. I tell kids if you have any questions, email me, send me a text. And if there’s something I really want to talk to a kid about, [I wait to] catch them in the hall, ask them to see me after school.

Thatcher used their written feedback to arrange a conversation.

Some students I find it's easier, I might just write, “see me” and put a little note that reminds me what I wanted to talk to them about. I’ll talk to them one-on-one more in depth if they have a more complicated issue that needs to be addressed.

On the other hand, some of the participants found ways to connect individually with students during class. Teachers noted sacrificing class time for feedback came at a high opportunity cost, because they have a number of goals to accomplish during the time allocated for a class meeting. Only six of the participants specifically described how they found or made time to provide individual verbal feedback during class time.

For example, Parks described how they provided class time for students to complete their work. When the students were on task, Parks explained, “I'm walking around the classroom and I'm providing feedback as I see them working, so I can do it verbally in class as they're
working.” Alexander interacted with at least some individuals and small groups to provide feedback during student work time as well. “Daily, I call up different groups. We'll talk through what they know, what they don't know. I'll try to clear up confusion, especially when they're researching.” Other participants sought to move their informal, technology based written communication to individual conversations as students were engaged on an assignment.

Notably, Earhart stated after they added formative comments on an electronic doc, they would make a point of following up with students. “Then, depending on the situation, I can go and actually sit and talk to them. [I can ask], ‘Do you understand what I just typed?’” Similarly, Aldrin prioritized meeting with at least some individual students.

Aldrin explained the need to, “prioritize who I need to talk to that day, [because I] don't have enough time to see everybody all for a long time.” Aldrin described looking at student work on a shared electronic doc, and “I'll see something and it's a great opportunity to pull up a chair and sit next to them [the] next time they're in class working on it, because we do a lot of our writing and projects in class.” Two of the participants took the use of class time for feedback further, specifically describing how they devoted a significant chunk of class time to meet individually with students.

Yellen explained the need, in at least one of their classes, to structure the allocated time around constant individual feedback. Creating time for individual feedback, Yellen explained, ensured students would master enough of the basic concepts to pass the required course to graduate:

Or the other feedback, because I have seniors and we're under pressure to graduate everyone, I do a lot of individual feedback. [The feedback is] in class. We just went to a block schedule about three years ago, so now you have that time built in. You always
have at least 20 minutes built in that you can have these conversations. [Students] need to come up [and see me] while the other students are working or standing in line waiting their turn. They can't just turn in a work sheet. They have to come up to me and have this one-on-one conversation. I’m going to grade it right in front of them and we’re going to go through it one-on-one. So, every single kid has to do that. Because then they know they can pass the test if we have this conversation. If I don't do that, then I know they’re not going to pass the test. There’s a lot they need to know, but [I focus on what they] have to know. These are the required work sheets … and they have to have one-on-one meetings with me because it's the only way they’re going to pass the class.

Keynes, a teacher of an advanced level course, didn’t make individual meeting time a daily activity, but did make it a priority following each summative assessment. Keynes explained their students actively sought further explanation of formal feedback on essay examinations. As a result, Keynes made a point of setting aside an entire class period to meet individually:

For writing? Oh, they look at [the feedback], they look at it big time. And I know on days when I hand back a [short answer or essay question], I block out an entire day. I hand it back to them, and I tell them alright you have 5-10 minutes to … look through the feedback. And I tell them I won’t answer any questions during that 5-10 minutes because I want them to look at the feedback. They can only ask me, “What does this say?” I want them to try to truly understand the feedback first. And then I will come back and then we can have conversation pieces for the rest of the hour on a one-on-one basis.

Participants found a variety of ways to provide verbal feedback to students. They addressed the whole class as a large group to share exemplars and common errors, or to ask questions and clear
up any misunderstanding. They provided informal feedback to individuals while they were working, or they arranged time outside of class for longer, in depth one-on-one conversations.

Only two of the participants, however, regularly devoted significant time during class to verbally provide individualized, in-depth feedback. This is noteworthy because participants universally said one-on-one conversations were by far the most important and desired type of feedback. I next complete my data analysis by discussing participant’s views about the efficacy and value of the feedback they provide, the emotions they experienced when providing feedback, and the perceived roadblocks to delivering feedback for learning.

**Costs and Benefits Associated with Constructing and Delivering Feedback**

The participants made their beliefs about the most valuable and powerful feedback abundantly clear. Every single teacher in the current study lauded the benefit of a personal, one-on-one conversation with a student. When they were asked, if it were possible, what they would change or do differently in terms of providing feedback, teachers emphatically stated they would hold more individual meetings with students.

Parks, for example, described the importance of, “face-to-face conferencing, so they don’t make the same mistakes.” Abbot said they would, “Do more individual feedback. I’d like to sit down with them.” Alexander would, “be more conference based, where you can sit down one-on-one.” Hayek longed for the students to “be human again. I would break the feedback down and give individual feedback.”

Keynes and Friedman both described the power of having a, “conversation” with students. Ostrom explained they did not “enjoy giving feedback, but if it were more of a conversation it would be less burdensome.” Friedman simply said, “ideally, I would meet one-on-one with all students, frequently.” Eliot called conferencing with one student, “optimal,” and
Steinbeck stated they “can’t be sure the feedback I give is meaningful without a face-to-face conference.”

Smith and Earhart both flatly said they would like to “do more one-on-one,” and “meet one-on-one with everybody.” Thatcher recognized the need to “meet one-on-one if [the student] has more complicated issues.” Malthus noted it was important to, “personalize feedback.” Aldrin explained they would give more feedback to everyone and meet with all instead of having to “prioritize,” due to limiting factors. Yellen captured the essence of the power of face-to-face conferencing when they stated, “These are conversations we have to have … to figure out what they know and do not know.”

Participants believed individual conversations had great value because such interactions could ameliorate factors which rendered other types of feedback ineffective. Yet, teachers found it a challenge to arrange and conduct individual conferences and, as a consequence, relied on other avenues of feedback deemed inferior. Participants’ evaluation of the value and efficacy of their feedback, and their description of three factors which impacted their ability to effectively use feedback, included: (1) time limitations, number of students and forced tradeoffs; (2) differentiating feedback according to perceived student motivation, willingness, and ability; and (3) feedback effectiveness and attendant positive and negative emotions.

**Time Limitations, Number of Students, and Forced Tradeoffs**

All 16 participants indicated that time was a scarce resource which, limited their ability to provide adequate feedback. Whether it be minutes in the class, hours in the day, or days in the term, time considerations in one way or another impacted the effectiveness of feedback. Delaying feedback to allow deeper processing of complex material may be beneficial for learning (Hattie & Timperley, 2007), but if students have not received feedback soon enough,
they will focus on new content and not spend additional time mastering the previous material (Gibbs & Simpson, 2005). Participants described the challenge of providing timely feedback to large numbers of students.

When I asked participants to describe the biggest limitations or challenges to providing quality feedback, Thatcher’s answer epitomized participants’ feelings when they stated, “Time is absolutely the biggest one.” For Thatcher, time and number of students impacted their teaching and feedback practice in at least two important ways. First, it forced a tradeoff in the types of activities they planned for various classes. “I have to admit, when I look at planning for my two classes, I alternate which ones are doing more written work for example.”

Secondly, Thatcher felt pressure to return written feedback to students in a timely manner, but struggled to find a way to do it without making a personal sacrifice:

In fact, one of the challenges is, best practices of course, that we get feedback back to students right away so that the assignment is still fresh and memorable [for them]. But it's also true that when you have 90 essays to grade, that takes a while. And … some of my colleagues think I’m crazy for doing this, with these, I actually took two personal days to just stay at home and grade so that I could get them back to [students] in a reasonable time. But that's always dicey because I hate setting that precedent, but I'm also very eager to get them back to kids.

Similarly, Ostrom explained the biggest challenge of providing feedback was, “Time, time, time. Really, meaningful feedback; it's just extraordinarily time consuming, especially when you're talking about the written word.” Ostrom described in detail what they considered to be an amazing method for evaluating and providing feedback on essays they learned in graduate school. “The professor talked about grading essays [using a system of multiple readings]. It was
[an excellent] discussion, but [the method] just was sort of eye opening to me. I think it's a much more meaningful feedback.” When asked if they use it, however, Ostrom explained it simply was not practical. “I think it's a credible system, but I've never done it. I mean, I wish I could. I love it, it's an amazing idea, but it's so time consuming.” Some of the participants leveraged technology to provide written feedback, but surprisingly, the LMS did not necessarily eliminate the time crunch teachers felt.

Technology and comprehensive grading standards influenced teachers’ provision of feedback. Theoretically, the combination should result in timely, focused feedback useful to improving student learning. In practice, however, participants indicated the challenges of providing feedback were exacerbated, particularly when class sizes remained large. Eliot explained:

Once we moved to the standards-based grading, we realized that the amount of feedback that you give is a lot. Probably doubled our work output. We always gave feedback but now you want to give very specific feedback to the criteria, so you want to give a ton of feedback. Class size is a big deal. It’s important to get feedback to students in a timely manner, but it is very difficult to do. Trying to slog through a lot of essays leads to unconscious comparisons between students rather than against an objective standard. To avoid that you need to take a break, but taking breaks increases the time needed and time is of the essence for the feedback to be meaningful. We spend countless hours, time at home, on weekends.

Steinbeck concurred, adding, “Having 35 or 41 students in a class is a major drawback. You have to give every one of them written feedback.” Steinbeck also emphasized the value of one-on-one meetings with students but rued their inability to do so. Steinbeck stated, “Having
individual conferences is the most powerful [form of feedback], but it is not possible to find the time to interact individually with every student.”

Aldrin described how they tried to provide in-progress formative comments via an online doc, but found,

Time is definitely the biggest limitation, it can be very time consuming. The thing I told you about the docs, that means I'm kind of grading them three times at the least. If it's a big project, I'm poking my nose in several times and putting comments. It’s more time consuming.

Participants described how their students’ demands for feedback have exacerbated the time pressure they experienced.

Abbot decried students’ increased demand for immediate feedback. “I think every student wants instant feedback too, which I find hard. And that's new within the last probably cell phone era, I think.” Managing student demands for, “instant feedback and instant satisfaction have become difficult,” Abbot explained. “I think that's been a challenge. And if they don't see [the feedback] even within 24 hours, then they just … don't care anymore. I think they need instant feedback.”

Earhart described how students’ demand for immediate feedback molded their use of online docs. Earhart explained how students’ asking for comments while working, “really helped me figure out that, for them, it's easiest when [feedback comes] right away. They want that instant, [evaluation or grade].” Earhart noted if feedback did not come immediately because large student numbers or time limitations made it impossible,
kids forget what you're even giving them feedback about, then they do the same exact thing again and again. That's sometimes [why it is] harder to have a bigger class, because you want to just sit down with them, and with so many kids in the room that's difficult. Parks, likewise, described how a large number of students rendered written electronic feedback ineffective, and made the face-to-face feedback they valued more difficult to provide. The challenge, Parks stated, was finding:

Time. When you have 30 kids in the space, kids don't always go back and read their comments that you've provided electronically. They don't always go back and read your comments. And so, [students aren't seeing] what I did wrong, [or] how [to] fix it for the next time. They could be making the same mistake over and over, getting threes or twos on every assignment because they're consistently making the same mistake. And so that face-to-face conferencing, it's limited because you don't have the time and there's so many bodies in the room. I think my biggest [challenge] is the time.

Time considerations forced teachers to make strategic decisions about how and when to provide feedback.

Malthus described decisions teachers had to make when presented with time constraints. Malthus stated they, “try to give my students very rapid feedback,” but agreed with other participants it was difficult because “time starts to become an issue.” The tradeoff Malthus outlined was between depth of feedback and how much time passed before feedback was delivered. Malthus wondered, “should I slow down and give more quality feedback? Or should I get the student the feedback as quickly as possible?”

Alexander concurred the sheer number of students was a daunting obstacle. If a teacher wanted to push students to take on a higher-level learning task, Alexander explained, it was
nearly impossible to deliver the specific feedback each student needed to nudge them to a new level of learning and achievement. Alexander stated,

The challenges are, always staying on top of [giving feedback] with the numbers of students we have. Five classes, roughly 30 students per class, 150 students [who need] feedback. The more quality products you want them to do, the harder it is to always get them timely feedback.

Tolkien explained how time limitations forced them to become more precise when giving feedback. Tolkien reflected on the need to maximize the scarce available time for feedback. Tolkien stated,

Well, I mean, the cliché’ [limitation] is time, but I think the more focused [challenge] is just, what should I focus on? I feel like early on in my essay grading career I was trying to do everything and it's just too much.

Keynes noted balancing available time and the number of students factored into the feedback they chose to deliver. Keynes explained they had to limit their written feedback because “it also comes down to a time issue when you have 32 kids that get their papers back at the same time. Especially in written form, because in the end when you’ve got a class of 32 its hard.”

Friedman discussed their continuing effort to become efficient, and the inherent tradeoffs regarding the type of assignments and lessons they used. Putting extraordinary time into building online formative activities allowed Friedman to effectively “provide individualized and sufficient feedback in the time that we have. We can work at it, but we get more and more efficient, which allows us to do it better.” In a different class with more essays, however, Friedman faced a tradeoff. “Either I provide a little less feedback per essay, or I reign it back and just give them fewer essays.” Friedman accepted the challenge while acknowledging their teaching reality.
Friedman shared, “I don't want to complain too much. If I was teaching [more writing], if I was teaching English all the time, it would be a much harder hill to climb than I face.”

On the other hand, Hayek described feedback as an almost overwhelming burden. Hayek found the tradeoffs involved their quality of life outside of the classroom. For Hayek, what drove their feedback choice was:

- **Survival in life.** I'm at a point in my career where I'm done giving three to five hours a night to public education. And to get it done during the day with my time management … I don't have the time or I'm not skilled enough to do that. So, my feedback is what realistically can we do to provide for our students that's manageable with our data driven system? I got here [after teaching in another state and moving back] and all of a sudden, I've got six classes, my classes are 30 to 36. I said, “What the hell? How are you supposed to [stay on top of it]?” I explain it to the students or the parents when they are [asking for more frequent feedback]. “Well, if I have 160 kids, it takes me 15 seconds to even touch a piece of paper. How much time is that in reality?” Now if you're going a minute per, that's 160 minutes, you're knocking on three hours. Boom. That's a minute. I mean, what can you do in a minute of feedback?

Listening to Hayek, I was transported to the coffee shop and the teacher I met timing their grading and feedback with a stopwatch. Some participants recounted how having fewer students, either in different classes or in different schools, allowed them to provide more and better feedback.

- **Hayek themselves contrasted the feedback they provided when they had fewer students with their inability to provide meaningful feedback today. Hayek longed for the day when, “I was out East and I had 90 kids and I had a block prep, and I gave more feedback.”**
remarked that feedback in the different classes they taught was similar in terms of a focus on,
“studying. I mean studying is studying.” With fewer students in one of their electives, however,
Smith noted, “I think the one thing with [the elective] class of 16, I have … more of an
opportunity to do that individual feedback.”

Earhart shared at a previous school, coupling written comments on docs with individual
meetings was “much easier to do when we had classes of 18-20 kids.” Ostrom agreed lower class
sizes allowed them to provide more feedback. Ostrom explained, “when I taught at a private
school where my class sizes where 10 to 15, I had weekly conferences with each of my students.
The opportunity [for individual feedback] is so much greater when your class sizes [are
smaller].”

Yellen prioritized maintaining smaller classes with their first-year students. Yellen
articulated how their department made a conscious choice to limit the number of students in the
first-year classes. “With my [first year] class,” Yellen explained, “we made a point of [keeping
the class size to] 26. We dwindled to 26 so that we can give more feedback.” Yellen rolled their
eyes and laughed about how with “bigger classes, I would struggle! Big time. I don't know how
you guys [at my school where the numbers are not held lower] do it.”

Keynes enthusiastically described the unexpected benefit of having an unusually small
class. One of Keynes’ class sections only had 15 students, and for Keynes it was “mind boggling.
You know how much easier it is to give feedback to 15 kids as opposed to 32?! I mean I give
better feedback, and the kids are more serious about it because they see it’s there.” Keynes
wondered at the fact feedback took, “less time! In class being the biggest [time saver]. Instead of
dedicating an entire class period [for one-on-one feedback] it takes like 20 minutes.”

Thatcher longed for just such an opportunity, and wistfully stated,
I mean, I always wished that we could have, this is a big picture thing that I don't as a teacher have any control over, but I wish that we could have small enough class sizes to provide meaningful feedback to every student on every assignment.

One of the tradeoffs teachers find it extremely difficult to make is between using class time for covering content with enjoyable lesson activities and using class time to provide individualized feedback to promote improved achievement and learning.

Tolkien exemplified the issue of deciding how to use their class time when they stated, “I think it's also valuable to have opportunities for feedback that aren't tied to the final assessment, but that gets tricky because then you have to build that into your classroom practice.” Tolkien elaborated on the conundrum of limited class time. “I think that's [balancing lesson activities against feedback is] where the theory then meets the actual reality of teaching.” Eliot lamented having to eliminate some of their favorite engaging activities to “spend more time on standards and feedback.” Providing more feedback, Eliot stated, “has resulted in some teaching challenges as well. There is less time for fun activities in class, lessons you have enjoyed, and you know kids enjoy.” Friedman reinforced the opportunity cost of scarce time when they explained even if more money was provided for teachers to work,

there is always going to be a tradeoff. Even [with more paid time], no matter how much time they give you, we can provide more detailed feedback, but the tradeoff is going to be that we can't build this [new and interesting] lesson. There is going to be something else for students that we are [sacrificing] instead.

Similarly, Alexander commented,
And that's also the challenge then as a teacher, because if you're planning great lessons too, then you also have to balance that with the time of putting all the feedback in for the assignments too. And your plate gets full very fast.

Ostrom clarified that other priorities took precedence when considering how to use their time.

I know even when I've had more time and fewer students, it's still not something I do extensively as much as I should. I love curriculum development, I enjoy instruction. Always, people have their own [interests], and for me, [providing feedback] is the part of the job that's the biggest loss, that I find the most unrewarding.

Teachers’ feelings about the importance of curricular content also impacted their use of feedback.

Smith explained even with smaller numbers of students, the obligation of covering the AP curriculum was too important to sacrifice. We’ve got our curriculum we’ve got to get through. Many years ago … [I only had] 22 or 23 students … but my class time was still the same. The year is still the same length. So, even with only 22 or 23, if [I] said, “I’m going to take this individual class period to have individual feedback,” I couldn’t do it.

Keynes, on the other hand, sacrificed both a content day and another feedback day to provide different feedback after AP essay exams. Keynes acknowledged the significance of sacrificing class time when asked about the challenge of providing quality feedback:

Time. Giving kids time. Time in class is it more beneficial to give feedback or more beneficial to do discussion or some other educationally appropriate decision? And then if kids don’t take it seriously, ok I’m not doing this anymore, because we have other educationally appropriate things we could be doing easily. Let me give you an example.
We have stopped giving back multiple-choice tests in AP. And that is because kids weren’t using it. We were going over common errors, and they weren’t using it. But on days we give back essays? Kids look at that big time. I know on days when I hand back a [short or long essay question] I block out an entire day.

Malthus also taught an AP course, and empathized, “Especially with an AP test coming up on May 5th and you have to finish that course in essentially three quarters of the year. So, it’s a very, very fast-paced class. So sometimes that presents a constraint.” Even in a standard level class, a disgusted Hayek noted, “Especially in social studies … a trillion standards you have to meet, especially in 9th and 10th grade, you have to cover a certain history level.” The class calendar also influenced the effectiveness of participants feedback by making it either easier or more difficult to connect with students and understand their learning needs.

Thatcher extolled the benefits of having students for a full school year.

I mean, honestly I feel like I get to know roughly what a student’s about and the superficial stuff, like what clubs are they into, what sports do they play? That kind of stuff. I can know that pretty quickly. But knowing them as a writer, knowing what’s going on in their lives, knowing that takes a long time.

Abbot illustrated the difficulty of having students for only one academic term. “We don’t keep the same kids. I can easily have a kid for [a term] and not speak to them once. It goes so fast.”

Yellen acknowledged the challenge of the short calendar time and balanced content against the need to give intense coaching and feedback to first-year students. The result was, in the first-year classes, Fridays were, feedback, grade check counseling days. Meet with the kids. We only have them one term before they change, so that’s why I felt it was really important that we need to sit down
[with students] and these kids can get their grade up and know somebody's watching over them.

In contrast, Tolkien championed the power of a course set up where they had the same students for two academic years.

So, exclusively in that 11th grade class, because the first semester of this two-year course, the first four or five assessments were small, and they were taking on specific criteria and they were all practice. So that, it was in essence a much more formative experience. And it shrinks. So, the students that are left are either doing it because it's part of their [national program] diploma or they just really love the class.

In summary, time constraints combined with the number of students formed a roadblock to delivering the most effective feedback to improve student learning. Whether it was a choice between devoting minutes to content or feedback, finding the time to deliver comprehensive formal written feedback, agonizing over how to connect individually with all of the students in a given class session or even a calendar term, or giving up teaching activities considered more enjoyable, participants all struggled to maximize their scarce available time to provide meaningful feedback. I next discuss teachers’ beliefs about tailoring feedback to student needs, and students’ willingness and ability to use feedback.

