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Student Perception of Teacher Feedback and the Relationship to Learner Satisfaction in a High School Online Course

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by Lesli Nichole Lemmon

March 2014

A Dissertation submitted to the Education Faculty of Lindenwood University in

partial fulfillment of the requirements for the degree of
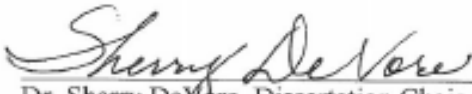
Doctor of Education

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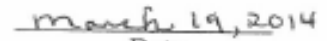
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Declaration of Originality

I do hereby declare and attest to the fact that this is an original study based solely upon my own scholarly work at Lindenwood University and that I have not submitted it for any other college or university course or degree.

Lesli Nichole Lemmon

Signature: *Lesli Nichole Lemmon* Date: 3/19/14

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Abstract

The focus of this study was to examine a high school online learning experience. This study used Hattie's (2009, 2012, 2014) four levels of feedback to determine the most frequent levels of feedback provided to online learners. This study also determined if a correlation existed between students' perceptions of the amounts and levels of feedback they received from their instructor and overall course satisfaction. The four overarching questions addressed in this study were as follows: What levels of feedback (task, process, self-regulation, personal) are an online teacher using when responding to student work? At what level are students satisfied with the quality and quantity of feedback they are receiving from their online teacher? At what level are students satisfied with the online course? What correlation exists between satisfaction with feedback quality and quantity and overall course satisfaction? This study yielded findings that most online teachers in this particular high school online learning program provided the lowest levels of feedback: level one (task) and level four (personal). This study also showed a positive correlation at a statistically significant level between students' perceptions of the *amount* of feedback they receive and overall course satisfaction, as well as a positive correlation at a statistically significant level between students' perceptions of the *levels* of feedback received and overall course satisfaction. This study revealed there was a stronger correlation between students' perceptions of the *amount* of feedback they received and overall course satisfaction than the *level* of feedback they received. Overall, it was determined there is a need for continued professional development in the area of navigating between different feedback levels.

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Chapter One: Introduction

We are a digital society. Researchers from MIT reported that the amount of digital data created each year has grown exponentially: "it reached 2.8 zettabytes in 2012, a number that's as gigantic as it sounds, and will double again by 2015. Digital information is expected to increase by 2000% by 2020" (Tucker, 2013, p. 51). Prensky (2013) argued:

> Technology isn't about new 'stuff'… It's not about different ways to do what we do now.... Technology, rather, is an extension of our brains; it's a new way of thinking…. So technology isn't something we need in *addition* to mental activity; technology is now *part* of mental activity. (p. 23)

In 2012, the Center for Public Education presented the *Searching for the Reality of Virtual Schools* report. The report concluded, "[t]he place of digital content in public education is therefore not a matter of debate; it is inevitable" (Barth, Hull, & Andrie, 2012, p. 1).

In Chapter One the growth of online learning in the K-12 environment is highlighted. What it means for a student to be in an online learning program is also defined. Hattie's (2009) four levels of feedback are also established in this chapter and Garrison's (2011) Community of Inquiry model is introduced as a framework for the study. The lack of research available in the K-12 online world is discussed as well as the research questions and definitions that guide this study. Finally, limitations and assumptions for the study are addressed.

Background of the Study

Evergreen Research Group (2012) reported in *Keeping Pace With K-12 Online &*
Blended Learning: An Annual Review of Policy and Practice, "More students are taking
online and blended courses than ever before" (p. 6). The researchers estimated that
"275,000 students attended a fully online school in 2011-2012" with blended schools and
district-created programs being the fastest-growing segment (Evergreen Research Group,
2012, p. 6). Furthermore, "The total number of students taking part in all of these
programs is unknown, but is likely several million, or slightly more than 5 percent of the
total K-12 population across the United States" (Evergreen Research Group, 2012, p. 6)
and overall, "close to two million online courses are taken by public school students
annually" (p. 1).

Life in a digital society is not the only driving force behind the sudden increase in
online learning opportunities. The International Association for K-12 Online Learning
(iNACOL) promotes the advantages for online learning. The advantages listed include:
"its capacity to provide customized instruction more efficiently to accommodate different
student needs, increase access to high-level courses, and deliver subject matter in ways
not possible with traditional classroom instruction" (Barth et al., 2012, p. 1).

As districts brace themselves for the changes that online learning brings,
understanding the differences between virtual schools, fully online courses and blended
opportunities become critical to the discussion. Barth et al. (2012) differentiated between
"fully online" and "virtual schools" by explaining:

In virtual schools, students sign up for a full class load and interact with teachers, often through e-mails, instant messages, or chat rooms…They can be part of a larger class or work through material at their own pace. (p. 6)

In contrast, fully online can mean "students can take single courses online, but all interaction is done through the computer, whether in conjunction with other students in other places, or as self-paced learning reviewed later by a teacher, who sends online feedback" (Barth et al., 2012, p. 6). Finally, blended learning "is a term used to indicate a mixture of in-person and online instruction" (Barth et al., 2012, p. 6).

While fully online, virtual schools and blended learning vary in the level of instruction offered online, each method has one factor in common: a teacher providing feedback. While the feedback provided may be different than in a traditional classroom, online teachers still have a major influence on student outcomes (Hattie, 2012). A key factor in increasing student achievement is the levels of feedback teachers provide (Garrison, Anderson, & Archer, 2000).

Hattie (2009) researched impacts on student achievement in *Visible Learning: A Synthesis of Over 800 Meta-Analyses Relating to Achievement*. These meta-analyses focused on many different influences on learning – home, school, teacher, and curriculum – and "were based on more than 50,000 individual studies, comprising more than 200 million students, from 4- to 20-year olds, across all subjects" (Hattie, 2012, p. 18). Hattie (2009) asserted that "following the completion of all possible influences on achievement…feedback was among the most powerful influences" (p. 173). Hattie (2009) went on to explain:

Feedback needs to provide information specifically relating to the task or process of learning that fills a gap between what is understood and what is aimed to be understood, and it can do this in a number of different ways. (p. 174)

Hattie (2009) outlined the major feedback questions as, "'Where am I going?' (learning intentions/goal/success criteria), 'How am I going?' (self-assessment and self-evaluation), and 'Where to next?' (progression, new goals)" (p. 177). Finally, Hattie (2009) explained that feedback works at four possible levels:

First, feedback can be about the task or product, such as the work is correct or incorrect…. Second, feedback can be aimed at the process used to create the product or complete the task…. Third, feedback to the student can be focused at the self-regulation level, including greater skill in self-evaluation, or confidence to engage further on the task…. Fourth, feedback can be personal in the sense that it is directed to the 'self' which… is too often unrelated to performance on the task. (p. 177)

Researchers are beginning to make connections between the importance of feedback and what online learning and teaching can mean for the expansion of personalized, relevant and formative feedback methods. Hatziapostolou and Paraskakis (2010) argued that through the use of Learning Management Systems, or online learning platforms, instructors can provide feedback that is more timely, motivational, personalized, manageable, and directly related to assessment criteria. They explained:

Students' perception of feedback is very important. Students with positive mindset can perceive feedback as an opportunity for further development while students with a negative attitude may be discouraged. As a result, quality

formative feedback should also be effectively communicated to students in order

to aid motivation and ensure that students engage with the content of the

feedback. (Hatziapostolou & Paraskakis, 2010, p. 113)

Conceptual Framework

Three concepts were considered when designing this study. These concepts

included: identifying what a quality online learning environment looks like, the

importance of student and teacher feedback, and the methodology and rationale behind

gathering student satisfactions and perceptions of course quality. These concepts are

critical when understanding what online learning environments should be in the greater

context of quality educational design and served as a framework for this study by

providing guidelines for quality online learning experiences (Garrison, 2011).

Garrison (2011), author of *E-Learning in the 21st Century: A Framework for
Research and Practice,* developed the Community of Inquiry model as a standard for

quality online learning experiences. According to Garrison (2011):

A theoretical framework for teaching and learning will reflect fundamental values

and beliefs about an educational experience. It is by making explicit the

theoretical elements that we reveal our educational ideals that will have a

profound influence on practice. E-learning has become the protagonist for

change, but the plot needs a purpose and direction. (p. 9)

The Community of Inquiry model assumed "that learning occurs within the Community

through the interaction of three core elements: cognitive presence, social presence, and

teaching presence" (Garrison et al., 2000, p. 88).

Garrison (2011) defined cognitive presence as "the extent to which participants in any particular configuration of a community of inquiry are able to construct meaning through sustained communication" (Garrison, 2011, p. 89). Cognitive presence is required for true critical thinking to occur. The second core element of the model is social presence (Garrison, 2011). Garrison et al. (2000) defined social presence as "the ability of participants in the Community of Inquiry to project their personal characteristics into the community" (p. 89). The goal is to show others in the online environment they are unique people with unique ideas to contribute. Garrison (2011) explained the final element, teaching presence, serves two functions: "The first function is the design of the educational experience" (p. 90). The second function is facilitation or "to support and enhance social and cognitive presence for the purpose of realizing educational outcomes" (Garrison et al., 2000, p. 90).