**Differentiating Feedback According to Perceived Student Motivation**

In addition to assessing the value of the pedagogy and other activities which must be given up to devote time to feedback, (what economists call the opportunity cost), participants reported they weighed the potential effectiveness of feedback based in part on the perceived intrinsic motivation and academic ability level of the student. Keynes, for example, who taught an elective AP course and a required AP course, explained the difference in the depth of
feedback, “between classes yes. For sure the [required course] feedback is, to be blunt, I put way more time and effort into it. Because kids also take that class more seriously, and they have over time. And it’s easier to give feedback in there.”

Abbot found their feedback was,

totally different from regular to AP, probably just because of the eagerness because they have a test … the eagerness of figuring it out and making sure they understand the concept. Regular, some kids can just kind of scoot by vaguely understanding the concept.

Smith reinforced the need to provide detailed feedback to AP students because Smith believed AP students were more motivated to achieve excellent grades and were more sensitive to receiving a lower mark:

Obviously on the other end where you got kids that are struggling … let’s face it in our AP classes kids getting a C might as well be an F you know? I think feedback, to me is also part of motivation. So, when they do a [written essay for an exam], I structure my grading so that even a 0/6, or 0/7, you would think I’m [going to] say it’s an F. But for AP kids it’s a C-. Because most of those kids, and this is what I tell them, and this is part of that feedback, “You’re in the ballpark.” And then it links into [my request that they] come and see me, or maybe I do a general feedback. Let’s go back and let me have people read a couple thesis statements here. What do you think, 0 or 1, ok why? So, you know it all ties in with motivation as well, because it is extra work. Think about what these kids are doing [the work they are putting in to prepare for the national] exam.

Eliot commented that feedback for their students in the higher-level classes, who are motivated and working for college credit, require more detailed feedback. Eliot explained, “You [have to] give feedback to all [students], but the kids you know are more motivated
definitely get more.” Similarly, Tolkien made it clear the principles of the national program represented quality pedagogy all students in their classes received. For those that opted to pursue the higher-level degree program, however, Tolkien explained,

We find ourselves spending more time than probably we should for the students who are going to take the exam to get them the feedback. They definitely appreciate it. They see the value immediately because it’s tied to an exam, and so how do we create that for the students who don’t?

Thatcher likewise contrasted the difference in feedback necessary for higher-level and standard-level students. “I don't want to portray my standard-level kids as not being bright or motivated because they are, and I really value them a lot. But I think that it is different.”

Thatcher noted the calendar time students devoted to the higher-level program made a difference.

For example, higher-level history is actually a two-year class. And so, they are, I feel like a lot more invested in my feedback. Whereas in the standard level class … I usually only have a handful that want to talk to me or get additional feedback.

Earhart explained how their feedback to the AP or higher-level students was geared to “push them further, get them to look for more sources, not take the easy route,” while feedback for regular students focused on the basics “Do you understand essay structure? Do you know how to use evidence to support an argument?” The age or grade level of the student was another factor that led teachers to differentiate feedback.

Eliot and Steinbeck discussed how students’ grade level impacted feedback due to the staggered implementation of standards-based grading. The first-year students have become acclimated to it because they experienced it all through middle school and are more used to standards and reassessment opportunities. Therefore, Steinbeck stated,
we are working a little harder with them to get them feedback in a timely manner and to differentiate it. Only 5-10% of juniors and seniors (for whom standards and reassessment are relatively new) use it, but 20-25% of first year students sought an opportunity for reassessment.

Parks expounded on the difference in feedback between their elective class, which was comprised mainly of juniors and seniors, and their required first year class.

So, the feedback is going to be completely different. … there's just a different feel. I mean in my electives it turns into a much more conversational relational feedback almost. And [in the required course] I still am very intentional about building relationships, but the feedback still feels very structured.

Yellen, who taught at the same school as Parks and also taught some of the same first year students, painted a stark contrast between feedback provided for their first-year students as opposed to senior year students,

It's completely different. The two classes are so different, but I love the [first-year students] because that's why you wanted to be a teacher. They have no choice. They need feedback to be ready for all their classes. Then 12th grade you're like, okay, some of you love it and are excited and some of you just need to get passed.

And within the senior class, Yellen differentiated feedback a step further:

So, it depends … all on do you want to be in the class or are you comfortable with a D in the class? Literally with the kids that's what it boils down to is I'm sorry to say but [for the final term] when I need everybody to graduate, I ask students “What are you comfortable with for your grade?” “Are you going off to college four years, then we
really need to push for you learning more.” But if [students are not going to college] then
[I ask], “Are we just are looking at passing? Okay, this is what we need to do.”

Yellen’s perception of differentiated student feedback extended even further when they
contrasted the anticipated difference between feedback for students at their school as compared
to a neighboring district in a relatively more affluent and less diverse area.

Because if I was teaching at [the neighboring district], I’d do all individual interviews
with them because those parents have an expectation that those kids will have a 3.5
(GPA) or higher. Now I'm trying to teach … how I handle things is different. I'd like
everybody to get an A, but I'm not aiming for that. When a kid tells me I just want to pass
the class, that’s what we're aiming for.

Thus, participants delivered more total, and more detailed feedback for learning to students who
enrolled in advanced classes or who were in their first year of high school as compared to those
who were in required classes or at the end of their secondary educational journey. Their
perception was the younger or more motivated students needed and wanted more feedback.

Teachers also explained their feedback was more effective when customized to the unique needs
of individual students.

Participants description of their feedback effort was like an army surgeon in a field
hospital. Some level of care is offered to all patients, but the doctor, understanding it is
impossible to adequately care for all the wounded, has to perform triage to determine who is in
the most urgent need and will most likely recover if given medical attention. Likewise, teachers’
make decisions about which individual students are most in need of intensive personalized
feedback and are the most likely to put such feedback to use. Then teachers take action to serve
those students based on their assessment of student need and value.
Eliot, for example, explained,

In a perfect world, all kids would value the feedback and put it to use, but in reality to save time you can sort of slam off the top 7-8 kids who really don’t need it, who are at the high level of the standards, and focus on the kids you know are motivated and who will do everything they can to raise their score.

Smith relied most heavily on verbal feedback to the large group but shared how they made offers to meet with struggling students outside of class to provide individualized feedback. One student in particular Smith remembered fondly. “I said come and see me. He actually did. I’m talking about study skills. [I asked], ‘Have you tried this?’ ‘Have you tried that?’” Smith continued, obviously moved by the memory as he shook his head and smiled, “and, that improvement! [The student] went on to get a 3 on the exam.”

Earhart made a point to seek out students who just try to stay quiet and don't [seek help when they need it]. I have a handful of kids, and I can put comments on their doc. I've tried [strategies to reach them], I know [they are] paying attention, I say “let's just have a conversation about it.” So, it can help reach some of those kids who traditional learning is not their thing.

Steinbeck described how they sorted feedback needs according to specific standards, and leveraged technology to see which students were interested in using feedback to improve:

The standards-based grading piece is huge, because when you grade a paper, you’re actually looking, on a scale of 0-8, with 7-8 exceeding expectations, 5-6 meeting expectations, etc., but we think the criteria are very specific. So, a student might get a 7, right on analysis, the ideas were there, however their organization might be lower, so on language skill criterion might be very low but the ideas were there, so students can
pinpoint areas where they need specific improvement. And our technology, when I make
comments on the doc, I can see who has accessed them. And I make students reflect on
my comments, and then I invite those that are interested to have a conversation and
reassess.

In some cases, the feedback triage targeted individual students who were noticeably struggling.
Participants connected building relationships with students to delivering personalized feedback.

Thatcher gave an example of a student they connected with, and who struggled with
personal issues outside of school. Thatcher knew the student wondered whether enrolling in an
advanced class was a mistake. Thatcher stated,
and so, the feedback I give her is more holistic. I choose one or two things that I want her
to focus on to try and improve. I don't want to overwhelm her or make her feel like she
can't get to that highest level.

Aldrin discussed a student who had been chronically late and apathetic, but who had recently
shown some initiative. Aldrin gushed:

Oh I was so excited, I got the best essay from the student who is always late … and his
essay is a grammatical mess, nothing is spelled right, it's very hard to read, but if you
really take the time to look at it, he had put in a coherent, historic argument, he was into
the topic, he thought about it. Of course … I made sure I emphasized all the great stuff in
there, let's emphasize what you're doing right and keep it going.”

Yellen clearly thought outside the traditional feedback box when students were in
obvious need or distress. Yellen described a student with a troubled home life.

I have a student now who just told me her mom's an alcoholic and she's going through
treatment and she decided to do it at home and not go into treatment, so at night she's up
with her. So, I made her an online student, which technically I shouldn’t, but she does all her work online and when she can get something done, she gets the feedback she needs to pass.

Participants’ recognized their feedback medicine was stronger and more effective when it was specifically tied to student learning symptoms.

Keynes emphasized the importance of tailoring their feedback individually. “So, the feedback in terms of a self-assessment, feedback on homework, feedback on a written assessment to me that’s way more valuable when it’s personalized for a kid, and you know how that kid functions.” Malthus reinforced the importance of the personal connection when they stated,

I just think that psychological aspect of motivating the student with your feedback, making sure that it's personalized, the student feels cared for and the student trusts the instructor that they are going to lead them to a successful course of action is really key.

Tolkien was clearly frustrated knowing their feedback was less effective in the early stages of a course before they truly understood student learning needs. Tolkien stated,

I mean, I’m just now starting to feel like I can assess better what a student's capable of and I mean, that’s the trickiest thing with feedback … the worst thing you could do is, push someone too hard who's not ready for that.

Friedman felt their feedback was fairly standard for all students, except when their triage uncovered problems or a lack of response to feedback.

If the results a student is getting are well outside the norm, if they’re really struggling. Or they're doing so well that they're at risk of being bored. Then based on their different situations, the feedback changes a little bit.
Teachers, like military doctors, have to sort patients to focus their feedback treatment on the most needy and receptive students. Despite their best efforts, teachers reported frustration when their feedback was not fully used by students, and elation at the rarer times when it was used. I next discuss participants’ feelings about the effectiveness of their feedback, and the emotions they experience trying to provide it.

Feedback Effectiveness and Attendant Positive and Negative Emotions

As illustrated in Figure 4, *Feedback Frustration and Perception of Wasted Effort*, 13 of the participants’ specifically experienced negative emotions because their well-intentioned effort to provide feedback was met to some extent with student apathy. Thatcher put it plainly when they noted, “But I honestly get a lot of people where I see it in the recycle bin right away.” Smith agreed, and stated feedback meant, “on tests, maybe not so much quizzes, writing the comments, [but] the one thing that is a bit frustrating, I don’t know how much kids really read those.”

**Figure 4**

*Feedback Frustration and Perception of Wasted Effort*
Smith further exemplified the highs and lows of feedback when they described how they tried to entice students to meet outside of class for the one-on-one feedback participants most valued:

So, I mean some of these things, even time it has to be like, almost separate. It needs to be a dedicated time, outside my classroom. Please come. You have to be here. Come and see me we could talk for like five minutes you know? I’ve told kids, in fact I was kidding [with them], I used to say give me five minutes, I’m now down to give me three minutes! I mean I’m there before school and kids can come, but, and I’m there after school, but... you know it’s frustrating. Very few ever take advantage of it. It’s very few that want [to take advantage of the offer]. So, it’s always a treat when somebody does come and see me.

Eliot similarly captured the emotion of providing feedback students did not use to improve. In practical terms, Eliot stated feedback, takes a tremendous amount of time and effort. It wears on you to spend so much time and only have a couple of kids look at it. It’s very frustrating when you give a kid a paper back … and you spent an hour giving them feedback and they’re just happy with the grade that they got.

Aldrin gave informal feedback throughout a project, yet still spent time with lengthy comments upon completion only to express, “In fact, I get kind of frustrated, by then they don't always read that feedback if you wrote a bunch of stuff down.” Yellen, laughing ruefully, noted one of the challenges of teaching online was “I found out that a lot of times they're not reading my comments.” Ostrom decried the “burden of feedback and the burden of grading,” and shared
providing [feedback] was, “the least favorite [part of my job]. I know it's a meaningful component, but it's so exhausting.”

Keynes lamented both the difficulty of giving consistent feedback, and instances where the effort to give quality feedback seemed for naught. Keynes shared they felt “disheartened” when

kids don’t take it seriously, and if it’s something significantly smaller than that, let’s say a content item, it’s really hard to give feedback to 32 kids at the same time. And so how to manage that. If somebody has a good answer to that other than a multiple-choice question, they would be making probably a lot more money than us.

Parks, who described their challenge of finding a way to meet face-to-face with every student, explained: “Without those meetings, they don't always go back and read your comments. They could be making the same mistake over and over, getting threes or twos on every assignment because they're consistently making the same mistake.”

Parks expanded that their belief in effective feedback was founded on observing a change or improvement in the quality of student work. “I know it's working if that behavior or that pattern of whatever they're doing is interrupted.” How often Parks noticed the improvement, however, was inconsistent because they stated,

I'm not always really good at it, but trying to remember and catch it [by saying to students], “The reason why you're losing points is because you keep doing this.” But I don't always remember that or remember to catch them or to remember to have that conversation.

Similarly, Earhart described how the effectiveness of feedback was limited when students either did not understand it or did not receive it in a timely manner.
One thing is them saying, yeah, I totally get it, and they totally don't. Another thing is, if [feedback] doesn't come immediately, sometimes kids forget what you're even giving them feedback about … they're onto the next thing, they're not even thinking back. So, if it's too much aftermath, they … just throw the assignment in the garbage. I got this grade, whatever.

Some teachers tried to encourage students to use feedback by connecting it to a grade or allowing students to use it to reassess and raise their summative grade.

Tolkien found formative feedback was only useful if the students endeavored to complete the formative work. They struggled to get students to complete assignments that were only, “practice.” Tolkien explained students would ignore work if they felt it, “doesn't count, so it's not really worth me taking the time.” Tolkien went on to state formative feedback wasn’t useful if it's not [provided during an in-class assignment] it's really hard. If it's something that I want them to work on outside of that class period, it almost has to be tied to a grade in order to ensure that students are doing it.

Formal feedback with a final grade, Tolkien noted, was similarly something students would “not be invested in once the assignment was done. It’s not useful.” Thus, Tolkien attempted to make feedback reflection part of the final assignment. “What I've tried to do is with every final piece, there's some sort of self-reflection where they're giving themselves feedback, but that's based on the feedback they received along the way.”

Hayek was exasperated with those students who were present, but were not motivated to pursue learning for reasons beyond extrinsic points and a grade.

To me, that’s accountability. Kids' accountability and desire to learn … I don't think kids really care about learning in general. I think the vast majority of our kids are playing the
game and going after the points. I would say few to any are ever coming up saying, “Hey, can you explain this to me? I know I have missed it on the test, but I'm really curious.” That's not a question we get … Never. So, kids aren't interested in their learning, they're interested in their grade.

Eliot, likewise, noted they had to attach a grade to formative work or students would “look at me and drop it on the floor. So, we went to formative counts for 20% of their grade.” Earhart explained, at their school, formative work accounted for 30% of the overall grade. Participants clearly wanted students to use feedback to demonstrate increased learning or better performance but had a wide array of estimates and anecdotes regarding whether they believed students put the feedback to good use.

Earhart discussed their feedback goal when they stated, “I always want them to take the feedback and go back and make changes. It's not always easy to get them to do that. Some kids are like, well, a C's a C, great.” However, Earhart believed in their standard-level classes, perhaps 50% of the students would take advantage of a reassessment opportunity after receiving feedback, and as many as, “70% if we are talking the AP or higher-level students.” Alexander was confident the verbal, informal feedback they offered during work time was impactful because “the vast majority make the changes immediately, because they want the better grade. They want to do better in the class.” Aldrin concurred, many “students are kind of driven to get to the A or B … so that does seem to be kind of motivating, and so if they want the good score, they've got to interact with the feedback.”

When the formal written feedback was presented with a final grade, however, participants found students did not always attend to the feedback comments. Alexander noted, “Sometimes
with the formal [feedback], if it's after the fact, they may or may not care.” The grade appears more important than the learning, Alexander described how:

A lot of them want to know the grade they got, but if they're not looking to make changes or get a better grade, they may not dive in deep on what that feedback was. When they get their feedback forms back, if they just asked to recycle it right away, or if they're done and they don't look at it anymore, then clearly that wasn't that effective. And what was the point of writing the comments then?

When asked what percentage of students take advantage of retake opportunities, Yellen was momentarily speechless. Yellen shook their head and said,

It's just so … my ninth grade class, I just told them that yes, you can retake the test, here is the deadline, here are the things I need to see you do and I had zero. So, I've got kids that are failing right now because they just chose not to do anything, or they have D’s.

Steinbeck instituted a series of steps such that students were required to look at feedback, and then prove they had reflected on it before they were allowed to reassess. “Reassessment is a double-edged sword,” Steinbeck explained. “You have to make it just inconvenient enough or students won’t put in the work up front.” Steinbeck further detailed their feedback reflection strategy:

I've actually built into my course a reflection being required. I got sick of giving all of this feedback, spending countless hours doing it, and having only three kids you know look at it out of 30 and actually using it. I created worksheets for a variety of assignments, requiring students look at my comments and fill out a worksheet to indicate, “Here is where I have to improve, and here is how I can do that.”
And, finally, before reassessing, both Eliot and Steinbeck required students meet them during lunch for a face-to-face conference. Steinbeck explained, “without the meeting, I don’t know if my comments I’m writing are over their heads … I can answer those questions if we have a conference.”

As previously mentioned, Steinbeck and Eliot believed 5-10% of older students, and 20-25% of first-year students used feedback to complete reassessments. Keynes also instituted a policy requiring students to reflect on feedback. When they returned an essay exam, students were required to spend the first 5-10 minutes of class reading the feedback comments, “I want them to try to truly understand the feedback first. And then I will come back and then we can have conversation pieces for the rest of the hour on a one-on-one basis.”

Thatcher looked for evidence of effectiveness by “mostly looking to see if there's an upward trajectory and are they improving and if they are, then I generally feel pretty good about it.” If not, however, Thatcher wondered, “Then it's like, okay, what's happening? Are they not hearing my feedback? Is my feedback not effective? What's going on?” Participants tried various strategies to get students to interact with feedback and experienced varying levels of success. Only two of the teachers in the current study attempted to quantitatively measure the impact of their feedback, and even then, they felt unsure about the positive effects.

Friedman and Ostrom teach a common course at the same school and shared a professional goal. Ostrom explained,

For the last several years [we] have had the same one, which is about talking about how to improve student performance on retakes. So, we've been collecting data on students who did poorly on the test, and then how much better did they do after various interventions?
“We can actually say, here's the percentage increase we saw on the retake, but that's only because we had to provide data for our goals,” Ostrom concluded. Despite evidence of improved performance, both teachers were loath to claim they could identify feedback as the specific causative factor. Friedman explained:

We've got data to show that students are improving. My notes, for each student specifically, how did we intervene, are not terribly detailed. They're like, “Student came in on this date to go over test.” So, I can't draw a correlation between [feedback strategies such as]. “… student worked in a group,” or “… student worked one-on-one,” and [improved test scores]. All I can say is, we're providing feedback and intervening, and I can tell you how much better they've gotten.

Ostrom added:

It's also the question of, is our intervention the bigger part of it? Was it also that it was just a bad day for the kid? Or was it that having now been in the class for another week … Since a retake is also done after they've had additional instructional time, it could be that it's that gestation time. You know what I mean? To ruminate over it more before they can do it. That's all individually accomplished.

Aside from a certain amount of uncertainty over the benefits of their feedback, and varying estimates of the number of students who used it, participants explained an additional frustration and challenge to providing effective feedback resulted from a combination of frequent student absences.

Alexander explained one of the biggest challenges to providing feedback came,

When you just add into the problems that every teacher has with attendance. So, there's always those challenges of getting that feedback. And then if they're gone, when you pass
back the feedback, does it matter to them later on when they're picking it up or is it just a sheet that ends up recycled?

Abbot was frustrated that their seniors were “never here. They're always doing something. So, in order to get feedback, they have to be in class.” Abbot went on to explain that even, some of the best and the brightest students [need timely feedback]. If I don't get it to them quickly, they forget about it. In AP, I make them do test corrections. A student was gone, he just never asked about it. I think an AP student should be a little more able to look out for themselves.

Eliot found feedback was effective under certain circumstances: “You kind of figure out the kids you have a relationship with, you know that kid is going to put some effort in if I reach out to them.” When a student was really struggling or “missed so much,” however, “it’s tough, we have to do something different.” Yellen described a specific student, “Like I've got a kid right now that I'm like, I see you once every two weeks. How am I going to interact with [that student]? I’ve got to teach them totally differently just to get them through.” Despite the frustration and challenges they found providing feedback and measuring its effectiveness, almost all of the teachers in the current study shared at least one success story that kept them from giving up on the effort all together.

Teachers’ frustration might be described like a round of golf. I enjoy playing golf, but I am not good at it. Golf, in the words of novelist Harry Leon Wilson, is a “good walk spoiled.” I have spent countless hours at the practice range and on the golf course trying to improve, yet my scores never dip below an average at best round. Some days, I feel as if I have never hit a golf ball before in my life. Every swing the ball shoots off into the trees or other hazards, and my score rises like a pinball machine. Even on my worst days, however, I always seem to have one
hole where my swing becomes smooth and the ball jumps off the club. A drive down the middle, a second shot that avoids the bunkers, and a solid two-putt par. And as bad as the rest of the round was, that one hole where it all came together makes me want to come back and try again. And that, in essence, is the teachers’ experience with feedback.

Smith, for example, shared the story of the student who actually made time to meet and, “he went on to get a 3 on the exam. And to see the smile on his face.” Smith also smiled as he recounted, “I’ve had kids who’ve emailed me when they’ve gotten into college going, ‘Man, the things you taught, I’m now putting them into practice.’” Similarly, Tolkien recounted, “This is few and far between, but it has been cool to have students come back and just say, ‘I really appreciate what we're doing in your class.’ Because now in college, it's much more critical thinking, essay-driven.” Aldrin gushed when he got an essay from a student who gave effort and employed some feedback they were “so excited!”

Thatcher mentioned their struggling student who got something down on paper and began to feel maybe they fit into a challenging class. Yellen described their feedback tailored to help the student who was planning to “just go to cosmetology school,” they “learned a budget, got enough to get across the finish line.” Eliot and Steinbeck reveled in the students they connected with, students who interacted with the feedback, told them they appreciated recorded comments, and met with them for the retake conference. Alexander was enthusiastic when they connected with a student to “get them to think, not just about one right way to do it, but what other alternative things could you have included and celebrating what they did well.”

Ostrom, Friedman, and Malthus all appreciated seeing student exam scores increase because the students had implemented study skills and otherwise interacted with the formative quizzes and feedback they designed. Hayek yearned to connect with current students the way
they did in a previous school when they had smaller numbers and felt they could really interact. Hayek expressed their concern about the future of education, and wondered,

What are effective ways in dealing with feedback for volume? I mean it just … feels overwhelming. When you're looking at the volume and the range of kids … the range of challenges, how do you provide feedback? I would love to have the answer and have someone to answer it.

**Summary**

Participants identified four main purposes of providing feedback: 1) communicating information about progress and achievement, 2) building relationships to encourage effort and instill confidence, 3) determining students’ developmental level, thought processes, and 4) learning gaps, and encouraging students to advance cognitively and develop improved academic skills. A number of variables limited their ability to offer feedback in the conversational, face-to-face manner they deemed most effective. These variables included time limitations, curriculum obligations, large numbers of students in each class, and the need to differentiate feedback according to individual student needs and motivation. Teachers questioned the effectiveness of their feedback to improve student learning.

Most participants described having mixed results providing feedback, yet they continued to employ feedback in many of the same ways. Still, the occasions when students used feedback successfully to improve generated commensurate feelings of success and positive emotions for teachers. In addition, teachers had a desire to connect with students on a human level, and a sense of a professional obligation to help students learn. Finally, teachers described how they felt a responsibility to explain and justify assigning a student a grade or score. These factors prevented teachers from abandoning feedback altogether.
In the next chapter, I analyze and interpret the major themes described in this chapter using analytic theories. The analysis reveals the importance of feedback as well as the underlying dilemmas facing teachers as they attempt to deliver feedback in an effective manner to promote student learning. Teachers must both establish foundational conditions which enable feedback reception by students and deliver appropriate feedback which accurately targets students’ learning gaps.
CHAPTER 5: THE DOUBLE-EDGED SWORD: EDUCATIONAL THEORY AND PSYCHOLOGY

I investigated the way teachers use and explain feedback to improve student learning. A second purpose of my study was to discover the factors which influenced teachers’ decisions about how and when to provide feedback. In this chapter, I make sense of the data by analyzing the emergent themes using two analytic theories. The theories are drawn from psychology, but both are widely referenced in relation to student learning and motivation in education.

I selected Vygotsky’s (1978) theory of the Development of Higher Psychological Processes (DHPP), and Deci and Ryan’s (1985) Self Determination Theory (SDT) to analyze the themes emerging from my data collection. Both theories address how individuals take in information from their surroundings and process and use this information to form judgments about their current reality and their future goals. Individuals make decisions based on the current state of their intellectual and emotional development with the ever-present opportunity to learn and change. This process involves both students and teachers.

While Vygotsky’s (1978) theory of the DHPP addressed the psychological stages of development, educators translated Vygotsky’s theory to educational settings (Clara, 2017). The theory allowed educators to gain insights regarding the conceptual development and learning readiness of students in formal and informal settings as well as the conditions favoring student learning and achievement. For example, Vygotsky argued students must be able to complete a challenging task with the help of the more knowledgeable “other” (1978). This psychological theory has important educational applications.

Deci and Ryan’s (1985) SDT offered yet another view of the psychological make-up and development of people, teachers and students included. A teacher providing feedback is a source
of information regarding a student’s level of development, as well as a resource for meeting the common psychological needs shared by all humans. Self-determination theory is also useful for analyzing teachers’ emotions regarding the challenge of providing effective feedback for learning. All humans, according to SDT, must have three basic needs for relatedness, competence, and autonomy met. If these needs are met, people are capable of intrinsic motivation and enjoying challenging learning or other professional activities. Both of these theories relate directly to the process of teaching and learning through feedback.

It turns out both psychological theories need to be understood by educators during the process of providing feedback. Psychological theory—-theories having to do with the thoughts, behaviors, and development of people—serves often as an equal or supporting player in educational practice. As Ryan and Deci (2020) pointed out, schools are societal institutions which significantly impact students’ mental health and sense of self. And, Vygotsky (1978) argued, psychological development is impossible without learning.

Vygotsky (1978) criticized theories offered by Piaget and others which claimed a child passes through an inevitable maturation process to arrive at a stage of mental development which made learning possible. Instead, Vygotsky argued learning was a necessary precondition to the advanced mental development which makes sophisticated psychological function possible. In addition to advanced cognitive functions, psychological theory addresses the emotional experiences of people and their states of motivation to pursue complex tasks.

Education is more than a robotic processing and regurgitation of information. Education requires human interaction, and any human interaction provides opportunities to meet needs, expand thinking, or, sadly, reinforce negative emotions and self-perceptions. My study revealed both the information processing aspect of feedback, as well as the human, emotional aspect of
feedback. As a result, I apply psychological theories with educational implications to interpret my data. I begin the analysis by using Vygotsky’s (1978) Theory of the DHPP.

Vygotsky’s Theory of DHPP: Setting the Stage for Effective Learning

Vygotsky emphasized studying the mind not for what it can do, but for how it changes to demonstrate higher mental processes which spring from social activity (Hausfather, 1996). According to Vygotsky (1978), a student is capable of demonstrating a higher level of performance with guidance from a more knowledgeable other than if they are working independently. Feedback is information provided to a learner about task performance (Kluger & DeNisi, 1996). Table 3 summarizes the alignment between the first major theme and sub themes emerging from my data and Vygotsky’s (1978) theory. Sometimes the teacher as the more knowledgeable other provided feedback which moved the student through the zone of proximal development (ZPD; Vygotsky, 1978) and resulted in improved student learning and development. At other times, however, teachers were unable to achieve the desired result of feedback due to various roadblocks beyond their control. I begin by discussing teachers’ self-described purpose of feedback as a means to communicate information to students about their progress and level of achievement.
## Table 3

**Alignment of Themes with the Theory of The Development of Higher Psychological Processes**

<table>
<thead>
<tr>
<th>Theme</th>
<th>Sub-Themes or Categories</th>
<th>Alignment to Theory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Definition and Purposes of Feedback</td>
<td>Communicate information about progress and achievement</td>
<td>Teachers must accurately diagnose students’ developmental level with guidance in the ZPD</td>
</tr>
<tr>
<td></td>
<td>Build relationships to discover student needs, instill confidence and encourage effort</td>
<td>Teachers must connect with students to establish trust and facilitate receptiveness to feedback</td>
</tr>
<tr>
<td></td>
<td>Determine developmental level and learning gaps</td>
<td>Probe thinking to determine gaps remaining between the current ZPD and an advanced developmental level</td>
</tr>
<tr>
<td></td>
<td>Encourage students to develop improved skills</td>
<td>Feedback moves students through the ZPD to a higher level of development and the internalization of more sophisticated mental processes</td>
</tr>
</tbody>
</table>

### Communicate Information About Progress and Achievement

Students begin the school year at some level of actual development resulting from previously completed learning and development cycles (Vygotsky, 1978). Vygotsky (1978) argued tests and other measures of learning explain what he called a child’s mental age. In other
words, tests are useful for measuring what a student can currently do and currently knows. These assessments, however, fail to accurately capture the true level of development because they cannot measure what a student can do with the assistance of others (Vygotsky, 1978).

The difference between a child’s actual development level and their potential for problem solving with adult guidance or peer collaboration is the zone of proximal development (ZPD; Vygotsky, 1978). The ZPD defines mental functions which have not yet matured and require guidance from a more knowledgeable other to emerge. Hattie and Timperley (2007) explained how feedback is part of the learning process because it provides information about students’ task performance, and may come from teachers, parents, peers, or students themselves. Feedback thus helps to identify the range of student ability in terms of the ZPD.

Two children in the same grade or at the same mental age at the beginning of a class or school year may likely be in different zones of proximal development (Vygotsky, 1978). Vygotsky (1978) challenged educators to carefully identify the specific ZPD and provide interactions with teachers or peers which facilitated development of more sophisticated mental abilities. Participants described feedback as communication geared to move students to a higher level of learning and achievement.

Friedman, for example, who primarily taught Advanced Placement (AP) students, saw feedback as information which would not only explain current performance, but more importantly modify student thinking about their learning. Friedman defined feedback as, “Any information I provide to them which may guide them in the future, change their approach to learning, or change their understanding of work they’ve already done.” Keynes also taught AP students, and focused feedback on advancing students’ learning level. Keynes explained the
The purpose of feedback was to “communicate ways for the students to improve upon what they did … so students can improve upon their knowledge, their skill.”

Thatcher, a teacher who taught a mixture of higher level and regular students, similarly targeted feedback to help students see avenues for learning growth they could not see on their own. Thatcher defined feedback as, “providing critical responses to student work so they know how to improve their work.” Alexander strove to deliver feedback while students were in the process of learning to facilitate immediate change and improved learning skills. Alexander explained feedback included “changes they can make … something they can apply immediately [to improve their work].”

The application of feedback by students which allowed them to demonstrate immediate improvement illustrated Vygotsky’s (1978) concept of the ZPD. Clearly, classroom teachers are in the position of the more knowledgeable other with the potential to facilitate student improvement. Teachers viewed feedback as information which students could use to achieve a higher level of learning than they demonstrated when working alone. In this sense, the teacher-student interaction exemplified Vygotsky’s theory. This simplified one-way delivery of information, however, is not enough to facilitate the deep reflection necessary to achieve a higher level of mental processing. I next discuss how teachers sought to establish relationships with students to deliver feedback with more precision, and to ensure students were receptive to feedback messages.

**Build Relationships to Discover Student Needs, Instill Confidence, and Encourage Effort**

Scholars have debated the meaning of the zone of proximal development and how to use education to best meet the learning needs of the child. One interpretation of Vygotsky argued the goal of instruction is to assess a child’s mental abilities so as to reveal the ZPD (Clarà, 2017).
From this perspective, educators must carefully tailor assistance in a meaningful way to facilitate student understanding of the instruction provided. Development requires “joint construction of knowledge where … each party assumes some understanding of the other,” (Hausfather, 1996, Zone of Proximal Development section, para. 3). Feedback must thus match students learning needs and ability to process the information.

Feedback which is overly complex is ineffective in promoting learning (Nicole & MacFarlane-Dick, 2006; Shute, 2008). Sadler (1989) argued students must be capable of making objective judgments of their performance against a learning standard. It is imperative that teachers and students collaborate in an interdependent interaction as partners in the learning process (Hausfather, 1996). The participants in my study described the importance of getting to know their students as learners to be able to diagnose their learning needs and effectively work with them to prompt further achievement.

Participants built relationships with students to create a connection and a trusting working relationship. Teachers had to know students well enough to accurately diagnose their learning level, and to provide targeted feedback which would allow students to move through the ZPD. Building relationships in this regard was an intentional strategy necessary for providing effective feedback. Feedback must be targeted to the individual student in relation to task performance as opposed to comparison with peers which calls attention to the self and renders feedback at best ineffective, and at worst a negative influence on student learning (Bangert-Drowns et al., 1991; Black & William, 1998; Hattie & Timperley, 2007; Kluger & DeNisi, 1996; Shute, 2008). Student receptivity to feedback is thus dependent upon how well teachers know their students’ needs, and whether a relationship exists which encourages students to attend to feedback.
Thatcher, for example, rated connecting with students as an essential component of effective teaching and feedback. Thatcher stated, “the relationship piece is so critical” when planning a course or working with students. Thatcher went on to explain why they needed time to make strong connections. “Knowing [the student] as a writer, knowing what is going on in their lives, knowing that takes a long time.” Understanding student needs and working to connect forms the foundation of the collaborative interaction necessary for improved learning and progress in the ZPD (Hausfather, 1996).

Keynes emphasized their effort to establish a relationship specifically to facilitate effective feedback. “In the end I do think it comes down to have you developed that relationship with a kid and figured out what type of feedback is important to them?” Steinbeck valued assessment feedback as a means to reinforce basic steps toward mastery of learning tasks. Steinbeck understood feedback would not be useful without establishing a connection to students. Steinbeck explained they sought to “build a relationship, build trust … so students would be more willing to accept and use formal feedback.”

Friedman similarly valued getting to know students personally to pave the way for feedback effectiveness. Friedman stated, “If I don't know one [student] from another well enough … [I may not realize] some students will need more encouragement, more positive words. But in reality, I don't want to try to guess who those are.” Abbot, an experienced teacher who understood the power of connection with students, bemoaned both the large number of student absences and a short course calendar. Advanced students, Abbot explained, have a “million things going, they are gone so [much of the time].” And in terms of the short class calendar, Abbot, shoulders slumping, shared “I can easily have a student in my class all term and not speak to them once.”
Teachers desired strong connections with students, but schools are institutions with many built-in norms and structures which inhibit the development of collaborative teacher-student relationships (Hausfather, 1996). For feedback to truly connect with students in the ZPD, it must be viewed as, “an intensely relational process, one requiring mutual understanding and negotiation of goals and practices,” (Smagorinsky, 2018, p. 74.). Otherwise, Smagorinsky (2018) argued, teacher and learner may view each other with suspicion and conflict.

Without a relationship based on mutual understanding and trust, students may be skeptical of teachers’ feedback and unwilling to use feedback to improve their learning (Yeager et al., 2014). If teachers were able to connect with students and establish a rapport, the collaborative interaction could potentially result in advanced student learning. Without a strong connection, however, there lies the danger teachers may not have a strong grasp of specific student needs and abilities in the ZPD. Vygotsky (1978) specifically cautioned against assuming students in the same grade had the same learning needs. I next discuss teachers’ efforts to diagnose and target remaining learning gaps between students’ current mental abilities and the next more advanced level of achievement.

**Determining Students’ Developmental Level, Thought Processes, and Learning Gaps**

Building relationships with students establishes a solid foundation for feedback and gives the teacher a chance to get to know their students’ learning needs. For feedback to be effective in moving the student through the ZPD, it is imperative that teachers correctly diagnose students’ true development level. Feedback instruction “must reflect the learner’s current understanding and activity in the ZPD, and … teachers are keenly aware that one cannot make assumptions about these understandings and activity” (Palinscar, 1998, p. 370).
Vygotsky (1978) noted properly organized learning leads to mental development and the emergence of more advanced mental processes. Learning activates a variety of mental functions which operate only with guidance from others. Feedback is inseparable from guidance and formative practice because such guidance is not formative if it does not close a gap or advance learners in the ZPD (Black & William, 1998; Sadler, 1989).

Teachers described feedback as communication to students about how to improve their work. This concrete, specific task-oriented use of feedback represented Vygotsky (1978) in that students were able to demonstrate improved performance with guidance from the teacher. Participants also described feedback as a means to discover ongoing learning gaps. By probing learning gaps, the teachers could accomplish two goals: first, teachers might identify remaining learning gaps which, from a Vygotskian perspective, kept students from fully advancing through the ZPD. Second, teachers may identify and close learning gaps which move the student to a true higher level of processing which transcended a specific learning task.

Mental functions, for Vygotsky, incorporated how children learn complex cultural constructs as opposed to learning how to solve specific problems for individual performance (Smagorinsky, 2018). Clarà (2017) described one view of teaching with the ZPD in mind held by scholars is to create interactions which reveal the maturing learning functions in the ZPD so instruction can focus on bolstering those functions. Participants explained how they utilized feedback as a strategy to identify thought processes and learning gaps.

Tolkien is a teacher who clearly spends a lot of time thinking about larger issues of educational philosophy. Tolkien reflected on the purpose of feedback in the context of overall human development beyond a specific learning task or grade. Tolkien stated it was essential to “think about how [students] think, how they learn, how they process. I feel like feedback should
be doing that because that's going to have a sustaining effect versus a [specific assessment grade].” Keynes, similarly, sought to identify the learning gaps unique to each student.

Vygotsky (1978) explained how students in the same class might be at different mental ages which necessitated unique interactions to move them through the ZPD. Keynes probed individual student thinking to identify their specific needs. Keynes shared, “I like to ask them questions to try to figure out where [the learning] deficit is and then just go into that specific deficit. It allows me to personalize the feedback based on where [students] are.” Yellen is an experienced teacher who similarly sought to identify student learning needs with questions. Yellen explained the most important use of feedback was to discover “how [students] think. I like to ask them questions … I have to figure out how they think.”

Teachers used feedback to diagnose student learning gaps and thinking patterns. Identifying such gaps allowed participants to target feedback to fill students’ specific learning gaps. If students learn more advanced learning and mental processes as a result, they will progress through the ZPD to a higher level of mental processing. Teachers described how they used feedback to diagnose student learning gaps and thinking patterns. Vygotsky’s (1978) theory of DHPP indicated students’ unique needs in the ZPD must be met in order to facilitate development. The feedback process may resemble a series of building blocks, with teachers reviewing student work, attempting to establish a trusting relationship, and diagnosing students’ remaining gaps between their current level of achievement and the next higher level of development. If the progression works seamlessly, feedback provided by teachers will fill those gaps and result in students demonstrating advanced development and higher mental processes. I next describe how teachers explained helping students internalize advanced learning processes
was the ultimate goal of feedback. Such a transformation would represent students moving completely through the ZPD.

**Encouraging Students to Advance Cognitively and Develop Improved Academic Skills**

One interpretation of Vygotsky’s theory of the ZPD and the role of education is that educators should focus on diagnosing the student’s true level of learning with assistance from an adult. The second view emphasizes moving the child from depending on such assistance, to being able to independently complete the advanced learning tasks (Clarà, 2017). Instruction according to these scholars must focus on adult and child interactions which create and move the child through the ZPD to a more mature mental level. The notion of instructional scaffolding comes from this perspective, and the goal of scaffolding is to encourage students to become capable of self-regulation.

Feedback scaffolding in this regard is more than preparing a student to independently complete a discreet task. Instead, true Vygotskian scaffolding through the ZPD leads to a profound and lasting impact on students’ long-term human development (Smagorinsky, 2018). Good feedback promotes self-regulation, and the most effective learners are self-regulated learners (Butler & Winne, 1995). Self-regulated learners are capable of setting goals, evaluating strategies, changing course when presented with obstacles, and monitoring progress toward goal completion (Butler & Winne, 1995).

Sophisticated mental development is characterized by the internalization of processes the individual could only previously do with guidance (Hausfather, 1996). If effective, instruction and feedback results in a transition to a new stage of development in which the student generalizes newly developed skills and abilities to more than one context (Clarà, 2017). The
child or student is able to internalize the advanced processes and transform the knowledgeable other’s language into their own inner speech (Hausfather, 1996).

Oakes et al., (2018) found dedicated feedback practices proved especially beneficial for students who struggle academically and behaviorally in school because feedback helps students to become self-regulated learners. The goal of feedback is to help students to internalize standards to monitor or self-assess their progress (Gibbs & Simpson, 2005; Nicole & MacFarlane-Dick, 2006). Feedback is an essential component of self-regulated learning (SRL), and students who become self-regulated use internal feedback to assess progress (Butler & Winne, 1995). External feedback enhances the learning progress and facilitates a transition to SRL. Nicol and Macfarlane-Dick (2006) defined good feedback practice as “anything that might strengthen the students’ capacity to self-regulate their own performance” (p. 205).

Participants hoped students would use feedback to develop advanced internal learning processes. Tolkien envisioned feedback as a conversation that began with the teacher leading the dialogue and gradually relinquishing control as students took charge of their own thinking and learning. Ultimately, Tolkien wished students would have the capacity to carry their own internal discussion consistent with a higher learning level. Tolkien shared their vision:

For me [feedback] is first and foremost a conversation [that] hopefully sparks the ability for [students] to take over that conversation. It’s equipping them with the tools for pushing their own self-reflection … to spur them to ask those next questions so that they’re able to self-score, self-reflect. I feel like the purpose of feedback is to equip students with the ability to take the ownership because they're going to eventually not have you there.
As with the majority of participants, Parks experienced feedback successes and failures. Parks’ reflections on the feedback process continually returned to the central question about how to facilitate student self-regulation. Parks, like Tolkien, referenced students taking ownership of the learning conversation. Parks believed “students should be …. the experts in the learning and, as much as possible, facilitate that conversation.” Parks continually wondered, “How do we put [students] in the seats as being the experts?”