The Community of Inquiry model "provides a theoretical framework that can provide order and parsimony to the complexities of online learning" (Garrison, 2007, p. 61). In online learning environments each of these elements plays a critical role in the quality of course instruction and learner outcomes. Garrison (2007) argued, "there is evidence that a sense of community can be created online. It has also been shown that sense of community is significantly associated with perceived learning" (Garrison, 2007, p. 61). Garrison (2007) asserted, "Progression requires direction. The primary issue worthy of further exploration in terms of cognitive presence relates to the progressive development of inquiry in an online learning environment" (p. 61).

Finally, the important role of the teacher, even in an online learning environment, cannot be overlooked:

Interaction and discourse plays a key role in higher-order learning but not without

structure (design) and leadership (facilitation and direction)…. The consensus is

that teaching presence is a significant determinate of student satisfaction,

perceived learning, and sense of community. (Garrison, 2007, p. 67)

Boykin and Noguera (2011) continued to make the link between teacher

involvement and student success, with the added focus on the importance of feedback.

They noted:

Attribution theory primarily addresses the belief that people see explanations for

events (and their consequences) in which they have participated. In the academic

domain, this translates to reasons that students attribute to their own success or

failure. These beliefs can be influenced merely by the type of feedback or praise

that the students receive in reaction to their performance. (Boykin & Noguera,

2011, p. 65)

Hattie (2012) noted, "There is as much ineffective as effective feedback" (p. 19).

Wiggins (2013) suggested, "Less teaching, more feedback equals better results" (p. 13).

Wiggins (2013) continued to point out the common pitfalls many educators fall into when

providing feedback:

Effective feedback is concrete, specific, and useful; it provides *actionable*

information. Thus, 'Good job!' and 'You did that wrong' and B+ are not

feedback at all. We can easily imagine the learners asking themselves in response

to these comments, 'What *specifically* should I do more or less of next time, based

on this information?' No idea. They don't know what was "good" or "wrong"

about what they did. (p. 14)

So the question remains, how can educators ensure the feedback being provided to students is effective and useful? Hattie (2012) suggested "students welcome feedback that is just in time, just for them, just for where they are in their learning process, and just what they need to move forward" (p. 20). One of the major concerns with a traditional seated learning environment is that much of the feedback students receive in a typical day is related more to behavior management and very little to task and strategies (Hattie, 2012). Marzano (2007) believed this problem could be solved by establishing clear goals or targets with feedback as a follow-up:

> Feedback provides students with information regarding their progress toward that target. Goal setting and feedback used in tandem are probably more powerful than either one in isolation. In fact, without clear goals, it might be difficult to provide effective feedback. (p. 12)

Boykin and Noguera (2011) took the role of feedback a step beyond recognizing its impact on student achievement. Their research focused on feedback's impact on student satisfaction. The findings of their study indicated that students reported positive satisfaction with learning experiences when they believe the teacher "validated the students' capabilities, were accessible and approachable, held high expectations and provided appropriate levels of feedback" (Boykin & Noguera, 2011, p. 72). While this research focused on traditional seated courses, researchers are now starting to make connections between online instruction and feedback and learner outcomes including satisfaction rates.

Statement of the Problem

Barth et al. (2012) observed "little solid research on the impact of online courses or schools…. Interestingly, news organizations, rather than education researchers, seem to be taking the lead in investigating and reporting their effects" (p. 2). The researchers continued to point out "The lack of information will not stand in the way of it moving forward, however. Online learning when done well can transform instruction and provide the 21st century education our students need" (Barth et al., 2012, p. 2). The International Association for K-12 Online Learning reported:

> 40 states have passed significant state online learning policies, and 30 states plus the District of Columbia operate their own virtual schools. Five states—Alabama, Florida, Idaho, Michigan, and Virginia—require high school students to take at least one online course to graduate, and more states are expected to follow suit. (Barth, 2013, p. 33)

What little research is available on the outcomes of online learning have discovered modest positive impacts, but these studies largely observed post-secondary students, not K-12 learners. Department researchers reported:

> There are only a mere handful of comparable studies of K-12 students that met rigorous research standards. Of the seven K-12 studies examined, three showed significant effects in blended learning environments, one showed negative effects of online learning, and the remaining three had no statistically significant results. (Barth et al., 2012, p. 9)

Without research to support this new teaching methodology, how has it been able to grow at such a fast pace? The answer is simple; parents demand it. The 2013 Phi

Delta Kappa Gallup Poll of the Public's Attitudes Toward the Public Schools showed nationally, "63% of parents favored increasing opportunities for students to earn high school credits over the Internet" (p. 17). Barth (2013) explained:

> In a 2012 poll conducted in the United States, Germany and China, 9 out of 10 parents said they believed that technology would improve their children's ability to learn. At the same time, only one in three thought that students' technology needs were currently being met in school. (p. 34)

As Evergreen Research Group (2012) reported, Missouri currently ranks last in the nation in the number of online courses offered through a state program:

> Missouri has a very small state virtual school with the Missouri Virtual Instruction Program (MoVIP), no statewide online charter schools, and a few district programs. There has been an overall decline in online learning options and enrollment in existing options due to statewide budget cuts in 2009-2010. (p. 118)

In 2012, a large accredited district in Missouri began its own online learning program to meet parent and student needs. Funded by district budgets, the new department developed its own courses using district-approved curriculum and hired current teachers to also serve as online instructors. However, similar to other state and district programs, no research exists supporting the validity of the online program as a successful learning environment.

Purpose of the Study

The purpose of this study was to explore a K-12 online learning program with a focused review on the levels of feedback students received, student perception of

feedback quality and quantity, and how satisfied students were overall with their online learning experience. The ultimate goal was to determine if a correlation existed between student perception of teacher feedback quality and quantity and student satisfaction. This study also analyzed feedback provided by online teachers in this K-12 online program and determined what level was provided most frequently to students.

The lack of K-12 online learning research has been an ongoing problem for districts seeking to determine if online learning will benefit their students (Barth, 2013). This study sought to fill the gap in online learning research for the K-12 environment, particularly those interested in the role teacher feedback plays in student learning satisfaction.

Research Questions.

Bolliger and Halupa (2012) argued, "factors associated with student satisfaction in distance learning include instructor feedback, reliable technology and interactivity" (p. 82). Researching the levels of feedback and the impact of feedback on student satisfaction in an online course allows for better understanding of the importance of feedback in a student's education. The following research questions guided this study:

1. What levels of feedback (task, process, self-regulation, personal) are an online teacher using when responding to student work?

2. According to online students, at what level are students satisfied with the quality and quantity of feedback they are receiving from their online teacher?

3. At what level are students satisfied with the online course?

4. What correlation exists between satisfaction with feedback quality and quantity and overall course satisfaction?

Hypotheses

$H4_0$: A correlation does not exist between satisfaction with feedback quality and quantity and overall course satisfaction.

$H4_a$: A correlation does exist between satisfaction with feedback quality and quantity and overall course satisfaction.

Significance of Study

Recent reports estimated "more than one-half of U.S. school districts (55 percent) have some students enrolled in online courses (nearly all in high school)" (Barth, 2013, p. 34). Even though these online learning opportunities are growing exponentially, there is very little research on online learning, especially K-12. Barth et al. (2012) noted "Few provide data to help us understand whether online schooling is effective in general" (p. 34). Most of the research that was available related only to higher education:

> The U.S. Department of Education's widely cited 2012 meta-analysis of the effect of online courses found a modest positive impact on participating students compared with their peers in traditional courses…. The study's findings, however, related mostly to postsecondary students. Of the 196 studies included, only seven addressed K-12 students. (Barth, 2013, p. 34)

With this lack of research considered, this study provided key high school data on a district-run online learning program in Missouri. This study also provided analysis on the most common levels of feedback teachers provide in an online environment and clarification on whether overall course satisfaction is possibly linked to feedback perceptions.

Definitions of Key Terms

For the purpose of this study, the following terms are defined:

Instructor feedback. The operational definition of instructor feedback is based on the work of Hattie (2012). Hattie (2012) noted, "feedback aims to reduce the gap between where the student 'is' and where he or she is 'meant to be'" (p. 115).

Online learning. The Evergreen Research Group (2012) defined online learning as "Teacher-led education that takes place on the Internet, with the teacher and student separated geographically, using a web-based educational delivery system that includes software to provide a structured learning environment" (p. 7).

Student perception. Bolliger and Halupa (2012) defined student perception as "the learner's belief of the value of educational experiences in an educational setting" (p. 82).

Student satisfaction. Lo (2012) defined student satisfaction as the "subjective perceptions, on students' part, of how well a learning environment supports academic success. Strong student satisfaction implies that appropriately challenging instructional methods are serving to trigger students' thinking and learning" (p. 48).

Teacher-student relationship. Hattie (2009) identified the factors that make up a teacher-student relationship. Hattie (2009) noted, "building relations with students implies agency, efficacy, and respect by the teacher for what the child brings to the class (from home, culture, peers)" (p. 118). Cornelius-White (2007) discovered that a teacher-student relationship is based on a teacher's ability to see a student's perspective, "communicate it back to them so that they have valuable feedback to self-assess, feel

safe, and learn to understand others and the content with the same interest and concern" (p. 23).