Alexander sought to use feedback to spur students to new thought processes about learning. Alexander is approaching that point of the teaching career where comfort with content and classroom management enables a teacher to consider larger philosophical issues about the meaning of learning. Alexander described how “feedback for me has changed, to try to involve more creativity … to get them to think, not just about one right way to do it, but what other alternatives [there were].” Thatcher likewise worked to provide feedback which elevated students to a new, higher level of development. Thatcher emphasized opportunities for advanced thinking. Thatcher described their feedback as “very growth focused, not just here’s where you are, but here’s how you get to the next level.”

Participants’ thinking about the meaning and purposes of feedback aligned with Vygotsky’s (1978) theory of the DHPP in several important ways. Vygotsky described how students were capable of demonstrating advanced development with adult guidance (Fani and Ghaemi, 2011). Teachers, what Vygotsky (1978) called more knowledgeable others, are charged with facilitating student mastery of learning tasks to enable students to progress to through a class to the next grade or school level. Students in the same grade may be at different mental ages which require different levels of feedback to connect with their abilities in the ZPD (Vygotsky, 1978).
Participants in my study viewed feedback as the communication of information about how students were performing against a grade-based learning standard, as well as information about how the students could improve their performance. Teachers sought to form relationships with students so as to make the feedback message more personal and acceptable. Teachers also attempted to use feedback to more specifically identify remaining learning gaps to target feedback in a way that would allow students to advance to a higher level of development. Ultimately, teachers hoped students could become the experts in their own learning, people who had internalized higher learning processes they could call on independently without direct collaboration (Hausfather, 1996).

While teachers providing feedback and facilitating the kind of learning growth Vygotsky (1978) associated with development seems to be a straightforward process, participants described factors which forced them to make decisions and tradeoffs about how to provide feedback. Teachers were not always able to use the method they preferred, and the results of their feedback were sometimes ineffective in moving students through the ZPD. I next describe the costs and benefits participants associated with constructing and delivering feedback, and the resulting logistical choices teachers were forced to make which prevented the kind of close collaboration necessary to facilitate development of higher mental processes.

Costs and Benefits Associated with Constructing and Delivering Feedback, and Attendant Emotions

Interactions between teachers and students geared to promote development of higher mental processes require a deep connection and mutual understanding of the goals at hand. It must be a collaborative process in which learners are engaged in the conversation in a way they can make meaning their own (Hausfather, 1996). Complete development of the ZPD requires full
social interaction (Fani & Ghaemi, 2011). The scaffolding metaphor is insufficient to capture the true depth of the learning process, which, “must be viewed as an intensely relational process… requiring mutual understanding and negotiation of goals and practices” (Smagorinsky, 2018, p. 74).

New mental processes are activated through learning only when a student engages in interaction with others (Vygotsky, 1978). Figure 5 illustrates the various factors which impose limits on teachers’ time and energy, and the resulting tradeoffs teachers are forced into as they make decisions about how to use feedback. The limitations encountered reduced the ability of teachers to utilize what they perceived as the most in-depth and effective type of feedback, and what is also the most valuable feedback according to Vygotskian theory: in-depth one-on-one conversations with students. As a result, teachers acknowledge mixed success and resulting frustration with the feedback process. I next describe the major limiting factors which force teachers into tradeoffs: time limitations and the large numbers of students they serve.
**Figure 5**

*Inverted Feedback Pyramid*

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**Time Limitations, Large Number of Students, and Forced Tradeoffs**

Time limitations and large class sizes affected teachers’ ability to deliver feedback to students. Teachers rated holding individualized feedback conversations with students as the highest value feedback activity but lamented their lack of ability to find a time or place to have those conversations. Whether because of content standards, assessment requirements, or the sheer number of students in the room, teachers struggled to make time for the conversations they wanted to hold. “Classroom practice is amazingly resistant to change … and the actual structure of schooling seems to work against change” (Hausfather, 1996, Implications for teacher education section, para 4). Teachers were stymied in their efforts to hold the in-depth, co-created conversations which are the key to student development.
Earhart is a young teacher who prioritized relationships with students as the foundation of their teaching. Earhart had the benefit of beginning their teaching career at a school with a limited enrollment and lower class sizes. Reflecting on the difference between that school and their current teaching situation, Earhart zeroed in on the problem of larger class sizes in regard to feedback. Earhart stated, “Some people have a harder time with class size because of behaviors or whatever. That's not an issue to me … I want to be able to have that one on one with everybody.”

Smith, a long-time AP teacher, reflected on class size as well but could not foresee sacrificing class time devoted to content standards in favor of providing more in-depth individualized feedback. Smith explained how, even with a smaller number of students, the obligation of covering the AP curriculum required maximizing available class time for content.

We’ve got our curriculum we’ve got to get through. Many years ago … [I only had] 22 or 23 students … but my class time was still the same. The year is still the same length. So [in terms of using class time for individual feedback], even if I wanted to, I couldn’t do it.

Eliot valued the specificity of the content standards adopted by their school but struggled with the paradox of finding time to provide adequate feedback on more standards to a large number of students. Eliot explained large class size is problematic because with standards-based grading, “you want to give very specific feedback to the criteria, [and new standards] probably doubled our work output. [Getting feedback to students in] a timely manner … is very difficult to do.”

And Hayek, a teacher who struggled to balance feedback requirements with available time, stated their discipline required them to teach “a trillion standards.” Hayek wondered with “160 kids” and “classes of 30-36 … how am I supposed to stay on top of it?”
Limited class time, school or department content standard requirements, and large numbers of students forced teachers to forego the in-depth one-on-one feedback conversations they desired to have with students. Such targeted and individualized conversations are integral to developing higher mental processes students are capable of demonstrating in the ZPD (Clarà, 2017; Hausfather, 1996; Smagorinsky, 2017). Due to the limitations they faced, teachers were forced to prioritize their scarce class time according to which students they believed were most likely to use feedback to improve their learning.

**Differentiating Feedback According to Perceived Student Motivation**

Teachers faced a double-edged sword of feedback challenges. True development according to Vygotsky’s theory required significant mutually negotiated interactions which resulted in intersubjectivity, or common understanding of the learning tasks and objectives (van de Pol et al., 2010). On one hand, participants felt a professional obligation to provide feedback to all students even if such interactions did not take place. As a result, teachers had a limited belief all students would use and benefit from the feedback. On the other hand, teachers felt confident they could have successful feedback interactions with students who were already motivated to receive feedback. As a result, the feedback process could become a self-fulfilling prophecy of benefit for those the teacher already expected would benefit. “Without intersubjectivity, teaching and learning can produce deficit conceptions of the student as easily as it can promote new understanding” (Smagorinsky, 2018, p. 73).

Havnes et al. (2012) found teachers offered more detailed feedback to students perceived as motivated and engaged in the material. Researchers found teachers expressed doubts regarding the efficacy of feedback provided to academically weak students as opposed to confidence in the benefits of feedback to motivated and advantaged students (Havnes et al.
In their study of Norwegian schoolteachers, Engelsen and Smith (2010) found stronger students were given almost twice as many interactions as low achieving students. My participants explained how the roadblocks they faced forced them to make choices about which students to provide more detailed feedback for learning.

Teachers narrowed the range of students who received detailed feedback in order to better serve students they perceived to be either the most motivated, or most concerned with improving a specific assessment grade. Ironically, one of the dangers of focusing on a specific concrete task with feedback, from a Vygotskian perspective, is sacrificing larger mental development for accomplishing a discrete objective like a grade. Focusing on the ZPD requires intense, mutually crafted, and negotiated understanding of long-term development goals (Palinscar, 1998). Scaffolding should be viewed as steps toward development of sophisticated competencies rather than instruction about how to complete a task successfully (Smagorinsky, 2018). Participants, however, faced with the realities of managing their classrooms, had to selectively deliver intense feedback to meet perceived student needs for achievement.

Eliot, for example, described the practical tradeoffs involved in delivering feedback to a large number of students. Eliot evaluated both perceived student achievement motivation, and extrinsic grade motivation. First, students in advanced classes were given more feedback. Eliot explained, “You [have to] give feedback to all [students], but the kids you know are more motivated definitely get more.” And in terms of grade motivation, Eliot admitted, in a perfect world, all kids would value the feedback and put it to use, but in reality to save time you can [ignore] the top 7-8 kids who really don’t need it [for a better grade], who are [already] at the high level of the standards, and focus on the kids you know are motivated and will do everything they can to raise their score.
Earhart, on the other hand, differentiated feedback more in line with a Vygotskian approach of differentiating students’ individual needs in the ZPD. Students in the same class could be at the same mental age, but differing development levels based on what they could do with assistance (Vygotsky, 1978). Earhart explained how their feedback to the advanced students in their classes was geared to derive learning development by “[pushing] them further … [avoiding] the easy route [of task completion].” For other students, feedback focused on the basics. Earhart asked, “Do you understand essay structure? Do you know how to use evidence to support an argument?”

Tolkien struggled with the demands of providing in-depth feedback for all students. Students who had opted to pursue the highest level of challenge, according to Tolkien “definitely appreciated … that we spend more time than we probably should giving them feedback.” But Tolkien continually pondered how to serve all students equally well. Advanced students, Tolkien noted, “see the value [of feedback] immediately, but [the question is] how do we create [that value] for the students who don’t?” Yellen’s feedback strategy personified the tradeoffs teachers made in terms of breaking feedback needs into their most basic, utilitarian function.

Yellen provided feedback to students differently based on their academic year. For seniors who needed to graduate, for example, Yellen focused primarily on the specific assessments they needed to pass the class and matriculate. Yellen described making time to talk with each student during class specifically to check work completion and understanding in preparation for an assessment.

Every single kid has to [talk to me] … because then they know they can pass the test if we have this conversation. If I don’t do that, then I know they’re not going to pass the test. [I focus on what they] have to know.
For these students, Yellen sacrificed the vision of the ZPD as a measure of cognitive growth potential (Fani & Ghaemi, 2011) in favor of the pressing need to ensure they passed the class and graduated.

For younger students just beginning high school, however, Yellen put greater emphasis on facilitating the kind of intellectual development that is more representative of advancement in the ZPD. Yellen explained for first-year students, feedback was, “completely different … I love the [first-year students] because that's why you wanted to be a teacher. They have no choice. They need feedback to be ready for all their classes.” Feedback Yellen provided for the younger students thus focused on skills that applied to all learning situations as opposed to mastering any one specific or required task.

Teachers described the challenges they faced to provide meaningful feedback for all students that attacked the students’ ZPD to promote advanced mental development. Teachers were forced to make choices regarding which students to focus their feedback efforts, and which students needed only basic feedback to accomplish a specific, required learning task. In some cases, teachers sacrificed feedback altogether based on class time or student absences. Teachers face a conundrum when it comes to feedback. They know it is important and they want to make their feedback meaningful for all students. Practical considerations, however, continually force them to make decisions leading to less satisfying feedback interactions. I next describe another tradeoff the teachers made in terms of the logistics of feedback delivery. Teachers relied more heavily on written comments than the in-depth conversation they most valued.

**Logistics and Processes of Feedback Delivery**

Participants made it extremely clear having individual conversations with students was their preferred method of feedback delivery. Every teacher in my study expressed a strong desire
to hold one-on-one meetings with students. The limitations I previously described, available
class and calendar time, content obligations, and number of students, made holding those
conversations with each student a practical impossibility. The importance of quality feedback for
learning cannot be divorced from the practical logistics of providing it (Sadler, 2010). To cope
with this challenge, teachers chose to provide informal written feedback comments on ongoing
student work. They also combined rubrics and written comments to communicate feedback on
formal assessments. This less personal written feedback may not comprise the type of
meaningful interaction which could move students through the ZPD. To address this challenge,
participants leveraged technology to attempt to provide important feedback as more
knowledgeable others while students were still in the process of completing work.

Written comments to guide students to task completion, or even improved performance
on a specific task, may be viewed as the type of scaffolding pedagogy often associated with
Scaffolding is a
temporary support provided for the completion of a task that learners otherwise might not
be able to complete. This support can be provided in a variety of manners that for
example includes modeling and the posing of questions for different subjects at different
ages. (van de Pol et al., 2010, p. 272)
To be effective, scaffolding must match students’ current level of development in the ZPD
(Palinscar, 1998). Scholars have cautioned that true development through the ZPD requires
intense, interpersonal, mutually understood, and negotiated meaning resulting from discussion
(Hausfather, 1996; Smagorinsky, 2018; van de pol et al., 2010). Out of necessity, however,
participants more frequently relied on quick and specific task-oriented comments.
Earhart constantly sought to connect with students and check up on students who were in process. Earhart leveraged technology to provide feedback comments as students worked. Earhart explained that using shared electronic documents made it “really easy to give them feedback, just typing it right in. You can do that throughout the process of writing instead of waiting till the end.” Eliot and Steinbeck similarly appreciated the convenience of technology and its ability to reach more students faster. Eliot called the process a “one-sided conversation where you give comments or suggestions on a piece of writing.” Steinbeck also reinforced concrete steps for improvement via the “quick feedback [using technology] that also gives [the teacher] the opportunity to check and see if students have viewed the comments.” Aldrin, too, used the electronic documents to “pop in and make comments all throughout the process. I [can constantly] provide feedback.”

The teacher to student written feedback exemplified the one-sided nature of the exchange referenced by Eliot. Out of necessity, teachers provided quick comments to try to catch students before the task was complete in order for students to successfully master the specific standard in question. This short-termed nature of feedback today so the student is successful tomorrow reduces the broad potential of true mental development in the ZPD to a more limited and mundane scope than Vygotsky envisioned (Smagorinsky, 2018). Once an assessment was completed, teachers attempted to offer specific written feedback along with a grade in order to explain to students how they could improve their future performance.

Tests or assessments measure students’ current or actual development level (Vygotsky, 1978). A rubric is a shorthand way for teachers to let students know where they scored on an assessment relative to an exemplary standard of mastery. Teachers compose feedback with the assumption students convert feedback into actions to improve learning. However, learning
improvements due to feedback are impossible if students do not process or understand feedback appropriately (Sadler, 2010). Feedback must help students understand the learning goal, instead of a list of criteria to be ticked off with a rubric. The exclusive use of rubrics impedes a holistic quality feedback effort (Nicole & MacFarlane-Dick, 2006), but the practical necessity of trying to meet the needs of a large number of students with a limited amount of time forced teachers to rely on rubrics and written feedback comments.

Abbot tried to deal with scarce time and meet student needs by communicating meaningful information with a rubric. Abbot described how “the feedback’s already on [the rubric]. I can [provide feedback] faster.” Similarly, Alexander relied on rubrics to save time. Alexander explained,

I use a lot of rubrics that allow me to grade quickly, while at the same time giving them specifics and letting them see where they land in achievement … it’s quick to give feedback, without having to rewrite the same things.

The written comments explain to students how they scored but may not provide the rich mutual understanding necessary for learning progression.

Intellectual growth and development are contingent on a student receiving assistance from a more knowledgeable other in the ZPD, allowing demonstration of abilities the student could not achieve alone (Vygotsky, 1978). A measure of performance as indicated on a rubric may communicate a current standard of performance but may not indicate guidance students could use to improve. Teachers tried to deal with this issue by providing additional written comments which students could draw on to learn how to improve. Ironically, the time saving measure of rubrics, combined with comments, wound up taking teachers even more time to
deliver. Teachers devoted this time even though they were not all certain students would make use of the comments to improve their learning.

Thatcher doggedly provided comments to accompany the rubric standards. Thatcher graded papers at night, at their family sports events, even during personal days away from the classroom. The intent of the comments was to spark improved achievement and learning in students. Thatcher explained the purpose of combining a rubric and comments.

I’m making comments [with the rubric] and every time I’m commenting on where is the disconnect between where you are in the rubric and the next highest level of the rubric … trying to identify [what is missing] for the student. I think that I make it very personal and specific.

Other participants similarly tried to provide written, personalized guiding feedback which would move students to a higher level of development.

Friedman used comments to supplement the rubric and explain how to improve. “There are rubrics … and [students are given] written responses … to say, ‘To get a perfect score, this is what you might have done differently.’” Likewise, Ostrom sought to explain remaining learning gaps with comments. Ostrom stated, “I will very specifically have a rubric where I'll say, ‘Here's what you did, here's what you did not do,’ as a way to give feedback that's much more specialized and more precise.” Eliot, Steinbeck, and Tolkien teach in the same department, and utilized a technology app to provide verbal comments to accompany a rubric. Regardless of the format, teachers were less than sure students would use additional comments to exhibit advanced development.

Smith, the experienced AP instructor, acknowledged the conundrum of feedback comments. Smith described one standard feedback practice as “writing the comments on tests,
[but] the one thing that is a bit frustrating, I don’t know how much kids really read those.” Thatcher, who so diligently worked to provide meaningful feedback, found “I honestly get a lot of people where I see [the assessment and feedback] in the recycle bin right away.” All of the participants provided some type of written feedback and all of the participants commented on the fact that many students did not use it to improve.

Eliot wearily summed up the frustration and challenge of providing feedback for large numbers of students. In practical terms, Eliot stated feedback, takes a tremendous amount of time and effort. It wears on you to spend so much time and only have a couple of kids look at it. It’s very frustrating when you give a kid a paper back … and you spent an hour giving them feedback and they’re just happy with the grade that they got.

Similarly, Ostrom, a highly dedicated teacher who enjoyed creating lesson plans and new online formative assessments, found feedback to be a “burden … the least favorite part of my job.” Earhart, who enthusiastically reached out to all students with online in-progress interaction, retained hope students would use feedback once the task was completed to continue to improve. Earhart, found, however, if student numbers and time constraints delayed feedback, “sometimes kids forget what you're even giving them feedback about… they're onto the next thing, they're not even thinking back.” Earhart hoped all students would use feedback to try to improve but learned through experience “it's not always easy to get them to do that. Some kids are like, well, a C's a C, great.”

Researchers found feedback comments should be provided without a grade because students are more likely to focus on improving learning strategies not the grade (Black et al., 2004). A grade or score does not represent feedback because it is a one-way designation of
performance and cannot be used to close a learning gap (Sadler, 1989). Further, grades call attention to the self and are not useful in promoting further learning (Gibbs & Simpson, 2005).

From a Vygotskian perspective, the requirements of assessment and evaluation limit the true learning potential via interaction between teacher and student in the ZPD (Vygotsky, 1978). The ZPD is less frequently activated due to the restrictive nature of schooling and the imposed limitations on teachers’ time and energy. It is more typical to observe feedback and interactions not related to the ZPD due to limited collaborative interaction between teacher and student (Hausfather, 1996). It must be a mutual decision for the ZPD to be activated and effective. The teacher must support learning, and the student must be willing to learn (Hausfather, 1996).

Participants hoped their comments would entice students to use feedback to improve scores, but frequently observed students accepted their mark and moved on.

The clash of competing demands on teachers’ time due to large numbers of students, content standards obligations, and the relentlessly advancing school calendar prevented participants from fully engaging in the type of deep interaction Vygotsky (1978) claimed was necessary for the DHPP. Practically speaking, teachers believed they had an obligation to provide written feedback comments to students to explain a grade or mark on a rubric, and to provide guidance for improvement. Further, participants utilized written feedback, whether via technology on in-progress work or as formal comments, to attempt to meet the needs of the large numbers of students in their charge. Ironically, writing the comments took a large amount of time, and participants felt time was one scarce resource they never had enough of to interact personally with students.

Written comments are a kind of one-way communication which may provide guidance for students but was less likely to be effective than mutually understood intersubjective
conversations (Hausfather, 1996; Smagorinsky, 2018). Participants longed for such interactions and reveled in feedback success whenever they occurred. I next describe the elation teachers experienced when they believed their feedback comments connected with a student in the ZPD and true cognitive development occurred.

**Meaningful Feedback Conversations Through the ZPD**

Vygotsky (1978) emphasized development of high-level mental processes which enabled the individual to assimilate broad cultural competency and transcended situationally specific tasks. From the perspective of school and education, such processes would begin with guidance from the more knowledgeable other which illuminated students’ true development level in the ZPD beyond what they could do alone (Vygotsky, 1978). Ultimately, students would internalize these processes and be able to repeat them in a variety of contexts (Fani & Gahaemi, 2011).

Internalization is dependent on a strong teacher-student connection which overcomes the traditional limitations of the school structure and becomes and intersubjective, mutually negotiated dialogue (Hausfather, 1996; Smagorinsky, 2018). When this occurred, participants reveled in their shared success with students.

Participants knew direct feedback conversations with students were necessary for promoting true learning and development. Steinbeck, for example, leveraged technology and created assignments to try to ensure students carefully read written feedback comments, but still acknowledged students had to meet for a one-on-one conversation or they, “can’t be sure students really understand the [feedback] … written comments can only go so far.” Keynes flatly stated, “In an ideal world, I would give all of my feedback verbally in the form of a conversation like we’re having.” Yellen identified the need to connect with each learner as they described the teaching profession as “an individual point, it's an individual curriculum. It's an individual job.
It's an individual feedback.” Teachers, however, struggled to make time for these powerful conversations.

Smith, like Keynes, explained, “What I would like to do is one-on-one feedback.” Smith, however, felt class time could devoted to content could not be sacrificed. Smith offered to meet students “before school, after school, catch them in the hallway, whatever.” Eliot, Steinbeck, and Tolkien devised a system to meet students individually during lunch. Keynes was the only teacher who devoted an entire class period to giving students individual feedback following an essay exam. Others, like Aldrin, Parks, and Earhart, would try to address student needs individually during class while students were given work time. Most of the participants were dissatisfied with these limitations but took great joy when their feedback to a student synched with student needs and new learning became evident and internalized.

Smith recounted specific students who shared how the feedback they received resulted in demonstrable positive results on national exams, or success in higher education programs. Smith joyously shared the story of one student who made time to meet outside of class to work on general study skills and, “went on to get a 3 on the exam. And to see the smile on his face.” Smith also smiled as he recounted, “I’ve had kids who’ve emailed me when they’ve gotten into college going, ‘Man, the things you taught, I’m now putting them into practice.’”

Similarly, Tolkien fondly recounted the rare examples of students who were able to put newly learned mental processes to work in higher education. Tolkien shared, “This is few and far between, but it has been cool to have students come back and just say, ‘I really appreciate what we're doing in your class.’ Because now in college, it's much more critical thinking.” Alexander enthusiastically described effective feedback implemented when a student was able to “think, not
just about one right way to do it, but what other alternative things could have [been done] and celebrating what they did well.”

In summary, teachers provide feedback, as more knowledgeable others. Feedback from teachers had the potential to connect with students in the ZPD to prompt students to higher levels of thinking than they were capable of on their own. Teachers sometimes effectively made these connections with feedback but were sometimes unable to find the time or means to accurately diagnose the needs of students. Without such diagnoses, teachers were unable to provide the kind of mutually understood and personal feedback necessary for true development of higher mental processes as outlined by Vygotsky (1978).

Practical roadblocks forced teachers to attempt to provide feedback using rubrics or written comments they knew were less effective than the intensive one on one conversations they preferred to have with students. These tradeoffs often left teachers frustrated when students chose not to use the labor-intensive written feedback to improve, and instead accepted a less than exemplary mark. Teachers know the majority of students will not closely read comments but feel providing them to at the very least justify the assigned grade is an expected professional obligation.

When the cosmos aligned, however, participants were able to establish relationships to correctly diagnose learning gaps and collaborate with students. Students used formative feedback to improve, and teachers experienced a strong sense of satisfaction and professional pride. The more knowledgeable other, in such cases, truly helped a student move to a higher level of development. Unfortunately, such experiences remained rare. When faced with scarce time and large numbers of students, teachers were more likely to forego the intensive one on one interactions prescribed by Vygotskian scholars. I next discuss how self-determination theory
(SDT) explains feedback in relation to the basic psychological needs of human beings. SDT illuminates why intrinsic motivation resulting from need satisfaction remains elusive for both teachers and students.

**Deci and Ryan’s Self-Determination Theory:**

**Basic Human Needs and the Feedback Process**

According to Deci and Ryan’s SDT (1985), individuals need information from their environment that fulfills their three basic psychological needs. The three basic needs are the need for competence, relatedness or belonging, and autonomy (Ryan & Deci, 2000). Individuals are “inherently prone toward psychological growth … and thus toward learning, mastery, and connection with others” (Ryan & Deci, 2020, p. 1). This intrinsic drive, however, requires strong support from people which meets the three basic psychological needs (Ryan & Deci, 2020).

Intrinsic motivation inspired by the ability to demonstrate sophisticated learning processes results from a combination of incorporating information about performance while in a secure enough psychological state to use the information to improve. Deci and Ryan (1985) assert intrinsic motivation is innate but will not develop unless these basic needs are met. Further, enjoying a general sense of psychological well-being, for both teachers and students, requires having the three basic psychological needs fulfilled (Ryan & Deci, 2020).

Figure 6 illustrates the connection between teachers’ definition and purposes of feedback identified from my research and the three basic psychological needs identified in SDT. Teachers clearly intended feedback to both meet student needs and promote increased learning and achievement. Feedback from teachers had the potential to support all three fundamental psychological needs, but at times failed to adequately support these needs. I begin by discussing
how teachers attempted to meet students’ need for competence by communicating information about progress and achievement.
**Communicate Information About Progress and Achievement**

Ryan and Moller (2017) described feedback as an informational element which correlates directly with satisfying people’s need for feelings of competence. Competence is demonstrated when students are able to successfully complete school learning tasks (Niemiec & Ryan, 2009). A lack of belief in their own competence makes learners incapable of internalizing learning goals or advancing to a state of intrinsic motivation. Self-determination, or intrinsic motivation is linked to positive academic performance, increased conceptual understanding, and affective benefits, such as positive emotions and enjoyment of academic work (Deci et al., 1991).

Feedback and other learning activities are only useful if they enhance the student’s belief in their own competence. Feedback is powerful if used to specifically provide information leading to greater possibilities for learning, more strategies for learning, and more detailed information regarding what is and is not understood (Hattie & Timperley, 2007). Participants
clearly sought to bolster a students’ sense of competence by providing useful information to master learning tasks. The first step in the process was to make sure students correctly understood the learning objectives.

An important aspect of meeting the need for competence with feedback was ensuring students had a basic understanding of the learning tasks at hand. If students do not clearly understand what is being asked of them, the assessments used by teachers cannot provide an accurate picture of their current progress toward mastery. Teachers’ described feedback as a means to monitor student work to ensure students clearly understood what was being asked of them. Malthus, a teacher who is deeply committed to helping their students succeed, explained the most basic purpose of feedback was to make the learning task clear. Malthus stated,

Well, I mean, at a very simple level, I think I can redirect misconceptions. So primarily I want the student to be learning the correct material or getting their misconceptions cleared up, so they get back on the right track.

Likewise, Ostrom emphasized the importance of checking students’ understanding of the task to accurately assess students’ abilities. Ostrom explained,

For me, it's that I very strongly believe that good directions lead to more constructive feedback. It's not that you have failed to demonstrate you can do something, it's that you didn't even understand that I was asking a particular question.

Once teachers were confident students understood the task at hand, the teachers employed feedback as a means to nudge students toward competence and mastery.

Thatcher explained feedback was “critical responses [specifically] so [students] know how to improve their work.” Thatcher viewed teaching and learning as a continuous goal toward gained more knowledge regarding how to meet mastery standards—equating competence with
excellence. Eliot, a veteran teacher, specifically emphasized using feedback to establish a foundation of competence among students. Eliot stated, “Feedback on practice work is helpful for students to master the basics. It’s important to get that basic stuff.” Eliot understood that when students lacked basic knowledge and skills, the lack of “competence” serves as a roadblock to higher learning and more complex ideas or processes. Likewise, Steinbeck, Elliot’s colleague, concurred regarding the importance of providing feedback on “practice work until it meets expectations.” These practice sessions served as building blocks, making a solid foundation for learning. Clearly, competence comes from the steady, incremental, and structured approach to teaching and learning.

Yellen knew from experience it was important to catch students before they strayed into incompetence. Yellen walked around the classroom and reviewed student work in progress to catch them on the spot by offering corrective guidance. Yellen described how they were “looking over [students’] shoulders, asking [students] to ‘Explain what you were thinking.’” Parks likewise moved through the class to keep students on track. Parks sought to “communicate changes they can make … [providing] feedback in the moment.”

The fundamental role of the teacher is to present new information to students and assist them in understanding and mastering the concepts or processes involved. Teachers want their students to successfully demonstrate new skills or accurately discuss newly learned information. Teachers can read student faces to gauge whether they are experiencing a feeling of competence, and subsequently provide feedback to cement competence if necessary. Teachers also evaluate student work against pre-defined standards and provide feedback geared to elevate students to a basic level of competence.
A feeling of competence is one of the basic psychological needs of all humans (Deci & Ryan, 1985). A second basic need is for relatedness and belonging. Students are more likely to use feedback if they feel a sense of connection and trust with the teacher. I next discuss how teachers attempted to meet this need for connection by building relationships with students to encourage effort and accurately determine students’ specific learning needs.

**Building Relationships to Encourage Effort and Instill Confidence**

The need for human connection or relatedness is inherent in all humans (Deci & Ryan, 1985). Teachers sought to build relationships with students to not only facilitate feedback reception, but also because a feeling of belonging supports the psychological health of both teachers and students (Ryan & Deci, 2020). A feeling of relatedness exists when a person has a sense of connection with others based on mutual trust and concern for well-being (Ryan & Moller, 2017). Without a basic connection to others, specifically to the teacher in the education setting, it is impossible for students to internalize the extrinsic standards set before them. When a person has accepted and valued the extrinsic behavioral goal, the result is a similar state of action to full intrinsic motivation (Ryan & Deci, 2000). The teachers in my study employed feedback to meet the foundational need for connectedness.

“Strategies for enhancing relatedness include conveying warmth, caring, and respect to students” (Niemic & Ryan, 2009, p. 141). Ostrom conveyed caring when they stated, “Part of feedback … is to reduce anxiety and encourage a sense of confidence.” Tolkien similarly expressed concern for student emotional well-being. Tolkien stated, “I am just overwhelmed with the number of students who are so anxious … and harsh on themselves. [Students’] legitimate anxiety issues … make it essential to combine encouragement with constructive criticism.” Smith explained they provided feedback specifically to convey their sincere interest
in students. Smith stated, “I think one thing kids know is … that I care. And that’s why I’m offering the feedback and spending time. Sometimes that feedback is just being positive.”

Keynes prioritized relationships above all. “The minute relationships are no longer a part of education, I want out.” Malthus captured the essence of the connection between relationships and feedback when they described the key to the feedback process.

I just think [the most important factor is] the psychological aspect of motivating the student with your feedback, making sure that it's personalized, the student feels cared for and the student trusts the instructor [will] lead them to a successful course of action.

Deci and Ryan’s (1985) SDT emphasized the interconnection between relationship building and processing feedback. Without mutual trust and understanding, feedback and its’ lack of reception may be viewed as an arena for conflict and hard feelings. Teachers worked to build caring relationships with students which met the basic psychological need for relatedness. Meeting the need for relatedness is a two-way street. People enter the teaching profession for many reasons, including the desire to connect with and be a part of the lives of young people. It is energizing and satisfying for teachers to build friendly, trusting relationships with students.

Working carefully with students to determine their current developmental level was a second aspect of feedback as relationship building which emerged from the data. I next discuss how teachers attempted to leverage relatedness to get to know students’ individual learning needs. Assessing student strengths and weaknesses aligned with the need to analyze students’ developmental level and allowed teachers to personalize feedback for students.

**Determine Students’ Developmental Level and Learning Gaps**

Scholars noted the importance of providing refined and responsive feedback to maximize the impact on students’ learning. Understanding student needs and perspectives is the first
important step to offering students autonomy, and autonomy support meets both the autonomy and relatedness needs (Ryan & Deci, 2020). Competence is best encouraged when learning activities and feedback are specifically geared to individual student needs (Niemiec & Ryan, 2009). Feedback which is overly complex is ineffective in promoting learning (Nicole & MacFarlane-Dick, 2006; Shute, 2008). Sadler (1989) argued students must be capable of making objective judgments of their performance against a learning standard. “Students will only engage and personally value activities they can actually understand and master” (Niemiec & Ryan, 2009, p. 139). The participants in my study described the importance of getting to know their students as learners to be able to diagnose their learning needs and effectively prompt them to further achievement.

Keynes described asking students questions to identify “where their specific [learning] deficit is and … personalize the feedback based on where they are.” Likewise, Yellen asked questions to “figure out how they think.” Earhart, a less experienced teacher than Yellen, also intuitively viewed feedback as an opportunity to probe student thinking. Earhart described feedback as asking questions to home in on student learning. Earhart asked students point blank “What are you thinking?” Ostrom captured the essence of feedback as discovery. Ostrom explained they had to “figure out how students got the wrong answer … because I can’t help them if I can’t understand [how] they got the wrong one.” Once a student’s learning needs were correctly identified, feedback must be tailored to those specific needs in order to be effective.

Relationships pave the way for a more accurate developmental assessment—teachers use developmental assessment to determine how students might advance cognitively or make adaptation to learning plans. Teachers continuously monitor and determine progress toward the mastery goal with students, and leverage relationships to determine specific learning gaps which
remain and are unique to each individual. If a trusting relationship can be established, and students have achieved competence, teachers sought to use feedback to elevate students to a state of intrinsic motivation and higher cognitive and academic performance.

I next discuss how teachers used feedback to encourage students to develop improved academic skills. The goal of most participants was to facilitate intrinsic, self-regulated learning strategies students could use in all academic settings. This feedback goal is arguably the most challenging, in that it requires allowing students to experience need fulfilling autonomy. The very structure of school as an institution, for both teachers and students, tends to limit autonomy in favor of structured routine.

**Encourage Students to Develop Improved Academic Skills**

Good feedback promotes self-regulation, and the most effective learners are self-regulated learners (Butler & Winne, 1995). Self-regulated learners are capable of setting goals, evaluating strategies, changing course when presented with obstacles, and monitoring progress toward goal completion (Butler & Winne, 1995). Self-regulated learners are able to independently solve problems and apply complex learning strategies (Butler & Winne, 1995). Deci and Ryan’s (1985) analytic theory explains the preconditions necessary to develop self-regulation. Intrinsic motivation and self-regulation are conditions which go hand-in-hand, described by Ryan and Deci (2000) as a “tendency to … extend and exercise one’s capacities, to explore and to learn,” (p. 70).

Such intrinsic motivation, or willingness to engage in activities freely, without reward other than self-determination, is dependent upon having the need for relatedness, competence, and autonomy fulfilled (Deci & Ryan, 1985). Having autonomy means having a sense of choice and ownership of one’s actions without a sense of being forced or controlled into actions (Ryan
& Moller, 2017). When autonomy is low due to the cause of behavior being external, even when accompanied with a reward, the work done is likely to be of moderate quality and the learner is unlikely to stretch or push themselves to improve (Ryan & Moller, 2017). Grades or other normative comparisons result in potential negative results of feedback (Gibbs & Simpson, 2005; Kluger & DeNisis, 1996). Black et al. (2004) identified providing quality feedback without a mark or grade as one important process for school improvement.

Extrinsic rewards offered to incent people to action have the reverse effect of reducing intrinsic motivation, specifically because such rewards reduce a person’s sense of autonomy (Deci et al., 2001). Students’ sense of autonomy can be enhanced by teachers removing the pressure of grading or evaluation and emphasizing the importance of learning (Niemici & Ryan, 2009). Ultimately, if feedback promotes learning growth, and students have a secure sense of autonomy, they will undergo a learning change that transcends a specific classroom and develop intrinsic motivation to master complex tasks. Study participants expressed the goal of facilitating such a change in their students.

Earhart described using a subtle, sales like technique to facilitate a sense of autonomy and intrinsic motivation in their students. Earhart explained, “I’ve had to figure out the slickest way to get buy-in. It’s like tricking them almost, so the [feedback message] is not just about the grade … but improving their [learning]skill.” Yellen also emphasized how important it was for students to develop skills that they could take with them and use in any setting. Yellen explained, “I have to establish some skills, some expectations of what I want [students] to do to be a good student so [they] don’t suffer in all of their other classes.”

Tolkien, similarly, described feedback as conducting a “conversation [which] equips students with the tools for self-reflection so that … they have the ability to take ownership [of
their own learning] and critical thinking.” Parks likewise sought to provide feedback which enabled students to be the “experts in the learning.” Parks asked themselves when considering feedback strategies, “How do we put [students] in the seat as being the expert?”

Teachers expressed the hope their feedback would enable students to develop improved academic skills that would transcend any one class or setting. When students embraced learning for its own sake, without a controlling extrinsic reward such as a grade, they demonstrated the fulfillment of the need for autonomy. With autonomy, relatedness, and competence, students were capable of intrinsic motivation, or willingness to engage in activities freely, without reward other than self-determination (Deci & Ryan, 1985).

The feedback strategies and purposes of participants demonstrated how feedback could meet students’ basic psychological needs. When teachers and students truly connected, feedback made a positive impact on both learning and overall psychological well-being. In many cases, however, teachers expressed frustration at students’ unwillingness or inability to use feedback, and exasperation with the entire process of attempting to provide meaningful feedback. Participants clearly wanted to meet the psychological needs of their students while experiencing need fulfillment in their own right. Frequently, however, factors beyond the teachers’ control blocked or disrupted need fulfilling interactions. I next discuss how the inability to meet student needs, and have their own psychological needs met resulted in negative emotions for teachers.

**Costs and Benefits Associated with Constructing and Delivering Feedback**

Figure 7 captures the frustrations participants shared regarding providing feedback to students in light of Deci and Ryan’s (1985) SDT. The teachers themselves described various challenges which either interfered with their ability to meet students’ basic needs or prevented teachers from having their own basic psychological needs met. Teachers are as human as
students, and SDT notably points out teachers must have their own psychological needs met to be able to effectively support student needs (Ryan & Deci, 2020). When participants felt their feedback efforts were for naught, they expressed frustration and discontent with the process. Often, factors beyond their control blocked teachers’ ability to effectively deliver feedback. The resulting tradeoffs and half-measures left teachers with strong negative emotions associated with unfulfilled psychological needs.

**Figure 7**

*Funnel of Feedback Frustration*

Multiple institutional and leadership factors associated with schools disrupt teachers’ ability to meet their own and their students’ basic psychological needs. Institutional roadblocks included curriculum standards, performance pressures, grading and evaluation requirements, and mandated high-stakes tests (Ryan & Deci, 2020). Added to these burdens are inordinately large
class sizes and the vagaries of the academic and school calendar which restrict the amount of
time teachers have to interact freely with students.

Each of the institutional barriers inhibits not one single psychological need, but rather
impairs the ability to fully meet all of the needs. I begin by discussing participants’ primary
complaint related to feedback. Teachers lamented the lack of adequate time to provide
meaningful personalized feedback, a challenge which was exacerbated by having a large number
of students in their charge.

**Time Limitations, Number of Students, and Forced Tradeoffs**

Participants explained time limitations prevented them from really getting to know their
students as learners and prevented them from making strong and emotionally satisfying
connections with students. Whether it be class time or calendar time, teachers were forced to
make tradeoffs regarding feedback. Thatcher explained the challenge of having the time required
to truly understand student needs. “Knowing them as a writer, knowing what is going in their
lives, knowing that takes a long time.” Some of the time challenge resulted from the academic
calendar, and some of it was due to the large numbers of students participants had in their
charge. Abbot, for example, described how having students for only one academic term made it
nearly impossible to assess their learning needs. “We don’t keep the same kids. I can easily have
a kid for [a term] and not speak to them once. It goes so fast.”

Hayek described their frustration with finding time to assess student work given their
large student load. “Well, if I have 160 kids, it takes me 15 seconds to even touch a piece of
paper. Now if you’re going a minute per, that’s 160 minutes, you’re knocking on three hours.
Boom. That’s a minute. I mean, what can you do in a minute of feedback?”
Likewise, Alexander described how the large number of students represented a challenge to effectively provide feedback which facilitated student feelings of competence, let alone encouraged higher level academic performance. Alexander explained they had “five classes, roughly 30 students per class, 150 students [who need] feedback. The more quality products you want them to do, the harder it is to always get them timely feedback.” In addition to deterring the ability to diagnose learning needs and ensure competence, limited time and large numbers of students also interfered with meeting the basic psychological need for relatedness.

A feeling of relatedness exists when a person has a sense of connection with others based on mutual trust and concern for well-being (Ryan & Moller, 2017). Participants described their desire to connect with students through feedback, and their disappointment when such connections were not completed. Finding time to forge relationships with feedback was difficult for participants. Smith, for example, explained the demands of their curriculum meant individual feedback meetings had to be held outside of class. Smith was clearly anxious to connect and disheartened by the small number of students who were willing to meet. Smith invited the students, saying “please come. I’m there before school … after school. It’s very frustrating, very few ever want to take advantage of it.”

Hayek wondered if “kids even feel seen?” Hayek explained if they had more time and fewer students they could make meaningful connections. Hayek stated longingly, “The students would be less numbers. They would be human again.” Earhart, who described their philosophy of teaching was “all about building that relationship” with students, described large student numbers deterred the effort. Earhart explained how ideally, they would like to meet “one-on-one with everyone.” With larger class sizes, however, Earhart stated, “That's sometimes [why it is]
harder to have a bigger class, because you want to just sit down with them, and with so many kids in the room that’s difficult.”

Participants’ feedback efforts to make connections with students were sometimes thwarted due to time constraints and large numbers of students. Teachers identified in-depth, one on one conversations with students as their preferred feedback approach to counter these problems. However, multiple factors prevented them from providing feedback in the manner they most coveted. As a result, they relied on written feedback and rubrics they were less enthusiastic about and student were less likely to find need fulfilling and actually utilize. I next discuss the logistical decisions teachers were forced to make to attempt to provide feedback for all students.

**Logistics and Processes of Feedback Delivery**

Teachers relied heavily on written feedback for students because they did not feel they had time to meet and discuss student learning individually. The written feedback comments teachers provided to students had the potential to be need fulfilling if they were separated from a grade or other evaluation of student work. Feedback can be important and need fulfilling if it provides information which leads to improvement or emphasizes competent work (Deci & Ryan, 2020). Teachers described how they attempted to either leverage technology, or brief interpersonal interactions to offer informal formative feedback which would promote students’ feelings of competence.