Limitations and Assumptions

The following limitations were identified in this study:

1.   This study focused on only one K-12 district online learning program.

2.   The district program studied is still fairly new and has only been offering online courses for two years. While the teachers do receive training related to providing feedback in online courses, most of the teachers have only been teaching online for a limited time.

3.   One instrument used to conduct the research in this study was a survey. Fraenkel, Wallen, and Hyun (2012) noted four main threats to the internal validity in survey research. These included "mortality, location, instrumentation, and instrumentation decay" (p. 407). Steps were taken to ensure that the surveys were collected in a manner in which no data were lost or deleted. The questions were minimal to combat instrument decay. However, responses to surveys can be considered subjective based on the element of human input (Fraenkel et al., 2012).

4. Satisfaction data were based on student perception gathered from a survey. This can be an unreliable measurement since it is based on opinion and can vary from student to student. However, the growing importance and validity of student satisfaction data were noted in Scholder and Maguire's (2009) research:

> Most schools and administrators in the United States are acutely aware of the importance of student satisfaction and retention. For enrolled students, the delivery on promises is crucial…. For governing agencies, the quality of the

student experience may become a key component of demonstrating institutional effectiveness. (p. 2)

The following assumptions were identified in this study:

1. Online learning programs vary across districts in design and approach. Bentley, Selassie, and Shegunshi (2012) reported, "the rapid growth of online academic course provision worldwide has changed the learning environment for both students and teachers. E-Learning has taken many forms, such as fully online, mixed mode or hybrid, blended learning and web-assisted" (p. 1). Adding to this challenge is that quality standards for online learning programs are limited. The researchers explained, "In this context, the creation and implementation of effective quality assurance for such learning process has been identified as one of the most challenging tasks" (Bentley et al., 2012, p. 1).

2. Understanding of feedback levels impacts a teacher's ability to move between different functions. While teachers believe they are providing adequate feedback, that is not always the perception of the students. Hattie (2009) observed "about 70 percent of the teachers claimed they provided such detailed feedback often or always, but only 45 percent of students agreed with their teachers' claims" (p. 174). Hattie (2009) argued, "the art is to provide the right form of feedback at, or just above, the level where the student is working – with one exception. Feedback at the self or personal level (usually praise) is rarely effective" (p. 177).

3. Training educators to be effective online teachers varies in quality and quantity. Bonk and Zhang (2008) claimed:

As a direct result of the explosion of Web-based learning during the past decade,

there are hundreds of thousands of new online instructors around the planet each

year who have never been trained or certified to teach in online environments, nor

have they taken an online course as a student. (p. vi)

Most online teachers are current classroom teachers who struggle to adapt teaching styles

from the traditional to those needed in a 21st century learning environment. This struggle,

combined with needed changes in feedback styles, can create a challenging teaching

situation. (Bonk & Zhang, 2008)

Summary

Bonk and Zhang (2008) argued, "The increasing popularity of online learning in

education and training, combined with insufficient instructor development, poor strategic

planning, and high dropout rates, generates many challenges and dilemmas for

instructors, trainers, and instructional designers" (p. v). Through analysis of online

teacher feedback levels and student perception of the feedback they received and the

possible impact on overall course satisfaction rates, insight was gained on the need for

teacher training and what students value in an online learning environment.

In Chapter One an introduction to the study was presented, providing background

information on the current state of online learning in the K-12 environment. The

conceptual framework provided a basis for the research establishing the importance of

understanding the elements of a quality online learning experience as well as the levels of

feedback that were used throughout the study. The need for online learning research was

demonstrated, particularly in the K-12 environment. How teacher feedback and student

perception would be analyzed using a district online learning program was outlined in the

purpose of the study. Finally, the significance of the study was presented to show the necessity of researching online learning practices as they continue to grow in popularity at the K-12 level.

In Chapter Two of this study, a review of literature included: (a) development of distance education, historically; (b) purpose of online education and growth in K-12 online learning; (c) Community of Inquiry conceptual framework; (d) analysis of student-to-teacher feedback; (e) online feedback research; and (f) student satisfaction and perception research. In Chapter Three the research design and methodology were discussed, including: (a) problem and purpose of the study; (b) research design; (c) population and sample; (d) instrumentation; (e) data collection; and (f) data analysis. Data analysis was presented in Chapter Four. In Chapter Five, a summary of the findings related to literature, conclusions, and recommendations for further research were discussed.

Chapter Two: Review of Literature

Personalized learning opportunities and flexible options for students are a growing trend in public education fueled by a technology-driven world. Barth (2013) noted, "Education technology pioneers recognize the potential of online learning to customize instruction to individual students" (p. 33). Richardson (2013) argued that the brick-and-mortar school most educational institutions have been founded on for the past 150 years no longer exists in its traditional sense: "Welcome to what portends to be the messiest, most upheaval-filled 10 years in education that any of us has ever seen. Resistance, as they say, is futile" (p. 10).

Barth (2013) reported that 40 states now have "significant online learning policies and five states require high school students to take at least one online class to graduate" (p. 33). From 2009-2012, PreK-12 students took nearly two million courses online (Pape, 2012). While these fast changes have already taken place and continue to be pushed through school districts, little research has been completed in the K-12 arena to support the benefits of online education. Barth (2013) reported, "the research tells us so little about online learning…. Few provide data to help us understand whether online schooling is effective in general" (p. 33).

The historical development of distance education will be explored in this chapter. The purpose of online education will also be examined as will an analysis of the growth that has taken place over the last 10 years for K-12 students. The gap in research that exists will also be studied. The conceptual framework used for the study, the Community of Inquiry model, will be discussed, as will an analysis of the importance of teacher-to-

student feedback. An analysis of online feedback research that impacted this study will be provided. Finally, student perception and satisfaction research will be presented.

History of Distance Learning

Although online learning may be thought of as a contemporary phenomenon in education, its origins can be traced back to the 1840s and Sir Isaac Pitman, who taught a system of shorthand on postcards and received transcriptions from his students in return for him to correct (Banas & Emory, 1998). The development of correspondence study at a more formal level began at Pennsylvania State University in 1892 (Banas & Emory, 1998). The rapid spread of radio in the 1930s led to public schools broadcasting educational programs including 200 city school systems and 25 state boards of education (Banas & Emory, 1998).

Correspondence courses in the nineteenth century grew into educational television during the twentieth century and evolved into learning through the Internet by the mid-1990s (Perry & Pilati, 2011). Corry and Stella (2012) found:

> Distance education has changed significantly from its origin in correspondence courses to the innovations of the past several decades, which saw the introduction of televised lectures in the distance education classroom to courses delivered completely online and accessed by a variety of desktop and handheld devices. (p. 134)

Anderson and Dron (2012) noted, "Through hardly an original observation, it is interesting to note that distance education evolved from a Gutenberg-era print and mail system to one that supports low-cost, highly interactive learning activities that span both time and distance" (p. 1).

Anderson and Dron (2012) recommended thinking of the development of technology as occurring in three (or more) overlapping generations. Anderson and Dron (2012) reported:

> The first generation of distance education technology was one of postal correspondence. This was followed by a second generation defined by the use of mass media including television, radio and film. Third generation distance education introduced interactive technologies – first audio, then text, then web, and most recently, immersive conferencing. (p. 2)

Audio teleconferencing was "perhaps the most successful means available, but came with associated costs and complexity that limited its usefulness and scalability. The postal service and publication redistribution of messages was very slow, expensive, and limited in scope for interactivity" (Anderson & Dron, 2012, p. 3).

Anderson and Dron (2012) noted, "none of these generations has been eliminated over time, but rather the repertoire of options available to distance education designers and learners has increased" (p. 4). As Kelly (2010) observed, "Few, if any, technologies have ever actually disappeared. What happens is that, as new technologies become available, the range of adjacent possibilities enabled by technologies continually increases" (p. 76). Anderson and Dron (2012) reported, "All past generations of distance education technologies, as well as the pedagogies that dominated their use, remain in effective use today" (p. 2).

Use of the Internet has greatly expanded the capacity and affordability of distance education (Anderson & Dron, 2012). eLearning is "usually understood as instruction delivered via a computer in teaching and learning" (Hussain, 2012, p.12). Hussain

(2012) explained, "A number of other terms are synonymously used with eLearning, for example, computer based training, online learning, virtual learning, web-based learning and so on" (p. 13). The central idea, Hussain reported, "is that all these refer to use of information and communication technology that pertain to all educational activities either performed individually or in groups, working online or offline, synchronously or asynchronously, via networked or stand-alone computers or some other devices" (p. 13).

According to Anderson and Dron (2012), "Today, instructional design activities are enhanced by a host of Web 2.0 tools. Of primary use are distributed text tools such as Google Docs, DropBox and wikis" (p. 4). Prior to the Internet, collaborative work was difficult to navigate and often involved long delays between edits; however, "modern systems allow multiple authors to edit text and owners to manage multiple versions. These edits may be in real time or asynchronously" (Anderson & Dron, 2012, p. 4). Voice tools operating synchronously, like Skype, or asynchronously, like Voice Thread, "allow for more interaction, enhancing social presence among collaborators" (Anderson & Dron, 2012, p. 11).