Formative feedback is information communicated to a learner that is intended to modify their thinking or behavior in order to improve learning (Shute, 2008). Participants specifically used the term informal to represent feedback that did not accompany a summative evaluation or grade. Alexander, for example, sought to guide students toward improvement before they submitted and assignment for evaluation. Alexander explained “A lot of times [feedback] is
informal, communication ahead of time before they turn something in, changes they can make. When it's informal, it's something that they can directly apply immediately to the assignment they're working on.” Parks similarly monitored student work by, “walking around the classroom and… providing feedback and reviewing student work in the moment.” Parks said, “As I see them working, I can do formative [feedback] on the spot.” Yellen concurred, “I'm reading over their shoulders, [and commenting to students], ‘I don't see where you're going with this.’”

Other teachers leveraged technology to monitor student progress and offer comments on electronic documents as students were in progress. Aldrin, for example, described how they provided informal feedback on a working document.

I'll pop in [on the computer screen] and put some comments about how things are going, places they can add. I'd rather give more feedback at the beginning than a real long written report about the ups and downs of your project at the end.

Earhart explained that providing earlier feedback benefitted both the teacher and the student.

Earhart stated:

It's nice [on an essay]. The kids ask, “Can you just do this while I'm writing it, so that I don't have to keep coming up and asking you questions?” You can do that throughout the process of writing instead of waiting till the end. So, it's nice to be able to give feedback just right there while they're doing work.

Such informal feedback had the potential to meet student needs for both competence and relatedness. Information about progress is likely to promote intrinsic motivation to learn and grow (Ryan & Deci, 2020). Teachers attempted to provide informal feedback to as many students as possible, but time and class size limited their ability to do so. As a result, teachers tried to provide feedback comments along with summative grades or evaluations they hoped
students would read and use to improve. Providing feedback with grades, however, or promoting extrinsic grade rewards as motivation to use feedback adds controlling significance which inhibits feelings of autonomy and has the reverse effect on student motivation to improve (Deci & Ryan, 1985).

Extrinsic rewards offered to incent people to action have the reverse effect of reducing intrinsic motivation, specifically because such rewards reduce a person’s sense of autonomy (Deci et al., 2001). Grades are not feedback and grades presented with feedback lead students to disregard feedback comments (Black & William, 1998; Black et. al., 2004; Sadler, 1989). When autonomy is low due to the cause of behavior being external, even when accompanied with a reward, the work done is likely to be of moderate quality and the learner is unlikely to stretch or push themselves to improve (Ryan & Moller, 2017). Thus, the lure of a grade reduces autonomy for students and is therefore unlikely to inspire them to greater effort.

Teachers provide grades because they feel they have to, and in some cases because they feel students will not engage in learning activities unless a grade is awarded. Ironically, one way to meet students’ need for autonomy is to eliminate the pressure of controlling assessment.

Students’ autonomy can be supported by teachers’ minimizing the salience of evaluative pressure and any sense of coercion in the classroom, as well as by maximizing students’ perceptions of having a voice and choice in those academic activities in which they are engaged. (Niemiec & Ryan, 2009, p. 139)

Teachers’ sense of autonomy was limited when they felt a pressure to provide grades, and students use of feedback was reduced by extrinsic grade rewards.

Hayek expressed doubt students cared about anything other than a grade. Hayek stated, “Kids aren’t interested in their learning, they’re interested in the grade.” Eliot described how
students would “look at me and drop [their work] on the floor” if it wasn’t graded. Eliot also explained they felt they had to give scores to justify evaluations against a standard. “Once we moved to the standards-based grading, we realized that the amount of feedback that you give is a lot. Probably doubled our work output.” Steinbeck agreed, explaining even with large class sizes they felt they had to provide grades and feedback. Steinbeck stated, “Having 35 or 41 students in a class is a major drawback. You have to give every one of them written feedback.”

Participants used rubrics to attempt to communicate with students and save time. The rubric described a student’s current level of achievement. Participants also combined rubrics with written comments to explain why students fell short of a higher score. Abbot relied on a rubric as feedback to both save time and justify the grade awarded. Abbot explained, once the rubric was created, “the feedback’s already on there. I can [provide feedback] faster.” Abbot added that with a rubric, “students can’t question you about why they got a grade.”

Alexander also relied on rubrics to save time. Alexander noted, “I use a lot of rubrics that allow me to grade quickly, while at the same time giving them specifics and letting them see where they land in achievement.” In a class which required more student writing, Friedman provided a rubric and added written comments to clarify a final grade. Friedman explained:

In [this class], it’s all process and trying to get them to think a little bit more. There are rubrics… and [students are given] written responses, generally brief, but to say, “To get a perfect score, this is what you might have done differently.”

To entice students to make time to meet and discuss rubric and grade comments, teachers offered grade rewards. Predictably, the extrinsic rewards did not increase student motivation to meet.

Yellen, for example, was dumbstruck at how few students sought retake opportunities to improve their grade. Similarly, Steinbeck and Eliot both offered assessment retakes to raise
grades if students would meet with them in person over lunch. Steinbeck and Eliot believed only 5-10% of older students, and 20-25% of first year students used feedback to complete reassessments.

For participants, providing written feedback was viewed as an obligation. And, most felt offering feedback with grades and a chance to complete reassessments would motivate students to strive to improve their score. Grades, however, provide a limited sense of competence, and generally reduce motivation, especially among struggling students (Ryan & Deci, 2020). Teachers intuitively knew their written formal feedback was an unsatisfactory endeavor, and desperately wanted to provide feedback via in-depth, one on one conversations. Unfortunately, they did not feel they had the time or ability to engage in such meetings with all students. The in-depth, need fulfilling meeting was the feedback holy grail for participants.

To improve students’ reception of feedback and make it more likely the feedback would be used, teachers desired to hold one on one conversations. Every participant in my study explained if they had to power to change their teaching situation, they would hold more individual meetings with students. The teachers were frustrated at their lack of autonomy to structure their time to make such meetings possible. One limiting factor was the mandated curricular standards which were beyond their autonomous control.

Smith, for example, felt they could not sacrifice class time needed to cover their curriculum, and thus sought to entice students to meet, “before school, or after school. Or I try to catch them in the hallway.” Smith explained even if they had smaller class sizes, “I have to get through the content. I just couldn’t give up the time [to use for providing feedback instead].” Aldrin explained they had to prioritize who to meet with because they “don’t have enough time to meet with everybody.” Hayek put it simply, stating in Social Studies “we have a trillion
standards. How are we supposed to cover them all?” Thatcher yearned to meet with each student but was thwarted by their large class sizes. Thatcher’s longing for autonomy was evident in their description of the ideal feedback situation.

I mean, I always wished that we could have, this is a big picture thing that I don't as a teacher have any control over, but I wish that we could have small enough class sizes to provide meaningful feedback to every student on every assignment.

Teachers’ psychological satisfaction was abundantly obvious when they described those rare occasions where relationships were established with students and feedback both enhanced student competence and resulted in autonomous intrinsic motivation. The teachers clearly felt satisfied and even joyful when they recounted such successes. Their shoulders relaxed. They smiled. Their eyes sparkled. They became animated. A student’s writing improved. Another student graduated and went on to pursue higher education. A student made a point of sending an email or dropping by the school to say thank you, the skills and strategies they learned were helping them succeed in college. The feedback holy grail had been glimpsed, even grasped for an instant.

Unfortunately, teachers reported these feedback successes were too few and far between. The lack of autonomy to design ideal feedback practice resulted in frustration and a lack of enthusiasm for the feedback process. The sense of wasted effort also detracted from teachers’ beliefs about their ability to provide feedback, undermining their basic need for competence. And, the inability to connect with all of their students in the time allotted undermined teachers’ need for relatedness. I next discuss how these institutional roadblocks which undermined the basic needs left teachers with a negative outlook about feedback.

*Feedback Effectiveness and Attendant Positive and Negative Emotions*
Participants described feeling frustrated and exasperated with the feedback process. Ostrom decried the “burden of feedback and the burden of grading,” and shared providing [feedback] was, “the least favorite [part of my job]. I know it's a meaningful component, but it's so exhausting.” Motivation to engage in tasks wanes without the ability to exert autonomy or control over one’s work and decisions. Amotivation is a lack of intention to act because the individual places no value on the activity (Ryan & Deci, 2000). Self-determination theory scholars described how motivation proceeds along a continuum, from externally regulated extrinsic to the intrinsic state of performing an activity because it is satisfying, and one has the autonomy to pursue competence.

Hayek, for example, described feedback as an almost overwhelming burden. Hayek found the tradeoffs involved their quality of life outside of the classroom. For Hayek, what drove their feedback choice was survival in life. I’m at a point in my career where I’m done giving three to five hours a night to public education. And to get it done during the day with my time management … I don’t have the time or I’m not skilled enough to do that. So, my feedback is what realistically can we do to provide for our students that's manageable?

Hayek explained the demands of curriculum standards and grade recording limited their ability to choose more satisfying pedagogy and feedback strategies. Hayek clearly did not have their need for autonomy fulfilled.

Autonomy requires the belief one’s behavior is voluntary and self-chosen (Niemiec & Ryan, 2009). Teachers, who themselves feel controlled, are less able to foster autonomy in their students (Ryan & Brown, 2005). Teachers who do not experience autonomy are less likely to be enthusiastic about required teaching activities such as providing feedback (Niemiec & Ryan,
Teachers’ lack of autonomy was evident in the time they spent providing feedback they had little hope students would read, and the inability to pursue the more meaningful individual feedback conversations they desired.

Eliot stated feedback, takes a tremendous amount of time and effort. It wears on you to spend so much time and only have a couple of kids look at it. It’s very frustrating when you give a kid a paper back … and you spent an hour giving them feedback and they’re just happy with the grade that they got.

Smith explained feedback meant, “writing the comments,” but admitted “I don’t really know how much kids read those.” Thatcher, who described taking personal days to provide feedback on papers, found “I honestly [with a lot of students] see [my feedback] in the recycle bin right away.” And Parks admitted the comments were often not useful but continued to provide them anyway. Parks explained students “don’t always go back and read your comments. They could be making the same mistake over and over, getting threes or twos on every assignment because they're consistently making the same mistake.”

Keynes lamented both the difficulty of giving consistent feedback, and instances where the effort to give quality feedback seemed for naught. Keynes shared they felt “disheartened” when “kids don’t take it seriously … it’s really hard to give feedback to 32 kids at the same time.” To save time and to try to focus feedback efforts where they would be most effective, teachers identified students they felt were the most likely to put feedback to use.

Eliot, for example, talked about shaving off the top students and providing more comments for students who they knew wanted to improve and had not scored at the top level of the rubric or standard. Tolkien and Thatcher, teachers in different schools, both taught higher-
level degree-oriented classes which students pursued over two years. The long calendar time and resulting connection led both teachers to provide more detailed feedback to those students. Tolkien explained,

We find ourselves spending more time than probably we should for the students who are going to take the exam to get them the feedback. They definitely appreciate it. They see the value immediately because it's tied to an exam.

Thatcher likewise contrasted the difference in feedback necessary for higher-level and standard-level students. “I don't want to portray my standard-level kids as not being bright or motivated because they are, and I really value them a lot. But I think that it is different.” Thatcher noted the calendar time students devoted to the higher-level program made a difference. “For example, higher-level history is actually a two-year class. And so, they are, I feel like a lot more invested in my feedback.”

The tradeoff, of course is relative lack of time for feedback for the standard level students who lack intrinsic motivation and whose basic needs are not fully met. Teachers agonized over these forced tradeoffs. Thatcher was obviously distressed when they commented that “in the standard level class … I usually only have a handful that want to talk to me or get additional feedback.” And Tolkien wondered “how do we create that [motivation and excitement to get feedback] for the students who don't use it?” Teachers clearly struggled to provide meaningful feedback to all their students. Teachers also struggled with feedback in general because they found it less enjoyable and need satisfying than other teaching activities.

Psychological need satisfaction promotes motivation to engage in current tasks as well as long-term psychological health and development (Ryan & Deci, 2000; Ryan & Moller, 2017). People seek out challenges and find the experience of mastering challenges intrinsically
rewarding out of a basic psychological need for competence (Ryan & Moller, 2017). Completing a need fulfilling task out of the enjoyment of pursuing a goal is indicative of intrinsic motivation. Intrinsically motivated people engage in activities freely, without constraint, coercion, or reward other than self-determination (Deci & Ryan, 1985). Participants described a variety of other teaching tasks they would prefer to engage in instead of feedback.

Teachers did not find the feedback process satisfying, in part because they preferred to be tackling other teaching tasks they found more enjoyable and which reinforced their feelings of competence. Eliot explained how more standards and feedback requirements resulted in less time for more personally rewarding teaching activities. Eliot stated having to spend more time on feedback “has resulted in some teaching challenges as well. There is less time for fun activities in class, lessons you have enjoyed, and you know kids enjoy.” Friedman, likewise, described a feedback tradeoff as forsaking “building [new and interesting] lessons.”

Similarly, Alexander commented “[It is] also the challenge as a teacher [to devote time to feedback], because if [you're using] all that time for feedback, [it is hard to find time] for planning great lessons too.” Ostrom explained how providing feedback was personally unsatisfying.

I know even when I've had more time and fewer students, it's still not something I do extensively as much as I should. I love curriculum development, I enjoy instruction. Always, people have their own [interests], and for me, [providing feedback] is the part of the job that's the biggest loss, that I find the most unrewarding.

**Summary**

People seek to engage in activities they find challenging and need satisfying when they have the autonomy to decide how to engage in the activity, and believe they have the ability to
successfully achieve a goal. Participants in my study described a variety of feedback techniques they employed and numerous instances of successful feedback interventions. The frequent lack of feedback success, however, with students repeating mistakes or ignoring the labor-intensive comments, clearly harmed teachers psychological need for competence. No one likes to expend tremendous effort only to have it ignored or see it fail to lead to meaningful change.

Further, the inability to control their teaching environment or class size, and the institutional demands to meet standards and record summative grades harmed teachers’ need for autonomy. Finally, the limited class, academic calendar, and large number of students made building meaningful relationships with all students a practical impossibility. The demands on teachers forced them to make tradeoffs and concessions they knew were less effective and need satisfying for themselves and their students. Written comments, rubrics, and differentiating which students received more feedback were all techniques teachers used instead of the meaningful, need satisfying one on one conversations they wished they could hold with all students.

Teachers saw firsthand that their feedback efforts were often not well received. They witnessed students recycling less than exemplary work after barely glancing at comments. They offered to meet students individually outside of class and had a relatively small number of students accept. These unmet needs left participants feeling at times “frustrated” and “disheartened” with feedback.

Yet, teachers continued to try to offer feedback because it is an expected teacher duty, and because the teachers know there was always the chance students might use it to improve. The instances when students did use feedback were memorable. These successes, whether a change students made that improved in progress work after informal feedback, or the rare student
who actually made time to meet one on one and went on to demonstrate intrinsically motivated self-regulated learning, were psychologically need satisfying and rewarding for participants.
CHAPTER SIX: SUMMARY, IMPLICATIONS, AND RECOMMENDATIONS

In this final chapter, I present a summary of major research findings, and then discuss the implications stemming from these findings. Using a collective case study methodology, I investigated teacher’s decision making and beliefs about using feedback. The implications include insights regarding the opportunities as well as problems associated with feedback and its effects on student achievement and motivation. I also recommend ways to improve practice based on my findings. Later in this chapter, I note the contribution of this study to the literature, describing areas of agreement as well as challenges and/or new contributions to the literature. I also provide recommendations for further research and discuss the limitations of my study.

The literature revealed how feedback exerts a powerful influence on student learning, motivation, and academic performance (Hattie, 1999; Klueger & DeNisi, 1996; Shute, 2008). However, the literature lacked a robust description of feedback practices used by current, practicing high school teachers. I investigated how teachers use feedback to promote student learning, including how they judge whether the feedback provided proved effective as well as the factors affecting teacher decision making regarding how to provide feedback to students.

I applied Vygotsky’s (1978) Theory of the Development of Higher Psychological Processes, and Deci and Ryan’s (1985) Self-Determination Theory as tools to analyze and interpret the dominant themes emerging in the study. The themes were organized into three main categories: (1) providing feedback to students: definitions and purposes; (2) the logistics and processes involved in the delivery of feedback; and (3) the costs and benefits associated with constructing and delivering feedback. I provide a brief overview of these themes and the theory used to interpret the data. I then describe the implications of my findings with regard to professional practice.
Providing Feedback to Students: Definitions and Purposes

Participants descriptions regarding the purposes associated with student learning included: (1) communicating information about progress and achievement; (2) building relationships to encourage effort and instill confidence; (3) determining students’ developmental level, thought processes and learning gaps; and (4) encouraging students to advance cognitively and develop improved academic skills.

Communicating Information About Progress and Achievement

The participants’ primary conception of feedback involved the information teachers provided to students about the quality of their work as measured against a standard of excellence. Teachers used feedback to clear up student misconceptions about the learning task. Further, teachers hoped students would use feedback to improve the quality of their academic work. Participants’ beliefs about feedback as information about progress matched the definition of feedback found in existing research literature.

Feedback is information delivered by an instructor intentionally to inform students about the quality or correctness of their performance (Bangert-Drowns et al., 1991). Teachers serve as what Vygotsky (1978) termed a “more knowledgeable other”—someone with the potential to facilitate increased student achievement by mentoring students and presenting an appropriate challenge. Information regarding the accuracy and quality of academic performance similarly had the potential to meet students’ basic psychological need for competence.

Ryan and Moller (2017) described feedback as an informational element which correlates directly with satisfying people’s need for feelings of competence. Competence is demonstrated when students successfully complete school learning tasks (Niemiec & Ryan, 2009). Unless a learner responds and uses the information to change their performance, the information
communicated is not feedback (Black & William, 1998; Sadler, 1989). The research findings revealed participants’ attempts to provide meaningful feedback were at best inconsistent as to whether students actually used the information to change or improve their work.

Sometimes teachers noticed students implementing feedback immediately. Teachers generally provided feedback while students were in the process of completing a learning task. Teachers provided verbal feedback or written comments on electronic documents, and students used the information to modify and improve their work. When students used feedback to improve their work, both teachers and students experienced satisfaction because they fulfilled the human need to experience or gain competence (see Deci & Ryan, 1985).

Unfortunately, sometimes teachers noticed students repeating mistakes or ignoring written comments and accepting a less than exemplary score or mark. When students ignored the feedback, the information communicated by teachers to students failed to serve as feedback. Ignoring feedback denied students and teachers the opportunity to gain psychological satisfaction due to increased competence, as competence is best supported when students receive and use information about how to master the task at hand (Niemiec & Ryan, 2009). Teachers described a recurring pattern of inconsistent feedback and its effectiveness related to student achievement. When teachers provided feedback and students learned from the feedback, both teachers and students experienced feelings of competence.

Teachers often described the importance of feedback used to build relationships with students. Relationships are an essential element of the teaching, learning, and feedback process. Teachers, like their students, have a basic human need for relatedness (Ryan & Deci, 2020). Further, feedback is best delivered and received when teachers and students collaborate as partners (Hausfather, 1996). As was true with all aspects of feedback, the research findings
indicated teachers had mixed results forming productive, meaningful relationships which facilitated feedback for learning.

**Building Relationships to Encourage Effort and Instill Confidence**

Teachers believed feedback was an important tool for forming meaningful connections with students. Participants indicated building strong relationships was an important goal in and of itself, as well as a mechanism which made feedback more relevant and effective in promoting improved achievement. Feedback must be more than information. It is a relational process dependent upon collaboration and mutual understanding (Smagorinsky, 2018). Teachers found it a challenge to form strong trusting connections with all students which facilitated feedback.

Students, particularly those who traditionally struggle in school, are more likely to use feedback if they trust teachers care about them as learners (Yeager et al., 2014). Further, a feeling of relatedness based on warmth, caring, and trust is a basic human need essential for the psychological well-being of both teachers and students (Ryan & Deci, 2020). When teachers could connect with students, they expressed happiness and their visage exhibited positive emotion. When such connections were not made, however, teachers felt frustration and anxiety.

Teachers desired strong connections with students, but schools are institutions with many built-in norms and structures which inhibit the development of collaborative teacher-student relationships (Hausfather, 1996). The current research findings confirmed such institutional barriers continue to prevent the development of satisfying relationships. Teachers described how large class sizes, limited calendar and class time, and the demands of meeting curriculum standards interfered with their ability to form need-fulfilling connections with all of their students. Without strong relationships, teachers could not be certain of students’ unique learning needs.
Vygotsky (1978) specifically cautioned educators not to assume students in the same academic grade had the same learning needs because their mental ages could differ based on previous development. The ability to master complex learning tasks with assistance revealed the learner’s ZPD, or potential for achievement with guidance from a more knowledgeable other. Such guidance is not possible unless students and teachers have achieved intersubjectivity, or a mutually understood agreement about the relevance and purpose of learning (Smagorinsky, 2018). Without this mutual understanding, learning objectives remain external and do not result in students valuing and internalizing achievement goals for topics they do not inherently find interesting (Deci et al., 1991). Mutual understanding is indicative of a relationship based on trust.

Individuals who experience trust and mutual concern for well-being with others have their need for relatedness met (Ryan & Moller, 2017). Without relatedness, it is impossible for students to internalize the extrinsic curricular goals established by the institution. Extrinsic motivation limits an individual’s ability or desire to pursue complex learning behaviors which can be applied in more than one setting. The ability to demonstrate new cognitive abilities is indicative of a move through the ZPD to a higher level of mental development (Vygotsky, 1978). Teachers hoped building relationships would create an opportunity to provide feedback which would help students develop advanced cognitive abilities and academic strategies. In order to achieve this lofty goal, feedback must be targeted to the specific learning needs of the individual student.

If a relationship could be established, teachers sought to probe students’ thinking to discover the specific and unique learning gaps which remained between their current level of performance and the next more advanced level of performance. Unfortunately, teachers admitted
they were incapable of achieving this level of connection with all their students. When given the opportunity, however, they worked diligently to understand students’ learning needs.

**Determining Students’ Developmental Level, Thought Processes, and Learning Gaps**

Participants sought to identify the specific learning gaps unique to each student in order to effectively tailor feedback to improve learning and performance. Feedback is ineffective unless students clearly understand both expected learning goals and where they stand in relation to those goals (Hattie & Timperley, 2007). Feedback resulted in improvement only if the student could accurately compare current performance against the learning standard or goal (Sadler, 1989). Teachers intended feedback to illuminate the difference between current performance and excellence or mastery of the learning objective. Once students demonstrated mastery with assistance, they could potentially move through their ZPD to a new and higher level of mental processing (Vygotsky, 1978).

Teachers cannot assume students in the same grade have the same learning needs because students arrive at different mental ages with differing capabilities (Palinscar, 1998; Vygotsky, 1978). Furthermore, when learning activities and feedback are specifically geared to individual student needs, and students successfully master the learning tasks, they experience a feeling of competence (Niemiec & Ryan, 2009). When possible, teachers asked questions to probe students’ thinking and identify specific learning gaps. Unfortunately, large class sizes and other limitations prevented teachers from working closely enough with all students to properly identify their individual shortcomings.

Information not used to close a learning gap is not feedback (Sadler, 1989) and incorrect assumptions about learning goals and deficiencies can render feedback useless (Nicole & MacFarlane-Dick, 2006). Participants offered specific feedback targeted to individual needs
when they were able to establish relationships and get to know their students as learners. At other times, however, teachers were in the dark regarding student learning gaps and were forced to offer general comments or marks on rubrics as feedback. Teachers reported students were less likely to use feedback in this case. The former feedback scenario met teacher and student needs for relatedness and competence, while the latter left needs unfulfilled and teachers feeling dissatisfied with the feedback process.

When the feedback stars aligned, teachers were able to form connections with students, facilitate competence, and enhance student intrinsic motivation to apply newly developed learning skills in a variety of academic settings. Intrinsic motivation to engage in complex tasks and apply newly developed learning skills is dependent upon having all three basic needs for competence, relatedness, and autonomy met (Deci & Ryan, 1985). Students developing sophisticated new abilities was evidence they had progressed through the ZPD to a higher level of mental functioning (Vygotsky, 1978). Teachers reveled in recounting examples of students who used feedback to demonstrate newly developed skills and abilities in more than one academic setting. The ultimate goal of feedback for participants was for learners to advance cognitively and develop improved academic skills.

**Encouraging Students to Advance Cognitively and Develop Improved Academic Skills**

Participants expressed the hope students would use feedback to become the experts in their own learning. Specifically, teachers described feedback as a conversation about learning they wanted students to be able to direct for themselves. This desire is in alignment with research literature which suggests the goal of feedback should be to help students internalize standards to monitor or self-assess their own progress (Gibbs & Simpson, 2005; Nicole & MacFarlane-Dick, 2006). Good feedback promotes self-regulation, and self-regulated learners are able to
independently apply complex learning strategies to a variety of situations (Butler & Winne, 1995). Self-regulation aligns with characteristics of an intrinsically motivated individual who has all of their basic psychological needs satisfactorily filled.

Intrinsic motivation, or the willingness to engage in activities freely, without reward other than self-determination, is dependent upon having the need for relatedness, competence, and autonomy fulfilled (Deci & Ryan, 1985). Autonomy is arguably the most difficult need to meet in the educational setting for both students and teachers. Institutional demands such as learning standards, high stakes testing, and matriculation impose limitations on the freedom to pursue inherently interesting and satisfying teaching and learning activities.

Having autonomy means having a sense of choice and ownership of one’s actions without a sense of being forced or controlled into actions (Ryan & Moller, 2017). When autonomy is low due to the cause of behavior being external, even when accompanied with a reward, the work done is likely to be of moderate quality and the learner is unlikely to stretch or push themselves to improve (Ryan & Moller, 2017). When autonomy was present, however, learners embraced the value of learning for its’ own sake (Niemici & Ryan, 2009). Development of cognitive maturity is similarly evidence of a move to a new higher level of mental processing.

If effective, instruction and feedback results in a transition to a new stage of development in which the student generalizes newly developed skills and abilities to more than one context (Clarà, 2017). The teacher, as the more knowledgeable other, introduces the student to new ways of thinking and illuminates abilities the student was previously incapable of demonstrating alone (Vygotsky, 1978). Ultimately, the transition to advanced cognitive processing is complete when the child or student is able to internalize the advanced processes and transform the knowledgeable other’s language into their own inner speech (Hausfather, 1996).
Examples of learners who demonstrated the ability to internalize feedback and transition to self-regulated learning stood out in the minds of participants. Such transitions occurred when teachers were able to effectively connect with students, diagnose their learning needs, and provide guidance which students used to experience newfound competence and advanced cognitive abilities. Basic needs for both teacher and learner were fulfilled, and the teachers’ experienced professional pride and described positive emotions. Unfortunately, however, such examples proved elusive. Teachers described multiple barriers which blocked them from pursuing feedback in their preferred manner, and prevented them from forming the foundational human connections with students they ardently desired.

Schools as institutions impose limitations on teachers’ ability to fully meet their own needs, let alone their students basic psychological needs. Further, teachers are prevented from pursuing the mutually negotiated feedback conversations they believe are the gold standard of feedback for learning (Hausfather, 1996; Ryan & Deci, 2020; Smagorinsky, 2018). In order to fulfill their professional obligations and to attempt to provide adequate feedback, teachers were forced to make numerous tradeoffs regarding how to provide feedback to students. I next summarize the perceived costs and benefits participants associated with feedback, the logistical tradeoffs they were forced to make, and the attendant emotions they experienced as a result.

**Costs and Benefits Associated with Constructing and Delivering Feedback, and Attendant Emotions**

Participants’ evaluation of the value and efficacy of their feedback, and their description of the factors which impacted their ability to effectively use feedback, included: (1) time limitations, number of students and forced tradeoffs; (2) differentiating feedback according to perceived student motivation, willingness and ability; and (3) feedback effectiveness and
attendant positive and negative emotions. Ultimately, feedback decisions involved tradeoffs to forego the most prized form of feedback, interpersonal conversations, in order to meet other teaching obligations and provide at least some feedback to all of the students in their charge. These tradeoffs often left teachers feeling dissatisfied with the feedback process.

**Time Limitations, Number of Students, and Forced Tradeoffs**

Every participant in this study stated unequivocally they believed holding in-depth, interpersonal conversations with students was the most effective way to deliver feedback, and they strongly desired to hold such conversations with all students. Likewise, every participant explained they simply did not have the time available to devote to individualized feedback conversations. Further, teachers explained providing even less efficacious feedback was extraordinarily time consuming and an onerous professional burden. The importance of quality feedback for learning cannot be divorced from the practical logistics of providing it (Sadler, 2010).

The participants sense of time constraints and the burdensome nature of feedback matched research literature findings. Teachers most enjoyed discussing feedback with students but had no confidence they could find dedicated time to regularly engage in such dialogue (Tuck, 2012). Researchers noted the ability to provide frequent feedback has been limited by reduced resources and increasing class sizes. As student numbers and class sizes have increased, the ability of teachers to effectively provide timely feedback to individuals has been damaged (Crisp, 2007; Gibbs & Simpson, 2005; Nicole & MacFarlane-Dick, 2006). Participants preferred verbal interactions, but also attempted to leverage LMS technology to get written comments to students in a timely manner.
One logistical tactic participants used to provide feedback was written comments on shared electronic documents while students were in the process of completing learning tasks. Participants described feedback given to students before the final product was submitted as informal, in that it did not accompany a final grade or mark. Students could immediately use the feedback to improve their work. Having relatively large numbers of students per class made it a challenge for teachers to provide feedback to all learners. Further, written comments on a specific learning task, while potentially effective for helping students master the task, are less optimal than verbal interactions for promoting more advanced cognitive processes.

The short-term nature of feedback so the student can be successful on a specific assignment does not match the grand vision of advanced cognitive development discussed by Vygotsky (Smagorinsky, 2018). Written comments are a kind of one-way communication which may provide guidance for students but was less likely to be effective than mutually understood intersubjective conversations (Hausfather, 1996; Smagorinsky, 2018). In a pinch, however, such informal feedback does have the potential to meet student needs for both competence and relatedness.

Feedback can be important and need fulfilling if it provides information which leads to improvement or emphasizes competent work (Deci & Ryan, 2020). Participants also described how they attempted to provide informal verbal feedback to students in the classroom by moving through the room and monitoring student work. Such informal interactions which occur without the controlling significance of a grade could foster a sense of relatedness as well as increased autonomy for students (Niemiec & Ryan, 2009). Participants welcomed these informal written and verbal interactions but noted their large class sizes prevented them from having such interactions with all students. As a result, they relied on written comments provided with a rubric.
and a final grade or mark. While participants emphasized students had the option to use the comments to redo or improve their work, they noted a relatively few students actually took the opportunity to do so.

Writing comments to accompany a grade is one of the feedback practices teachers universally despise yet continue to use either because they feel it is a professional obligation, or they hope students will use the comments to improve their work, or both. While the research literature is clear that feedback provided with grades is not effective in promoting learning, the research findings indicate providing feedback with grades continues to be standard practice. Rubrics and written (or verbal recorded) comments are a logistical tradeoff teachers make because they cannot find the time to interact in a meaningful way with all students.

Participants’ description of their written feedback efforts exactly matched research literature which noted the process was labor intensive and cognitively draining (Sadler, 2010). Further, it is rare to see written comments incorporated in future work (Crisp, 2017; Quinton & Smallbone, 2010), let alone used to redo the same assignment. Teachers feel required to provide an evaluation of student work, whether it be using a rubric and learning standards, or a traditional letter grade. Classroom practice remains resistant to change (Hausfather, 1996). Once that evaluation is made, however, feedback which accompanies it is likely to be disregarded.

Feedback comments should be provided without a grade because students are more likely to focus on improving learning strategies not the grade (Black et al., 2004). Grades and written comments are a one-way communication stream which cannot replace the collaborative, mutually understood in-depth interactions which connect with the students’ in the ZPD (Hausfather, 1996; Smagorinsky, 2018). Grades also have a controlling significance which detracts from students’ basic need for autonomy and reduces their motivation to push themselves
to improve (Ryan & Moeller, 2017). Grades inevitably invite normative comparisons which further reduce feedback effectiveness (Kluger & DeNisis, 1996; Shute, 2008).

Participants’ experience bore out the theory and research literature findings. Students who used the written feedback provided with grades were the exception to the rule. Teachers desperately wanted to improve the effectiveness of their feedback by holding meaningful conversations with students, but had difficulty finding available time to connect with their large number of students. This conundrum resulted in additional logistical maneuvering to attempt to entice students to meet outside of regular class time.

Participants attempted to create interpersonal interactions outside of regular class time to provide in-depth feedback. Some required students who wanted to reassess to meet in-person during an open lunch period. Others made time available before or after school, or even tried to catch students in the hall between periods. Teachers were frustrated by their lack of ability to create time to connect with students and provide meaningful feedback. The majority of participants felt they could not sacrifice available class time to meet individually with students due to the demands of covering required curriculum standards. As a result, teachers were frustrated with unmet needs for relatedness and autonomy. Similarly, students’ rare use of written feedback to improve was indicative of similar unmet needs. As a result, teachers employed additional strategies to winnow down students most likely to use and benefit from feedback.

**Differentiating Feedback According to Perceived Student Motivation, Willingness, and Ability**

Because participants knew not all students would utilize feedback and their time and energy was limited, teachers focused their feedback efforts most heavily on those students they
believed most likely to value and use it to expand their learning potential. Participants acknowledged they felt an obligation to provide feedback to all but admitted the most motivated and willing students received more. Feedback interactions thus reinforced teachers’ perceptions of student abilities, in that stronger students were given sophisticated feedback which would be more likely to help them advance cognitively, and more struggling students received more targeted specific feedback which was less likely to transcend a specific learning task.

It is common for students who are perceived to be high achieving and more motivated and engaged to receive more total feedback, and more carefully structured and specific critical feedback from teachers (Engelsen & Smith, 2010; Havnes et al., 2012; Rubie-Davies, 2007). Ideally, all students would receive detailed, mutually understood feedback geared to advance them through the ZPD and develop sophisticated higher mental processes (Palinscar, 1998; Smagorinsky, 2018). Practically speaking, teachers explained they provided essential feedback to struggling students to assist them to simply meet a learning objective. Such feedback is more in line with the narrow interpretation of scaffolding which does not result in more sophisticated cognitive ability and may reinforce deficit conceptions within students who are already struggling in school (Smagorinsky, 2018). The limited feedback interaction is also less likely to fulfill needs for relatedness and competence in both students and teachers.

When students successfully complete school learning tasks they demonstrate a sense of competence (Niemiec & Ryan, 2009). One can infer teachers who see their students master learning tasks with feedback similarly experience feelings of competence. Further, both teachers and students have an inherent need for relatedness (Deci & Ryan, 1985). It is understandable, therefore, why teachers would choose to devote more of their scarce time to students who they
know appreciate and will utilize the feedback, as the interaction reinforces a sense of relatedness that is need-fulfilling for both parties.

Enjoying a general sense of psychological well-being, for both teachers and students, requires having the three basic psychological needs for competence, relatedness, and autonomy fulfilled (Ryan & Deci, 2020). And, if these needs are met, humans’ inherent drive to explore and master complex learning tasks will flourish (Ryan & Deci, 2020). Participants described how they frequently experienced negative emotions and a lack of desire to engage in feedback practices with students. Clearly, the current structures and limitations of the institution of school prevents teachers from experiencing the kinds of need fulfilling interactions regarding feedback they desire.

**Feedback Effectiveness and Attendant Positive and Negative Emotions**

Participants described their emotions regarding providing feedback to students as a roller coaster of a few high peaks and several low dips. The teachers in this study used words such as frustrating, discouraging, burden, increased workload, survival, and disheartening to capture their feelings about feedback. Every participant, however, also pointed to a specific instance where they experienced a connection with students and observed or later discovered their feedback had resulted in improved learning and academic achievement beyond the bounds of their own unique class. In such cases, participants words and body language expressed satisfaction, confidence, and even joy. Unfortunately, the structures and barriers embedded in the institution of school relegate the strong positive experiences as the exceptions to the feedback rule.

Feedback has been identified as one of the most powerful influences on student learning and achievement (Hattie, 1999; Hattie & Jeager, 1998). For feedback to be at peak effectiveness,
it must be delivered in such a way that students are capable of understanding the feedback message and are able to use the information to close a learning gap (Hattie & Timperley, 2007; Nicole & Macfarlane-Dick, 2006; Sadler, 1989). When not carefully targeted in such a way that it does not call attention to the self, feedback may actually result in worse performance (Kluger & DeNisi, 1996; Shute, 2008). Students who traditionally struggle in school, are naturally passive or have low trust in teachers are less likely to use feedback to improve their performance (Black & William, 1998; Havnes et al., 2012; Yeager et al., 2014). Participants in this study described multiple barriers which imposed on their ability to provide targeted, clear feedback which connected with students specific learning needs.

Every participant in this study expressed a desire to hold meaningful, one on one feedback conversations with students, and every participant lamented their inability to manage their large number of students and limited time to do so. Mutually negotiated, collaborative conversations which overcome the traditional limitations of the school structure have the potential to move a student through the ZPD to a higher level of cognitive processing and achievement (Hausfather, 1996; Smagorinsky, 2018). Ultimately, students would internalize these processes and be able to repeat them in a variety of contexts (Fani & Gahaemi, 2011). Internalization and application is evidence of the development of intrinsic motivation.

Intrinsic motivation is linked to positive academic performance, increased conceptual understanding, and affective benefits, such as positive emotions and enjoyment of academic work (Deci et al., 1991). This motivational state, however, depends on having all three basic psychological needs for competence, relatedness, and autonomy fulfilled (Deci & Ryan, 1985). Participants in this study explained various reasons why they could not fulfill their own basic
needs and experience psychological well-being and intrinsic motivation to provide feedback to students.

Large class sizes made it impossible for teachers to establish the warm, caring relationships which met their need for relatedness with all students. The academic calendar further inhibited establishing such connections. Participants who were able to teach a class or program where students spent longer calendar time, even as long as two academic years in some cases, genuinely felt a connection with students and believed they had a better grasp on the specific learning needs of those students. In many cases, however, teachers explained they might only have students for one academic term and therefore had virtually no opportunity to form meaningful relationships. During the academic term, teachers felt they did not have the freedom, or autonomy to design feedback practices because they were beholden to meeting institutionally imposed curriculum or learning standards.

Teachers described their need to assess students against a set of learning standards and provide a grade or score indicating the students’ level of mastery. While they did offer feedback to accompany or explain the grade, teachers reported the majority of students ignored the feedback comments and did not use feedback to reassess or improve their performance. Grades or other normative comparisons result in potential negative results of feedback (Gibbs & Simpson, 2005; Kluger & DeNisis, 1996). Black et al. (2004) identified providing quality feedback without a mark or grade as one important process for school improvement. Teachers did not feel they had the autonomy or time to incorporate more feedback and less grading, and grades similarly reduce students’ experience of autonomy.

Extrinsic rewards offered to incentivize people to action have the reverse effect of reducing intrinsic motivation, specifically because such rewards reduce a person’s sense of
Students’ sense of autonomy can be enhanced by teachers removing the pressure of grading or evaluation and emphasizing the importance of learning (Niemici & Ryan, 2009). Teachers, if they had true autonomy, described how they would have smaller class sizes and more time to connect with each student. They would form the strong, need meeting connections, diagnose each student’s learning need, and provide feedback which facilitated advanced, self-regulated intrinsic motivation to learn and grow.

Participants in this study attempted to provide meaningful feedback to all students, but admitted it was a practical impossibility. As a result, they attempted to use strategies to give feedback within the overriding structure of school which they hoped would assist students to improve their learning. In many cases, participants found the process burdensome and the tradeoffs ineffective and unsatisfying. In some instances, however, whether via a brief informal interaction during class, or when a student was willing to make time to meet and have more in-depth conversations, teachers reported feedback led to improvement and they took pride in their effort. Teachers know feedback is important, and they know it can be effective. Without the ability to provide it in the manner they prefer, however, they observe students ignoring their efforts. The resulting lack of competence and autonomy, coupled with teachers’ inability to form relationships with all students, left them feeling more negative than positive about providing feedback to improve student learning. The challenges and nuances of providing individualized feedback to a large group of students in a typical classroom produced implications for a variety of stakeholders involved with public education.

**Implications**

The research findings have implications for stakeholders at all levels of education, including teachers, professional development coordinators, administrators, teacher preparation
programs, and educational policy makers. The implications are highlighted according to stakeholder groups in the following sections.

**Teachers**

Teachers face many challenges in their daily practice, including lesson planning, student engagement, classroom management, adequately covering required curriculum standards, and providing effective feedback to promote student learning and motivation. Research literature indicates feedback has the potential one of the strongest effects on student learning (Hattie, 1999; Kluger & Denisi, 1996). Providing feedback takes skill, dedication, and time (Hattie & Jaeger, 1998; Hattie & Timperley, 2007). Teachers universally acknowledge the importance of providing feedback yet find, in practice, they do not have the time or ability to get feedback to students in the manner they deem most effective. Further, teachers spend an inordinate amount of time writing feedback comments they know the majority of their students will not use or carefully review. Why?

Teachers may wish to reconsider how they use their scarce available time to provide feedback. As an Economics major, I understand every decision involves an opportunity cost, or the value of the next best choice foregone. Teachers highly value interpersonal feedback, but rarely make time during class to deliver in-depth feedback to students. Teachers may reevaluate their practice to try sacrificing other classroom activities to make dedicated time for feedback. Teachers were forced to experiment with new technology and instructional delivery systems during the pandemic-induced distance learning. Teachers may wish to leverage these strategies to meet required content standards and free up time for collaborative, meaningful feedback discussions with students. Further, teachers may consider abandoning the labor-intensive written
feedback comments they know, and research literature confirms are relatively ineffective for promoting improved learning.