Looking toward the future of distance education, researchers predicted the Semantic Web, or Web. 3.0, as well as "mobility, augmented reality, and location awareness into the mix. It is clear we are in a state of rapid technological development and profound new discoveries of life and learning in connected contexts" (Anderson & Dron, 2012, p. 11). Hussain (2012) explained:

> Web 3.0, termed as the semantic web or the web of data, is the transformed
> version of Web 2.0 with technologies and functionalities such as intelligent

collaborative filtering, cloud computing, big data, linked data, openness,

interoperability and smart mobility. (p. 11)

Hussain (2012) explained the difference between Web 2.0 and Web 3.0 technologies and

their impact on eLearning:

If Web 2.0 is about social networking and mass collaboration between the creator

and user, then the Web 3.0 is referring to intelligent applications using natural

language processing, machine-based learning and reasoning. From the

perspective of advancements in eLearning, the Web 2.0 technologies have

transformed the classroom and converted a passive learner into an active

participant. It can be argued that the eLearning 3.0 will provide all earlier

generations' capabilities enhanced with the Web 3.0 technologies. (p. 11)

Growth of Online Learning in the K-12 Environment

While online learning began at the collegiate level, its movement into the K-12

setting has been increasing over recent years. In 1988, the U.S. Congress's Office of

Technology Assessment conducted a national study on the use of computer technology

for instruction in primary and secondary schools (Picciano, Seaman & Allen, 2012). This

study, one of the first of its kind, provided a glimpse into the investment that schools

across the country were making in instructional technology (Picciano et al., 2012). The

study revealed "millions of microcomputers costing billions of dollars had been

purchased in the 1980s, and almost every school in the country had acquired some form

of computer technology" (Picciano et al., 2012, p. 18). The computer to student ratio at

that time was 125:1 (Picciano et al., 2012).

Fast-forward to 2007 when the ratio for students to computers nationally sat at 4:1 (Picciano et al., 2012). Picciano et al. (2012) reported on a series of experiments testing the impact of technology use in the classroom. The major findings indicated, "test scores in treatment classrooms where software for math and reading was used did not differ from test scores in control classrooms" (Picciano et al., 2012, p. 18). A follow-up study was conducted one year later with the same findings: "The conclusion is that although schools continue to invest significantly in technology, educators are cautious and concerned about its impact and much instruction continues to rely heavily on traditional face-to-face modes" (Picciano et al., 2012, p. 18).

Christensen, Horn, and Johnson (2008) co-authored *Disrupting Class: How Innovation Will Change the Way the World Learns.* They continued to make the argument throughout their research on school reform that "Up until this point in time, student-centric technology in the form of computers hasn't had much impact on mainstream public education" (Christensen et al., 2008, p. 211). The shift from teacher-delivered instruction (or computer-based) to student directed (online) has happened quickly. Christensen et al. (2008) noted, "Like all disruptions, it first appears as a blip on the radar, and then seemingly out of nowhere, the mainstream rapidly adopts it" (p. 240).

Christensen et al. (2008) argued that "student-centric technology allows students to learn subject in a manner that is consistent with their learning needs" (p. 212). Christensen et al. (2008) went on to explain, "Like all disruptions, student-centric technology will make it affordable, convenient, and simple for many more students to learn in ways that are customized for them" (p. 244).

Students and parents are moving to online education opportunities for a variety of reasons. One of these reasons is AP or Advanced Placement classes. The college-level courses are offered to high school students, but as Christensen et al. (2008) pointed out, "there is a vast non-consumption of AP courses in most high schools" so students find online vendors who can offer the courses outside of the traditional school setting (p. 250).

Students attending small rural schools that offer few courses outside of those required are another consumer of online courses. Christensen et al. (2008) discovered, "even those rural schools that are larger and have more funding available for more teachers often find that they cannot recruit qualified faculty to the needed locations" (p. 251). The same argument can be applied to large urban schools were enrollment is high and funding is low. Christensen et al. (2008) explained, "Online learning is a welcome solution with the alternative is to forgo learning the subject at home" (p. 255).

Johnson (2013) reported, "In 2011, only about .5 percent of AP courses were completed online. However, the number of online courses being offered is growing" (p. 43). Students can now access online AP courses through fully online high schools like Florida Virtual School or private companies like Apex Learning (Johnson, 2013). Students and parents can expect to pay between $200-$350 per Advanced Placement course (Johnson, 2013).

Other potential customers to the online learning arena include homebound or homeschooled children, a population which has now reached more than 2 million students (Christensen et al., 2008). Christensen et al. (2008) noted:

In the past, both home-schooling advocates and critics have expressed concern that the range of subjects and the depth of learning available to those students

were limited by their parents' own knowledge. The online world solves this

problem. (p. 261)

Finally are those students who need to make up credits and use online courses as

credit recovery. Watson and Gemin (2013) noted, "While the primary reason online

courses are offered in school districts is to expand offerings to courses that would

otherwise be unavailable, the second most commonly cited reason for offering online

learning is to meet individual student needs" (p. 3). Watson and Gemin (2013) reported

many educators supported online and blended learning as "an effective way to reach

students who fail one or more courses, become disengaged, or who seek an alternative to

traditional education" (p. 3). The main benefit of online credit recovery is the speed at

which students can work through the material, going as fast or slow as needed (Watson &

Gemin, 2013). Christensen et al. (2008) reported, "Its modularity means that students do

not have to waste instructional time on concepts they've mastered; they can simply take

the modules with which they struggled in order to pass the class" (p. 261)

Christensen et al. (2008) predicted that "one-quarter of all high school courses

will be online by the year 2016 and about one-half of all high school courses will be

online by the year 2019" (p. 209). Picciano et al. (2012) supported Christensen's et al.

(2008) predictions:

Christensen et al. are among the clarions that foresee transformation in education

driven by online learning technology. It has been projected that over the next five

to six years, the K-12 enrollment in online courses will approach 5-6 million

students which represents about ten percent of the total K-12 student population.

(p. 18)

Evergreen Research Group (2013) reported in *Keeping Pace with K-12 Online and Blended Learning: An Annual Review of Policy and Practice*:

> Twenty-four states and Washington DC have blended schools. Multi-district fully online schools serve an estimated 310,000 students in 30 states. Seventy-five consortium programs operate across the country to offer locally facilitated online options to students. Twenty-six states have state-supported virtual schools serving 740,000 enrollments and eight states are allowing private school students to take courses from state-supported online supplemental programs. (p. 4)

K-12 Online Learning Research and Analysis

The data discussed previously leave little doubt that online and blended learning environments are on the ascent and have important roles to play in K-12 education. However, while online courses offerings and enrollments will continue to grow, there is little-to-no research focused on K-12 environments. Most of the research that is available on online learning relates only to higher education:

> The U.S. Department of Education's widely cited 2012 meta-analysis of the effect of online courses found a modest positive impact on participating students compared with their peers in traditional courses…. The study's findings, however, related mostly to postsecondary students. Of the 196 studies included, only seven addressed K-12 students. (Barth, 2013, p. 34)

Cavanaugh, Barbour, and Clark (2013) reviewed current literature and research related to K-12 online learning. Cavanaugh et al. (2013) reported limited research had been completed on this growing education field. Cavanaugh et al. (2013) noted:

While K-12 distance education programs are developing around the world and why growth in K-12 online course enrollments has outstripped that of other educational reforms in recent years, a fundamental challenge is this relatively new field for program developers, managers, and instructors is locating guidance from successful practice and from research and literature. (p. 2)

Barth et al. (2012) found "little solid research on the impact of online courses or schools…. Interestingly, news organizations, rather than education researchers, seem to be taking the lead in investigating and reporting their effects" (p. 2). Barth et al. (2012) continued to point out, "The lack of information will not stand in the way of it moving forward, however. Online learning when done well can transform instruction and provide the 21st century education our students need" (p. 2).

Community of Inquiry Model

Garrison's et al. (2000) Community of Inquiry model developed out of a need to establish parameters around what quality online learning would be. This need became apparent as the online learning industry began to grow fast with little established pedagogy (Swan, 2010). It has been over 10 years since Garrison, Anderson, and Archer first introduced the Community of Inquiry model (Swan, 2013). The Community of Inquiry model established the three realms needed in an online learning environment. These included the cognitive presence, social presence, and teaching presence (Garrison, 2007). This theoretical framework "provides order and parsimony to the complexities of online learning" (Garrison, 2007, p. 61). The purpose of the Community of Inquiry was to "be a useful guide in online learning research" (Garrison, 2007, p. 70). Swan (2013)

explained, "The Community of Inquiry framework was developed to help them make sense of issues confronting their new online graduate program" (p. 1).

The Community of Inquiry framework was social constructivist in nature and grounded in the work of John Dewey's (1938) notion of "practical inquiry" (Swan, 2013, p. 1). Swan (2013) noted, "It is a dynamic process model designed to define, describe and measure elements supporting the development of online learning communities" (p. 1).
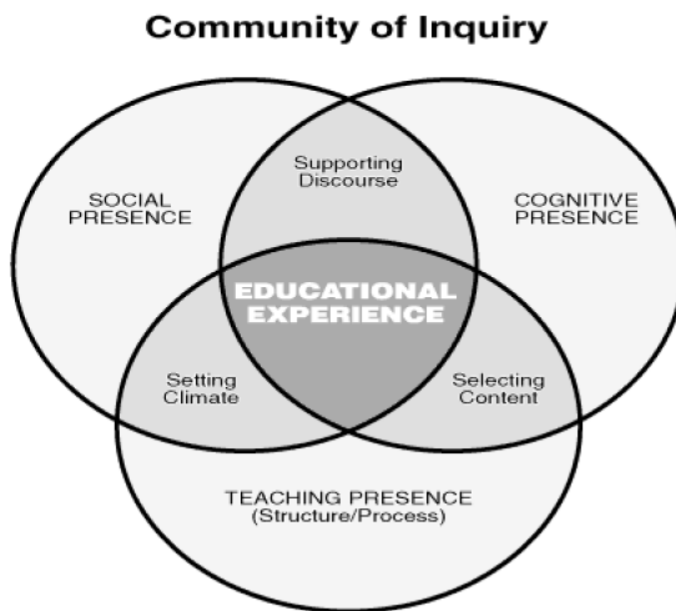
Figure 1. Community of Inquiry model. Adapted from Garrison, D. R. (2011). E-Learning in the 21st century: A framework for research and practice (2nd Edition). London, England: Routledge/Falmer.

The first realm of the model, the social presence, was the understanding that "a sense of community is based upon common purposes and inquiry and is described as the ability to project one's self and establish personal and purposeful relationships" (Garrison, 2007, p. 63). Online learning attracted attention to the importance of

collaborative assignments that encourage social presence in a course since so many are asynchronous in nature and could be completed without this presence (Garrison, 2007). Espasa and Meneses (2009) noted that when considering this perspective, "online learning should be conducted within the framework of a community whose ultimate goal is the co-construction of knowledge through asynchronous interactions between students and teachers in relation to content or learning tasks" (p. 278).

The second realm in the Community of Inquiry model was cognitive presence. Garrison (2007) noted, "The primary issue worthy of further exploration in terms of cognitive presence relates to the progressive development of inquiry in an online learning environment" (p. 65). Garrison (2007) argued that much of inquiry cannot move beyond the exploration phase and teachers should design tasks in online courses "to move students through to resolution through online collaborative problem solving" (p. 66).

This type of progression in learning requires direction. Garrison (2007) believed this could be achieved through a strong teaching presence, the final realm of the theoretical framework. Garrison (2007) argued, "The consensus is that teaching presence is a significant determinate of student satisfaction, perceived learning, and sense of community" (p. 67). The teaching presence in Garrison's (2007) opinion was a balance between interaction and discourse:

> Without explicit guidance, students will engage in lower-level thinking. Faculty may need to be more directive in their assignments, charging the participants to resolve a particular problem, and pressing the group to integrate their ideas followed by rich, authentic feedback. (p. 67)

The Community of Inquiry model was critical to the understanding of online learning opportunities because it was the first of its kind to outline what a quality online learning experience should look like (Swan, 2013). Swan (2013) explained, "The development of a common Community of Inquiry model has resulted in a flurry of new research that is moving our understanding of online learning dramatically forward" (p. 2).

The Community of Inquiry model was not without its critics. Annand (2011) explained, "They considered the central indicator of a successful online learning experience to be deep and meaningful learning" (p. 42). Following a review of Community of Inquiry research, Annand (2011) concluded:

Deep and meaningful learning did not occur as described in the framework. Students seemed to report instances of surface learning and to associate these more with completion of assignments than sustained interaction with the instructor or other learners. (p. 42)

Akyol (2009) argued that the "Community of Inquiry Framework is primarily a process model rather than an outcomes-based measure" (p. 91). In fact, much of the research concerning the model has observed shifts over time that occurred in online courses.

As evidenced by the research investigating the usefulness of the Community of Inquiry, "this framework offers a way to conceptualize what it means to experience deep and meaningful online learning" (Lambert & Fisher, 2013, p. 3). The framework also "operationalizes what it means to build a community of inquiry and provides explicit strategies to use in the design, development and assessment of online courses" (Lambert & Fisher, 2013, p. 3).

Role of Feedback

As noted in the Community of Inquiry model, teacher presence and feedback is critical to a quality online learning experience. Wiggins (2012) recognized that the term feedback is often used to describe all kinds of comments made after assignments to students, including advice, praise, and evaluation "but none of these are feedback, strictly speaking. Basically feedback is information about how we are doing in our efforts to reach a goal" (p. 11). Hattie (2012) agreed with Wiggins and encouraged teachers to look at feedback in the form of three questions: "Where is the student going? How is the student going? and Where to next?" (p. 18).

Hattie (2009) conducted a synthesis of over 900 meta-analyses on the factors that impact student learning. Hattie's (2012) research focused on many different influences on learning including "home, school, teacher, and curriculum—and were based on more than 50,000 individual studies, comprising more than 200 million students from 4 to 20-year-olds" (p. 18). Hattie's research discussed the importance of placing efforts on those reforms that had the highest effect size on student achievement. He concluded that a .04 percent increase in student achievement was a medium level of impact (Hattie, 2009). Hattie (2009) reported that, with an effect size of 0.75 percent, "feedback was among the most powerful influences on achievement" (p. 173).

Hattie (2009) referenced a number of studies that were analyzed to come to his conclusion on the power and importance of feedback. The most systematic study addressing the effects and various types of feedback was published by Kluger and DeNisi (1996). Kluger and DeNisi (1996) "reviewed every research study on the effects of feedback that had been published between 1905 and 1995…. The studies revealed that

the effects of feedback depended on the reactions of the recipient" (p. 32). The study concluded that "feedback is more effective when it provides information on correct rather than incorrect responses and when it builds on change from previous trails" (Hattie, 2009, p. 175). This research inspired the framework that Hattie used to discuss the four levels of feedback cited throughout his work.

Hattie (2009) claimed that the purpose of feedback is to reduce discrepancies between current understandings and performance and a learning intention or goal. The strategies that students and teachers use to reduce this discrepancy "depend partly on the level at which the feedback operates" (p. 175). According to Hattie (2009), the four levels of feedback are:

> First, feedback can be about the task or product, such as the work is correct or incorrect…. Second, feedback can be aimed at the process used to create the product or complete the task…. Third, feedback to the student can be focused at the self-regulation level, including greater skill in self-evaluation, or confidence to engage further on the task…. Fourth, feedback can be personal in the sense that it is directed to the 'self' which… is too often unrelated to performance on the task…. The art is to provide the right form of feedback at, or just above, the level where the student is working. (p. 177)

Hattie and Yates (2014) noted, "Teachers claim to give students high levels of feedback on their work, but students say that this is not what they experience" (p. 64). According to Hattie and Yates (2014):

> Students tend to be future-focused, rather than dwelling on what they have done beforehand and left behind. The dilemma is that students want and need

information on 'where to next' but teachers often act as though that is achieved

through negative feedback. (p. 65)

Hattie (2014) discovered feedback to be most effective when "students know what

success looks like, find it aimed at reducing the gap between where they are and where

they need to be, and when it is focused on providing them information about where to go

next" (p. 66).

Hattie and Yates (2014) referenced the work of Carol Dweck (1999). Dweck

(1999) conducted several experiments where she observed young children's persistence

in problem solving to be reduced after being praised on earlier, easier tasks. Hattie and

Yates (2014) found "receiving praise for being intelligent or clever has an unfortunate

consequence of drawing attention to ability as a limited resource" (p. 68). Hattie and

Yates (2014) went on to warn educators against the use of too much praise: "Learners

need to expect difficult tasks to be difficult. But harm is done when experiencing

difficulty is wrongly interpreted. Believing one has to be successful all the time can

create self-doubt leading to reduced coping efforts" (p. 69).

Hattie (2009) made one final warning to teachers who used an appropriate level of

feedback for the student, followed by a message of praise:

The art of effective teaching is to provide the right form of feedback at, or just

above, the level at which the student is working – with one exception: do not mix

praise into the feedback prompt. This dilutes the effect. When feedback draws

attention to the self, students try to avoid the risks involved in tackling a

challenging assignment – particularly if they have a high fear of failure (and thus

aim to minimize the risk to the self). (p. 121)

Hattie's work and philosophy of the levels of feedback have been studied and analyzed through a variety of lenses. Wiggins (2013) reported, "Decades of education research support the idea that by teaching less and providing more feedback, we can produce greater learning" (p. 12). Wiggins (2013) placed his own standards on what good feedback to students should look like:

> Whether feedback is just there to be grasped or is provided by another person, helpful feedback is goal referenced; tangible and transparent; actionable; user-friendly (specific and personalized); timely; ongoing; and consistent. (p. 13)

Wiggins (2013) also pointed out that grades are the "most ubiquitous form of feedback," and "grading is so much a part of the school landscape that we easily overlook its utter uselessness as actionable feedback. Grades are here to stay, no doubt – but that doesn't mean we should rely on them as a major source of feedback" (p. 15).