In some cases, higher education institutions place burdensome written feedback requirements on instructors (Tuck, 2012), but secondary schools have a variety of grading and evaluation policies which may include rubrics and standards, but do not necessarily mandate the writing of additional comments. Further, when presented with a grade or mark, feedback comments are simply ineffective for promoting learning (Black et al., 2004; Crooks, 1988; Gibbs & Simpson, 2005). Yet, teachers continue to grade student work and spend countless hours writing comments to accompany the grade. Here we are, right back in the Indianapolis coffee shop with the beleaguered teacher and her stopwatch. Teachers may want to simply stop spending time writing comments and experiment with alternative ways to provide feedback. Additionally, teachers may wish to spend more time providing feedback before an assignment is completed and a grade is assigned. Making alternative choices about how to use their scarce time and energy may both improve the effectiveness of feedback, and improve the overall psychological well-being of teachers when providing feedback to students.

Professional Development Coordinators

Even experienced teachers express frustration at their inability to consistently provide effective feedback that is well received and acted upon by students. Therefore, professional development (PD) leaders may choose to devote their time and resources to research and present techniques for providing effective feedback for learning. Specifically, PD leaders may explore best practices regarding how to practically provide meaningful feedback in a timely fashion to a large number of students.
It is worth taking a moment to note here that, from both my own experience and according to research, teaching practices are notoriously difficult to change. In a study of teachers’ implementation of a feedback strategy, for example, See et al. (2016) noted teachers were prone to disagree with Hattie’s (1999) research findings and rely on their own intuitive beliefs. Researchers also noted quality professional development about feedback must not assume teachers recognize the characteristics of quality, higher level feedback (See et al., 2016).

Further, to encourage teachers’ intrinsic motivation to engage in new feedback practices, feedback suggestions must be provided in a way to connect with teachers’ basic needs for autonomy, relatedness, and competence. Within a framework of best practices, teachers should be encouraged to use their professional judgment about how to provide feedback, and to share their experiences with colleagues. No human will have motivation to experiment with new practices without a feeling of autonomy.

Professional development coordinators and planners therefore have a variety of options for presenting effective feedback research and strategies. One step-by-step approach is the instructional feedback program outlined by Oakes et al. (2014). This technique has numerous suggestions that incorporate quality research and addresses the practical considerations outlined in this study. The plan emphasizes pre-planning, for example, to create time for feedback and multiple opportunities to monitor the effectiveness of feedback provided across multiple learning domains. Other PD options may be to present elements of best feedback practice research and invite faculty to design implementation plans, thus maximizing teachers’ feelings of autonomy.

The wise feedback strategies of Yeager et al. (2014), which build connection and trust between teachers and students, is one example of a practice teachers could easily implement. Similarly, Black et al. 2004 offered a number of practical feedback implementation strategies,
from questioning techniques to tips for providing feedback without grades or marks, to building in time for repeated practice into daily lessons. Again, inviting teachers to be collaborators in designing how to implement these techniques may encourage more buy-in and motivation to make changes. This emphasis on autonomy along with other basic human needs of teachers is similarly important for school administrators who wish to implement effective policies to enhance student achievement and learning.

**School Administrators**

Both central administration and building administration may wish, in collaboration with local teachers’ union representatives, to reconsider institutional practices as varied as the school calendar, the number of students per class, the length of the academic term, and teacher observation and evaluation practices. The research findings make it clear large numbers of students and a relatively short academic calendar make it nearly impossible for teachers to form meaningful relationships with students, and to diagnose the specific learning needs of all students in their charge. Therefore, administrators may wish to explore budgeting practices to make reducing class sizes a priority.

Class size is certainly a hot button issue for all stakeholders, including the public who demand excellent education for their students while at the same time demanding schools are frugal and taxes remain low. Intriguing research findings indicate smaller class sizes may have the most benefit for students who traditionally struggle in school and are at risk of dropping out (Krassel & Heinesen, 2014). Additionally, research indicates smaller class sizes have a long run positive impact on total educational attainment level, and wages and earnings later in life (Fredriksson et al., 2013).
Interestingly, available research on class size rarely focused on differences in pedagogy resulting from having fewer students in class. Researchers found pedagogy largely remained the same despite class size differences (Ehrenberg et al., 2001; Wyss et al., 2007). Administrators may therefore wish to tie class size reduction with implementing robust, interpersonal feedback practices geared to individual student needs, particularly for students who traditionally struggle in school. In addition, administrators may consider whether the length of their academic terms is sufficient to enable teachers to make meaningful connections with all students.

All of the schools in this study employed academic calendars which feature the traditional summer break of 2.5 to 3 months. Administrators may wish to make a case to the community (and likely the faculty) that an extended time away from school reduces the opportunity to provide the targeted feedback which could result in the development of advanced cognitive processes and academic achievement for all learners. Administrators may also consider whether a teacher will have adequate time to diagnose students’ learning needs and offer productive feedback over the course of a short academic term. The interdependent, collaborative, and need-fulfilling connections required for successful feedback take time to develop.

In terms of teacher evaluation, every building administrator has the task of observing and evaluating their teachers’ performance. Research shows feedback has the strongest potential effect on student learning (Hattie, 1999). Administrators, therefore, may wish to include observation of their teachers’ feedback practices as part of their teacher evaluation process. Traditional evaluations include observation of classroom management, lesson planning, and student engagement. Because finding time to deliver effective feedback is crucial, administrators may therefore wish to include a feedback component in their observation and performance review metrics. Further, administrators may find it powerful for faculty motivation and student
learning to encourage faculty to spend less time on content, or record keeping or other time-consuming activities and more time on planning to provide timely in-person feedback. All of the high schools represented in this study featured a professional learning community (PLC) faculty development organization structure which created some amount of time for teacher collaboration. Administrators might also emphasize planning and incorporating feedback practices as a key requirement of the PLC process.

**Teacher Preparation Programs**

College faculty who are charged with providing teacher education may wish to emphasize the importance of providing effective feedback for learning. Teacher education programs are governed by specific institutional standards which must be met, and there is certainly a broad array of pedagogical issues which teacher education students need to learn and practice. Professors may find it beneficial to make sure they include ample instruction and practice providing effective feedback. New teachers need to not only learn how to balance the challenge of mastering course curriculum, plan engaging lessons, and manage their classes, but also how to find the time to provide effective feedback targeted to improve student learning and achievement. Evaluating a students’ learning needs, ensuring basic psychological needs are met, and making time to connect with feedback are skills which require instruction and practice.

**Educational Policymakers**

Whether it be high stakes testing requirements, threats of implementing voucher programs to allow students to move away from public schools to private institutions, or mandating the Common Core or other curriculum standards, educational policymakers have sought to implement programs or rules to improve educational outcomes for all learners. Specifically, policymakers are keen to reduce, if not eliminate, disparities in educational
achievement based on race, socioeconomic status, or other demographic categories. Research indicates students who traditionally struggle in school are the least trusting of their teachers, and the least likely to implement feedback to improve learning (Havnes et al., 2012; Yeager et al., 2014). Additionally, teachers who feel pressure to cover a plethora of mandated content standards and prepare students for high-stakes tests find it difficult to sacrifice scarce class time for feedback. Further, when teachers do provide feedback, large class sizes make it impossible to connect in a meaningful way with all learners, so they often give more in-depth feedback to those students they already perceive as the most motivated. Passive students who struggle with learning fail to understand or apply the feedback teachers give them (Havnes et al., 2012).

Therefore, educational policymakers may reconsider how to promote professional autonomy for teachers to evaluate learner’s specific needs and implement feedback strategies geared to advance the cognitive abilities of each student. Reducing required content standards, for example, would create time for teachers to focus on student thinking and academic skills which transcend any one discipline. Teachers may then have the opportunity to forge strong and trusting relationships with even traditionally passive struggling students. Such relationships are critical for promoting psychological well-being in such students and paving the way toward the development of intrinsic motivation to learn.

Summary

This study has implications for teachers, professional development coordinators, school administrators, teacher preparation programs, and educational policymakers. By placing an emphasis on creating more opportunities to implement effective feedback practices, stakeholders can develop pedagogy which facilitates quality feedback to promote student learning and cognitive development. Teachers in this study believe feedback is important and clearly want to
deliver meaningful feedback to all of their students. The teachers, however, described several institutional limitations they felt inhibited their ability to do so. Feedback was described as one of the more challenging and least rewarding aspects of their job. By rethinking how to structure school to place feedback at the forefront of policymaking and academic planning, teachers who most closely interact with learners may be able to form the warm and caring relationships they desire to have with students, provide specific targeted feedback which results in competence for students, and reinforce feelings of competent professionalism in teachers. Finally, teachers may experience the autonomy to structure their classes in a way to have more meaningful feedback interactions with students. Teachers would thus be more likely to experience psychological well-being, and students would be more likely to receive the targeted feedback which connects with them in the ZPD and facilitates the development of advanced cognitive processes. Although my findings may contribute to the research literature related to teachers’ use of feedback in secondary schools, there are limitations to my study which I next explore.

**Limitations of the Study**

This study explored how secondary classroom teachers make decisions about how to provide feedback to improve learning, and how they judge whether their feedback was effective. The study was limited to 16 current teachers from five high schools located in the upper Midwest. The geographical concentration could affect findings in that feedback practices may be more regulated or implemented differently by teachers in different areas of the country.

Participants sat for a semi-structured interview about their feedback practices. While I did reach out to participants to ask follow-up questions and confirm I had captured their feelings accurately, this study was completed during the onset of the Covid-19 pandemic. As a result, the ability to connect with teachers and find time to hold in-depth follow up conversations was
limited. Similarly, the interview process itself relies on teachers to self-describe their feedback practices, and there is always the possibility teachers’ descriptions of their beliefs may not accurately reflect their practices. The data collected from practicing teachers present intriguing opportunities for future studies.

**Recommendations for Further Research**

One possible study could include specific observations of teachers as they provide verbal feedback to students. Because teachers’ value in-person verbal feedback, it would prove interesting and enlightening to observe the specific type of feedback they offer, and to note the obstacles or challenges they encounter while attempting to make verbal feedback part of their regular classroom practice. Observers may focus on how teachers diagnose students’ specific learning gaps, and whether the feedback moves beyond the simplistic scaffolding approach of completing a specific learning task to a more complex guidance of students regarding how to develop advanced mental processes as envisioned by Vygotsky (1978).

A second potential study could include interviews with students and analysis of student learning performance to discover what level of improvement or change was evident in student work after they received feedback. Further, students could provide direct insight as to whether the feedback they received truly met their psychological needs for autonomy, relatedness, and competence. Finally, students may be queried to ascertain the salient reasons for why they do not act upon feedback from their teachers.

I completed this study during the unexpected, forced distance learning which resulted from the outbreak of Covid-19. I was able to re-connect with some of my participants, who told me the distance learning had changed their feedback practices and made them more responsive to individual students. The frustration they described shifted somewhat from making time for
feedback, to finding a persistent number of students who were unable or unwilling to participate in the required distance learning. Future studies may delve into the way distance learning impacted teacher feedback practices. Specifically, teachers should be asked to reflect on what they had to give up in order to try to effectively implement online learning, and whether sacrificing part of their practice out of necessity did indeed result in more satisfying and meaningful feedback and interactions around feedback with their students.

Closing Thoughts

This study developed as a result of ongoing professional reflection and observations of teaching colleagues in concert with my own school’s initiative to develop a set of grading and evaluation principles to be adopted by our faculty. The goal of the grading policy was to implement best practices to promote student learning and achievement and reduce the number of failing grades assigned to students of color. Our school, like many, experienced a pronounced achievement gap and we made it a mission to try to do something about it. As I reflected on the changes we made, it became clear we did not emphasize strongly enough that providing meaningful specific feedback must be the foundation upon which any evaluation of learning should be built. I had many invigorating and thought-promoting discussions and debates around grading practices with my colleagues, and their descriptions of their own thinking and experiences around grading and feedback prompted me to dig further into this topic. I am grateful for their willingness to be sounding boards for me, and their encouragement of my efforts to complete this work.

My research into feedback effects and practices has proved enlightening and has, I believe, improved my own teaching practices. I reviewed my classroom practices to make sure I build in time for feedback, and I put meeting students’ basic needs at the forefront of my
planning. I have also worked to deemphasize grading in favor of formative practice with targeted feedback. Finally, I no longer spend time writing lengthy feedback comments. I trust the class to be productive while I meet individually with students to discuss their work. And, I explain to students why I believe encouraging their autonomy is important and the connection between quality feedback and learning. I have, I hope, enabled them to be partners in the learning process.

I often think of the 16 participants I interviewed. It was a great pleasure to spend time with teachers from other schools and to learn about their perceptions and experiences regarding providing feedback to students. They were all willing to make time, and I know how precious a resource time is for them. I was also heartened to hear how committed they were to supporting students and trying to provide quality feedback. I also empathized with their frustrations when they could not connect with all students. It is my hope that this research may contribute to a change in teaching practices which reduces perceived workload and increases meaningful and rewarding feedback interactions between teachers and students. I hope, one day, to sit next to a teacher in a coffee shop and hear them having a spirited and enthusiastic discussion about learning with a student instead of laboring over comments they despair will ever be read or used.
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APPENDIX A

Informed Consent Form

Participation Key Information
Secondary Classroom Teachers’ Beliefs Regarding the Use of Feedback for Learning

What you will be asked to do: I ask participants to participate in a semi-structured interview about providing feedback to students for learning. The time commitment is about an hour, with potential for follow up questions. The study will take place at a time and location of convenience for participants.

Risks: There are no known risks from participation in this study, but there may be some that I am not aware of.

Please read this form and ask any questions you may have before agreeing to be in the study.

You are invited to participate in a research study about teacher use of feedback to improve student learning. You were selected as a possible participant and are eligible to participate because you are an experienced classroom teacher who has provided students with feedback as part of your teaching practice. The following information is provided to help you make an informed decision whether you would like to participate or not.

What will you be asked to do?

If you agree to participate in this study, I will ask you to do the following things:

- Participate in a semi-structured interview consisting of 7-10 scripted questions with time for follow-up and additional discussion arising from your answers.
- Provide written examples of feedback provided to students, and/or any school or department policy guidelines which impact your feedback practice.
- The interview will initially take about an hour of your time, with the potential for some follow up questions or clarifications which may require an additional half hour to an hour. The interview will take place at a location of convenience for you.
- The interview will be audio recorded and transcribed by me for the purposes of accuracy.
What are the risks of being in the study?

This study has no known risks.

Here is more information about why we are doing this study:

This study is being conducted by Dale Stahl under the auspices of the Educational Leadership and Learning Department at The University of St. Thomas. The study was reviewed for risks and approved by the Institutional Review Board at the University of St. Thomas.

The purpose of this study is to gain insight into the use of feedback by classroom teachers to improve student learning. This is a qualitative study that aims to detail the experience of teachers using feedback. Specifically, I will explore why teachers choose the feedback they use, what they hope the results of that feedback will be and whether they find the feedback they use to be meaningful and effective in improving student learning.

There are no direct benefits for participating in this study.

We believe your privacy and confidentiality is important. Here is how we will protect your personal information:

Your privacy will be protected while you participate in this study. I will meet you where and when it is convenient and private for the purposes of conducting the interview. The records of this study will be kept confidential. In any reports I publish, I will not include information that will make it possible to identify you. The types of records I will create include:

- An audio recording of the interview
- A written transcript made from the recording
- Copies of written feedback comments or other feedback related documents, if provided
- Contemporaneous notes made during the interview
- All recordings will be kept on my secure, password protected University of St. Thomas OneDrive storage system.
- Transcriptions notes and documents will be kept in a personal safe in a locked storage room in my apartment building. Recordings notes and transcripts will be destroyed upon completion of this project.

All signed consent forms will be kept for a minimum of three years once the study is completed. Institutional Review Board officials at the University of St. Thomas have the right to inspect all research records for researcher compliance purposes.

This study is voluntary, and you have the right to withdraw from the research with no penalties of any kind.

Your participation in this study is entirely voluntary. Your decision whether to participate or not will not affect your current or future relations with the administration of your school or the University of St. Thomas. There are no penalties or consequences if you choose not to
participate. If you decide to participate, you are free to withdraw at any time without penalty. Should you decide to withdraw, data collected about you will be destroyed unless it is already de-identified or published and I can no longer delete your data. You can withdraw by simply stating you no longer wish to participate, or by email or other written communication. You are also free to skip any questions I may ask.

Who you should contact if you have a question:

My name is Dale Stahl. You may ask any questions you have now and at any time during or after the research procedures. If you have questions before or after we meet, you may contact me at 612-597-9612, or stah5610@stthomas.edu. Information about study participant rights is available online at https://www.stthomas.edu/irb/policiesandprocedures/forstudyparticipants/. You may also contact Sarah Muenster-Blakley with the University of St. Thomas Institutional Review Board at 651-962-6035 or muen0526@stthomas.edu with any questions or concerns (reference project number 1497574-1.)

STATEMENT OF CONSENT:

I have had a conversation with the researcher about this study and have read the above information. My questions have been answered to my satisfaction and I consent to participate in the study. I am at least 18 years of age. I give permission to be audio recorded during this study.

You will be given a copy of this form to keep for your records.

_______________________________________________________________
Signature of Study Participant Date

_______________________________________________________________
Print Name of Study Participant

_______________________________________________________________
Signature of Researcher Date

UNIVERSITY OF St.Thomas
APPENDIX B

Recruitment Email

Dear XXXX,

Hello and thank you for taking a minute to consider helping a fellow social studies teacher!

I’m conducting research on teacher beliefs about feedback in order to earn a PhD from the University of St. Thomas, and I appreciate your willingness to donate your valuable time. I am targeting social studies teachers because it’s my subject, and my literature search indicated social studies teachers’ opinions have not been represented as often as other departments in academic research about feedback.

While [your principal] and your district [central administration title and name] have given me permission to contact you, your participation is completely voluntary, and your name and school location will be kept confidential in my published dissertation. I am asking you to participate in a relatively brief interview which may take approximately an hour and includes 10 questions regarding your beliefs about and use of feedback with your students.

I selected [your school] as a research location primarily because I know [your principal] and hoped their personal reference would ease your mind if you had any concerns about the purpose of my research. Further, your student population and demographics match my research parameters of a large, diverse Midwestern public high school. I want to capture the experiences of current public school teachers.

I will meet you essentially anywhere and anytime it is convenient, and I will happily provide coffee, lunch or dinner. The interview will take about an hour, depending on the depth of our conversation and your preferences and time availability. I may contact you with a follow up question or two you could answer via email or during a quick phone call. I will record your responses and take notes, but again you and your school will remain confidential.

You can read the attached informed consent document which lays out all of your rights and protections when participating in a research study. In short, your responses are confidential, your identity and school name will be anonymous, and your participation is completely voluntary. I won’t be sharing with your principal who has or has not responded to my inquiry.

Thank you for considering my request. Please respond to indicate whether you have any interest in participating. Again, I will arrange to meet at your convenience and a meal and or beverages are on me. I know your time is valuable. Please feel free to ask any questions you have about anything related to my study or academic research in general.

I am excited about the possibility of adding social studies teachers’ perspectives to the academic research literature on feedback and student learning. I look forward to hearing from you soon.

Best Regards,

Dale Stahl
Phone
APPENDIX C

Interview Questions and Script

Thank you for being willing to take the time to talk to me about your experience providing feedback to your students. I just want to take a moment to reassure you that there is no evaluation or judgment implied in any of these questions. My goal is simply to better understand what types of feedback teachers offer to students and gain insight into the process.

1. What classes do you primarily teach and what grade level are the students in those classes?

2. How long have you been a teacher?

3. If I ask you how you use feedback with students, what does that word mean to you? What is feedback?

4. What factors influenced your decision about using the type of feedback you described?

5. What are the strengths of the type of feedback you use for improving student learning or mastery of the material?

6. What are the limitations or challenges you find regarding providing feedback? (If not mentioned, ask if class size is a factor?)*

7. So if these challenges were removed, how would you see yourself using feedback differently?**

8. How do you determine whether feedback was effective for helping students learn?

9. Can you describe how the ways you use and think about feedback have changed over the course of your teaching career?

10. Does the feedback you use differ based on either the classes or the students you teach?

11. Out of all the things we talked about today, or things we missed, what should I pay attention to when I read over this interview? (Patton, 2015).

Thanks for taking the time to talk with me about feedback in your classroom!

* All 16 participants independently mentioned class size without prompting.

**This question was a follow up I noticed I asked after reviewing transcripts and recordings of the first three interviews. I added it as a standard question for all subsequent interviews.
APPENDIX D

Member Check Email

Hello XXXX I hope this finds you well!

I wanted to thank you again for participating in my research study. I anticipate completing the work and defending the dissertation this spring. To that end, I completed a chapter analyzing the data from all 16 participants, and I wanted to send you a summary of the major conclusions (see attached).

Your school will be identified as a large suburban high school in the Midwest, and participants have been assigned pseudonyms for the purposes of publication. Likewise, the names of the specific courses you teach are not identified in the text.

I worked to represent your views about providing feedback accurately and carefully. The attached doc is, again, a summary. Within the chapter are specific descriptions from each of you which flesh out and provide examples of the overall conclusions and major themes related to feedback I identified from your responses. These specific comments are coded with a pseudonym so that all participants remain anonymous.

If you have any comments or concerns about my conclusions, or questions about the data analysis, please don't hesitate to contact me. My most important goal is to make sure I have accurately captured the beliefs and experiences you shared.

Thank you again for your help, and my best wishes to you for the rest of the school year and beyond.

Best,

Dale