Hattie (2012) agreed that grading, in a traditional sense, is ineffective in increasing student achievement. In *Visible Learning* (Hattie, 2009), the top-ranked effect relating to student achievement was self-reported grades with an effect size of 1.44. Based on these findings, Hattie (2012) suggested fewer traditional assessments and more feedback to and from students regarding academic progress:

> The message is that teachers need to provide opportunities for students to be involved in predicting their performance; clearly, making the learning intentions and success criteria transparent, having high, but appropriate, expectations, and providing feedback at the appropriate levels is critical to building confidence in successfully taking on challenging tasks. (p. 53)

Hattie (2012) concluded, "Educating students to have high, challenging, appropriate expectations is among the most powerful influences in enhancing student achievement" (p. 55).

Hattie and Timperley (2007) were quick to point out that simply providing more feedback will not lead to an increase in student achievement:

> Increasing the amount of feedback to have a positive effect on student achievement requires a change in the conception of what is means to be a teacher; it is the feedback to the teacher about what students can and cannot do that is more powerful than feedback to the student. (p. 4)

Hattie (2012) reminded educators that the aim of teaching is "to provide feedback that is 'just in time', 'just for me', 'just for where I am in my learning process', and 'just what I need to help me move forward'"(p. 122). Providing that "just right" feedback will not be accomplished just by providing feedback more frequently (Hattie, 2012). Hattie (2012) noted, "There has been much evidence about the frequency of feedback and most of it is not that informative – because there are more important factors than merely increasing amount of feedback, or whether it is immediate or delayed" (p. 122).

Feedback in Online Learning Environments

Jackson, Jones, and Rodriguez (2012) stated, "One of the greatest challenges for teachers as online courses become more prolific will be the shift from 'conveyor of information' to 'mentor, coordinator and facilitator of learning' in the online environment" (p. 80). The role of the online professor is defined by the needs of learners, including "monitoring interactions between students, guiding discussion, and providing feedback" (Jackson et al., 2012, p. 80). Espasa and Meneses (2009) found, "A teacher's

influence is crucial for propitiating students' self-regulation in a virtual environment" (p. 278).

As established previously, little research has been conducted to this point on the feedback provided in online high school courses. Corry and Stella (2012) explained:

> Our challenge as scholars, educators, researchers, and advocates for students is to carefully and effectively harness the growth and power of online K-12 distance education for the benefit of learners. As online education grows, so does the need for more research to advance the field. (p. 134)

Policy makers and leaders in the K-12 online environment can review research conducted on higher education as a starting point, but researchers warn against direct comparisons due to the vast differences between the two education worlds (Corry & Stella, 2012).

Two research projects studying the feedback provided to students in an online environment served as a basis for the research conducted in this study. The first research, conducted by Boling and Beatty (2010), reviewed computer-mediated feedback and its potential impact on student achievement. The research methodology in this study served as a catalyst for analyzing teacher feedback and placing it into categories. This research did focus on a high school Advanced Placement English class; however, the research was conducted on students participating in a traditional seated course with minimal online components (Boling & Beatty, 2010).

Boling and Beatty (2010) reviewed asynchronous online discussion boards and the feedback provided by the instructor to the students over a period of time. Boling and Beatty (2010) explained, "Asynchronous online discussions are tools that teachers can use to make expert processes more visible and that can help them model, scaffold,

provide feedback, and generally support student learning" (p. 48). Boling and Beatty

(2010) also reported the lack of research on electronic feedback:

> Research on technology and feedback, in general, has revealed that there is a lack
>
> of conceptual models and operational procedures that provide guidance for
>
> optimizing the design of technological tools and instructional strategies to employ
>
> student peer review and other forms of interactive online learning. (p. 49)

Boling and Beatty (2010) used the cognitive apprenticeship model (CAM) as their

conceptual framework for analyzing feedback. According to Boling and Beatty (2010),

the cognitive apprenticeship model "supposes that in order for students to learn best, the

classroom environment must be altered so that 'expert processes' are made visible, and

problem solving takes place in real-world contexts" (p. 48). Boling and Beatty (2010)

described the four dimensions that, according to CAM, constitute a learning environment

including content, method, sequencing, and sociology:

> Content was identified as subject matter knowledge that was needed to succeed.
>
> Method described various ways subject matter expertise was demonstrated,
>
> sequencing consisted of data that reflected the order of learning and sociology
>
> was used to describe the social characteristics of the learning environment. (p. 53)

The researchers reviewed feedback provided to students in the online discussion

boards and labeled it as content feedback, method feedback, sequencing feedback or

sociology (Boling & Beatty, 2010). Boling and Beatty's (2010) research concluded that

after two months of observation, the instructor gave a variety of feedback at all four

levels identified in the CAM model. Findings from their study also indicated that

"students were able to become more critical in the feedback they provided to each other

especially after seeing their teacher model this type of feedback to their classmates" (Boling & Beatty, 2010, p. 60). Boling and Beatty (2010) did note the need for deeper levels of feedback as outlined by Hattie (2012) and the self-regulatory level:

In this study, we saw the tremendous amount of modeling, coaching, and scaffolding that took place through online discussions. However, we believe that more focus on articulation and self-reflection would help students develop more of the self-regulatory skills that are needed to promote individual learning. (p. 62)

The second research study used as a catalyst for the research in this study was an analysis of student surveys questioning feedback levels from teachers and the impact on overall course satisfaction. Espasa and Meneses (2009) surveyed 186 graduate students using an "electronic ad-hoc questionnaire developed and administered the last week of the course" (p. 282) asking students to "assess the kind of feedback they were receiving in the course" (p. 282). According to Espasa and Meneses (2009), "distance education is conducted within the framework of a community whose ultimate goal is the co-construction of knowledge through asynchronous interactions between students and teachers in relation to content or learning tasks" (p. 278). In keeping with this perspective, "the process of teaching and learning in online educational environments is usually based on assignments performed within the framework of continuous learning assessment" (Espasa & Meneses, 2009, p. 278). In this evaluative context, "feedback processes facilitate the regulation of learning and enable students to measure their performance against their aims" (Espasa & Meneses, 2009, p. 278).

Espasa and Meneses (2009) claimed "a teacher's influence is crucial for propitiating students' self-regulation in a virtual environment" (p. 278). Espasa and

Meneses (2009) divided feedback into three kinds: First, feedback in response to a doubt students had, second, after an assignment, and third, after the final assessment. The survey also gathered information on students' overall satisfaction of the course by having them complete a "likert scale of satisfaction (very dissatisfied, dissatisfied, neither dissatisfied nor satisfied, satisfied, and very satisfied)" (Espasa & Meneses, 2009, p. 282).

Espasa and Meneses (2009) concluded, "feedback offered during the continuous assessment process (answering student doubts) is the most widespread form of feedback in online classrooms" (p. 289). Upon further investigation, Espasa and Meneses (2009) observed, "From the viewpoint of the feedback's semantic dimension, our results allow us to conclude that this feedback is basically characterized by information on how to improve work and how to take learning further" (p. 289). Finally, Espasa and Meneses (2009) reported, "the results obtained show a statistical relationship between feedback and the learning results (students' satisfaction). This allows us to claim the relevance of feedback in favoring self-regulatory competencies within distance teaching and learning practices" (p. 289).

Chetwynd and Dobbyn (2011) researched the impact feedback had on retention rates in higher education courses. The researchers discovered, "effective feedback on assessments plays a vital role in the retention and the development of self-regulating learners, particularly in the first year" (Chetwynd & Dobbyn, 2011, p. 67). Chetwynd and Dobbyn (2011) argued, "Effective feedback on assessment is nowhere more important than in distance education courses, where comments on assignments may be

the principal, or even the only, learning communication between tutor and student" (p. 67).

Chetwynd and Dobbyn (2011) also reported problems associated with feedback including the failure of students to use feedback to change practice:

> Studies indicated that students do value feedback, but that many students fail to act upon it. Several possible reasons have been suggested for this: a failure to understand the discourse of the discipline or academic language generally, insufficient experience in deconstructing feedback comments, an inappropriate understanding of the nature of learning and perhaps, commonly, an inability to apply feedback on a current assignment successfully to future work. (p. 68)

While these findings are not limited to online courses, Chetwynd and Dobbyn (2011) argued, "Effective feedback is an essential part of the process of building independent learners, and in distance education this is frequently more difficult to provide than in conventional face-to-face settings" (p. 70).

The overwhelming recommendation from researchers who evaluated online feedback was the need for more training for teachers. Espasa and Meneses (2009) recommended "the training of university teachers in asynchronous and written contexts should undoubtedly take into account developing strategies for providing teachers with knowledge on the types and characteristics of feedback" (p. 290).

Student Perception and Satisfaction

While much has been written and researched regarding teacher feedback to students, new research is beginning to emerge regarding the importance of student feedback to teachers. Hattie (2012) reported "One powerful, but unused, method is

student evaluations of teachers. Students are more than passive observers of teachers" (p. 141). Budge (2011) concluded for many educators, "there is recognition of the significant role and value that feedback plays in student learning, however, very little is understood about how students perceive the feedback they receive on their work" (p. 342). In their study on feedback, Rowe and Wood (2008) stated, "while constituting a central aspect learning, education research to date has largely neglected the feedback issue particularly from the student's point of view" (p. 76).

This research gap is an important one to explore because "feedback is understood to be the most powerful influencer of student achievement" (Budge, 2011, p. 342). Unfortunately, Hattie (2012) reported that "student evaluations are often a hotchpotch of questions relating to course effectiveness or improvement, or teacher effectiveness or improvement" (p. 142). Several studies on student perception of feedback in higher education online environments have been published but, as stated previously, there is very little research regarding K-12 online environments and none of these are related to feedback specifically (Barth, 2013).

Rowe and Wood (2008) surveyed college students who took online courses to discover their perceptions of the importance of the feedback they received. The surveys were administered electronically to students via the universities Learning Management System:

> The findings of that study showed that students value feedback highly and
> perceive it as an indicator of teaching staff caring about their work, as a
> justification of their grade, and as an indicator of what they need to do to improve
> their performance…. The authors also found that 95% of respondents indicated

they use feedback to improve their results in future assignments and projects.

(Budge, 2011, p. 342)

Other studies specifically researched overall satisfaction levels with online courses:

While attempts to define and measure student success in online education has

been met with limited and debated results, researchers agree that student

satisfaction within the Internet-based classroom is directly affected by degree and

type of interactions between the assigned faculty member and enrolled online

students. (Jackson et al., 2012, p. 79)

Jackson et al. (2012) "identified faculty actions which positively influenced

student satisfaction in the online classroom at the community college level" (p. 78). Data

were collected from student evaluations of two Web-based courses (Jackson et al., 2012).

Descriptive statistics, bivariate correlations, and multiple regressions were used to

identify faculty behaviors that affected the satisfaction of students enrolled in the courses

(Jackson et al., 2012). Results of this study indicated the "strongest relationships

between the independent variables measuring student satisfaction with the online

education experience" (Jackson et al., 2012, p. 91). These variables included

accessibility of instructor, clear expectations, instructor enthusiasm, and comfortable

climate (Jackson et al., 2012).

Green, Inan, and Denton (2012) researched factors impacting learner satisfaction

in an online course. They discovered "an online learning environment is complex and

multi-dimensional and includes a wide range of factors" (Green et al., 2012, p. 190).

Green et al. (2012) categorized satisfaction factors into five dimensions: "the learner

dimension, the instructor dimension, the technology dimension, the course dimension,

and the design dimensions" (p. 190). Green et al. (2012) reported the greatest influence on student satisfaction to be "the amount of time spent online using the learning management system" (p. 190). Green et al. (2012) argued the importance of measuring student satisfaction claiming, "Learner satisfaction is a key factor in continued participation in web-based learning" (p. 191).

Researching what causes students to be satisfied is one approach to ensuring satisfaction in any educational experience. Lawson, Leach and Burrows (2012) questioned "whether satisfaction is an appropriate measure of success or whether there are other measures that could be used" (p. 7). Lawson et al. (2012) pointed out that "service organizations measure customers' satisfaction for a number of reasons, including to understand customers' needs and wants, for planning and making improvements to service and perceptions so that resources may be targeted appropriately" (p. 7). However, there is some debate concerning if students should be viewed as customers at all and if they should be consulted on what makes their learning experiences enjoyable (Lawson et al., 2012). University leaders in the study argued, "the core business of universities is not to satisfy students, but to educate them and provide an environment in which they may learn and develop" (Lawson et al., 2012, p. 8).

Tovani (2012) disagreed and believed there was power in asking students opinions about their learning experience:

> To meet students' needs, I need to get feedback as well as give it. It's a two-way street. When students have the chance to tell me what they need, they empower me to revise and rethink my instruction. Such two-way feedback puts students— instead of just the curriculum—in the driver's seat. (p. 51)

Hattie (2009) claimed:

It was only when I discovered that feedback was most powerful when it is from the student to the teacher that I started to understand it better. When teachers seek feedback from students then teaching and learning can be synchronized and powerful. Feedback to teachers makes learning visible. (p. 173)

Jackson et al. (2012) discovered that "students who are satisfied with their educational experiences are more likely to persist to graduation and are more likely to seek additional or similar opportunities with the same institution" (p. 79). Lawson et al. (2012) agreed, "The positive impacts for students are that being given the opportunity to provide feedback makes one feel empowered, that one's views are important and that individuals can help make a positive difference" (p. 8).

Summary

In the review of literature, a historical perspective of distance education, the growth of K-12 online learning, the Community of Inquiry conceptual framework, student-to-teacher feedback, online feedback research, and student satisfaction and perception research were discussed.

As K-12 educational institutions continue to grow online learning programs, specific research on the K-12 environment is needed to prove validity and student achievement in such programs. One way to measure potential impacts on student achievement is through the lens of teacher-to-student and student-to-teacher feedback. Using the extensive work of Hattie (2007, 2009, 2012) research can be conducted to determine the level of feedback a teacher is providing. The importance of student-to-teacher feedback can be leveraged through the use of satisfaction surveys that ask

students to report what they enjoy about their learning experiences and what, in their opinion, is having the greatest impact on their learning.

Chapter Two included review of literature related to online learning and the impact of both student-to-teacher feedback and teacher-to-student feedback. In Chapter Three, the methodology and design of the study were addressed. Analysis of the data were presented in Chapter Four. A summary of the findings related to literature, conclusions, and recommendations for further research were discussed in Chapter Five.

Chapter Three: Methodology

Problem and Purpose Overview

In *Searching for the Reality of Virtual Schools*, Barth et al. (2012) discovered "little solid research on the impact of online courses or schools…. Interestingly, news organizations, rather than education researchers, seem to be taking the lead in investigating and reporting their effects" (Barth et al., 2012, p. 2). The researchers continued to point out, "The lack of information will not stand in the way of it moving forward, however. Online learning when done well can transform instruction and provide the 21st century education our students need" (Barth et al., 2012, p. 2). Quantitative data were gathered and analyzed to determine the levels of feedback provided to students by instructors in high school online courses. These levels were based on Hattie's (2012) four levels of teacher-to-student feedback. Quantitative data were also gathered and analyzed to determine high school students overall level of satisfaction with teacher feedback and course satisfaction.

Research Questions

The following research questions guided this study:

1. What levels of feedback (task, process, self-regulation, personal) are an online teacher using when responding to student work?

2. According to online students, at what level are students satisfied with the quality and quantity of feedback they are receiving from their online teacher?

3. At what level are students satisfied with the online course?

4. What correlation exists between satisfaction with feedback quality and quantity and overall course satisfaction?

Hypotheses

$H4_0$: A correlation does not exist between satisfaction with feedback quality and quantity and overall course satisfaction.

$H4_a$: A correlation does exist between satisfaction with feedback quality and quantity and overall course satisfaction.

Research Design

The research in this study was analyzed using quantitative correlation research. Correlational research is "research that involves collecting data in order to determine the degree to which a relationship exists between two or more variables" (Fraenkel et al., 2012, p. 691). Fraenkel et al. (2012) explained, "A correlation study describes the degree to which two or more quantitative variable are related, and it does so by using a correlation coefficient" (p. 362). The goal of quantitative research is to "establish generalizations that transcend the immediate situation or particular setting" (Fraenkel et al., 2012, p. 11). Quantitative research elements were used in this study to establish if a relationship existed between teacher feedback and overall student satisfaction rates.

Population and Sample

The population of this study was comprised of 83 students and six teachers participating in an online course as part of a district-led online learning program in one large accredited district in Missouri. Students completed surveys as part of the general online program evaluation throughout the semester, using electronic surveys embedded in the Learning Management System used to deliver course work. Secondary data, gathered from student surveys, were used for this study.

In addition to using survey results, feedback from 10 random students in each course was analyzed for the level of feedback provided. Students were selected using a simple random sample. According to Fraenkel et al. (2012), "a simple random sample is one in which each and every member of the population has an equal and independent chance of being selected" (p. 94). A simple random sampling was used to provide the best sample representative of the population of interest (Fraenkel et al., 2012).

Instrumentation

For purposes of this study, a consensus survey and analysis of secondary data were used. A consensus survey is used when "an entire population is surveyed" (Fraenkel et al., 2012, p. 394). Fraenkel et al. (2012) identified "four main threats to internal validity in survey research: mortality, location, instrumentation, and instrumentation decay" (p. 407). To control internal validity in this research, these potential threats were considered. Steps were taken to ensure all surveys were managed electronically and secured using a password protected system. Interview questions were kept to a minimum to reduce the potential of instrumentation decay.

A Likert scale was used to determine the extent to which students were satisfied with teacher feedback quantity and quality, as well as overall course satisfaction. A Likert scale "is an attitude scale named after the man who designed it" (Fraenkel et al., 2012, p. 127). While a Likert scale may vary in design, the instrument used for this survey, *four* (strongly agree) indicated a positive attitude while *one* (strongly disagree) indicated a negative attitude.

Secondary data were analyzed to determine the feedback provided by each teacher to 10 students on 37 assignments completed throughout the semester. Fraenkel et

al. (2012) explained that the complete observer role is used when "the researcher observes the activities of a group without in any way participating in those activities" (p. 466). Teacher feedback to student work was analyzed using the district's Learning Management System and placed into one of four levels (Hattie, 2009). A third-party researcher was used to ensure inter-rater reliability.

Data Collection

Stake (2010) recommended the method for collecting data be "selected to fit the research question and to fit the style of inquiry the researcher prefers" (pp. 89-90). The first set of data was collected from online surveys administered to online high school students participating in one of three courses offered by the Missouri school district (see Appendix A). The population and sample included 83 student participants. The survey was sent out using the district's Learning Management System. The surveys were administered by the school district during the semester for purpose of ongoing system improvement to the online program. The results of the survey were provided as secondary data for the purpose of this research.

The second set of data collection used secondary data analysis. Using a third-party researcher to provide inter-rater reliability to the process and ensure student and teacher anonymity, 10 students from each of the six courses were randomly selected (60 students total). Thirty-seven assignments from each course were reviewed for the type of teacher feedback provided to the students for a total of 2,220 assignments. The type of feedback analyzed was placed into one of four categories based on Hattie's (2009) four levels of feedback. These levels included task, (commenting on how correct or incorrect the work is), process (how the student completed the task), self-regulation (questioning

how the student completed the task), and personal (comments directed to the student's personal being) (Hattie, 2009).

Data Analysis

Survey responses were stored in the Learning Management System and reported through a spreadsheet generated by the electronic software. Responses were reported as whole class responses as well as individual student responses. Responses from the Likert scale were placed on a numerical scale for analysis (Strongly agree = 4, Agree = 3, Disagree = 2, Strongly Disagree = 1).

After collecting the numerical data, the researcher used descriptive statistics to present quantitative descriptions of the data. Fraenkel et al. (2012) reported, "The major advantage of descriptive statistics is that they permit researchers to describe the information contained in many, many scores with just a few indices" (p. 187).

Following analysis using descriptive statistics, inferential statistical techniques were used. Inferential statistics are "certain types of procedures that allow researchers to make inferences about a population based on findings from a sample" (Fraenkel et al., 2012, p. 220). Correlational research is "research that involves collecting data in order to determine the degree to which a relationship exists between two or more variables" (Fraenkel et al., 2012, p. 691). A Pearson correlation coefficient was applied to each set of surveys and secondary research analysis to determine to what degree a relationship existed between the level of feedback a teacher was most likely to provide to a student and his or her satisfaction with the quality and quantity of teacher feedback. A Pearson correlation coefficient is:

A key index in both forms of criterion-related validity. A correlation

coefficient, symbolized by the letter *r,* indicates the degree of relationship that exists between the scores individuals obtain on two instruments. All correlation coefficients fall somewhere between +1.00 and -1.00. An *r* of .00 indicates that no relationship exists. (Fraenkel et al., 2012, p. 152)

Once the Pearson correlation had been established, a *t*-test for *r* ($\alpha = .05$, two-tailed) was applied to determine "whether a correlation coefficient calculated on sample data is significant – that is, whether it represents a non-zero correlation in the population from which the sample was drawn" (Fraenkel et al., 2012, p. 237). According to Fraenkel et al. (2012):

> It is customary in educational research to view as unlikely an outcome that has a probability of .05 ($p = .05$) or less. This is referred to as the .05 level of significance. When we reject the null hypothesis at the .05 level, we are saying that the probability of obtaining such an outcome is only 5 times (or less) in 100. (p. 228)

All data analysis outcomes were determined using statistical analysis tools in Microsoft Excel.

Ethical Considerations

The researcher prepared and submitted a proposal to the Institutional Review Board (IRB) for approval to analyze and report the data (see Appendix B). Secondary data, in the form of teacher feedback to students in the online learning program, were provided to the primary researcher by the participating school district. All personally identifiable information had been expunged by a third-party before the primary researcher received the data. Anonymity was ensured by assigning a letter to each

teacher (A-F) and a number to each student (1-60) as suggested by Fraenkel et al. (2012). Therefore, confidentiality was ensured.

Summary

The research methodology and design were presented in Chapter Three. The research problem and purpose of the research were presented, followed by the research questions. The population and sample were discussed along with the methodology for selecting a quantitative research study. An explanation of the instrumentation was presented. A description of the types of data collection procedures were included as well as the process used for analyzing the data.

This quantitative study used Pearson correlation coefficient statistical procedures followed by a t-test for correlative means to determine at what level a relationship existed between student perception of quality and quantity of teacher feedback and overall course satisfaction in an online high school course. The collection, review, and analysis of the data provided a greater understanding of the levels of feedback provided to students by teachers in an online course as well as how students perceive the feedback they receive. The collection, review, and analysis of the data also provided a greater understanding of factors impacting students overall satisfaction in an online course.

In Chapter Four, data analyses were presented by individual course responses, subject area responses, individual student responses, and overall program responses. Data results were also presented on levels of teacher feedback at the individual teacher level, subject area level, and overall program level. Finally, overall correlative data were presented. In Chapter Five, a summary of the findings related to literature, conclusions, and recommendations for further research were discussed.

Chapter Four: Analysis of Data

The purpose of this study was to explore a K-12 online learning program with a focused review of the levels of feedback students received, student perception of feedback quality and quantity, and how satisfied students were overall with their online learning experience. The ultimate goal was to determine if a correlation existed between student perception of teacher feedback quality and quantity and student satisfaction. This study also analyzed feedback provided by online teachers in this K-12 online program and determined what level was provided most frequently to students.

This study was also used to fill a much-needed gap in K-12 online learning research. Recent reports estimated more than half of K-12 schools now offer some sort of online learning program (Barth, 2013). Even though these online learning opportunities are growing exponentially, there is very little research on online learning, and the research that does is exist focuses mostly on colleges (Barth et al., 2012)

A quantitative research design was used in this study. Data were analyzed using a Pearson correlation coefficient to determine to what extent a relationship existed between student perception of teacher feedback quantity and quality and overall satisfaction rates. Existing student surveys conducted by the online program being studied were analyzed as well as a random sample of teacher feedback provided to students.

This study was conducted using one large accredited school district in Missouri that offers its own, district-created online learning program to high school students. The population for this study included 83 students and six teachers. The random sample used for the feedback analysis included 10 students from each class, or 60 students total. Students were selected using a simple random sample.

Organization of Data Analysis

The purpose of this chapter was to present a summary of collected data regarding student perception of quantity and quality of teacher feedback in an online course. The levels of feedback provided to students through secondary data were analyzed in this chapter. Finally, the correlation that existed between student perception of feedback and overall course satisfaction is presented as well as the possible relationship between overall student satisfaction and the level of feedback the student received from the teacher.

Data were collected in three stages. In stage one, secondary data were obtained. These data were survey results, from 83 online learning students, that had been previously collected by the school district. All surveys were analyzed to determine the level of satisfaction with teacher feedback quantity and quality, as well as overall course satisfaction. Data were reported at individual course, subject area, and overall program levels.

In stage two, secondary data were used to analyze to determine the feedback levels provided by each teacher to 10 students in each of the six classes, or 60 students total. Thirty-seven assignments were analyzed for each student for a total of 2,220 assignments using the district's Learning Management System. A third-party researcher was used to ensure inter-rater reliability.

In stage three, data from stage one were analyzed to determine if a relationship existed using a Pearson correlation coefficient. To further determine the nature of the relationship and the statistical significance, a t-test for r was applied. Correlation and

statistical significance were reported at the course, subject areas, and overall program level.

Analysis of Quantitative Data

Quantitative data, in the form of a survey, were collected from 83 high school students participating in a district-led online learning program. During stage one, the responses to four questions from the overall survey of 20 were calculated. Student-reported satisfaction with teacher feedback quantity and quality was examined, as well as overall course satisfaction. Data were reported by the program overall, then data were disaggregated by the subject, then the course. To ensure anonymity of the teacher and the students, each teacher was assigned a letter by a third-party researcher and students were assigned a number.

Stage One: Data Analysis of Survey Responses

Survey question 1. I am getting enough feedback from my teacher.

Of the 83 student responses, 27 students (34%) reported they strongly agreed that they received enough feedback from their teacher, while 46 students (53%) reported they agreed with this statement (see Table 1). Conversely, eight students (12%) disagreed with the statement that they received enough feedback from their teacher, and two students (1%) strongly disagreed.

In the first subject area (combined course A and B), 17 students took the survey. Nine students (59%) strongly agreed they received enough feedback from their teacher, while five students (23%) agreed with the statement. Four students (18%) disagreed with the statement, reporting they did not receive enough feedback, while no students strongly disagreed.

In course A, seven students took the survey. Two students (33%) reported they strongly agreed they received enough feedback from their teacher, while three students (34%) agreed. Two students (33%) disagreed they received enough feedback. No students strongly disagreed.

In course B, 10 students took the survey. Seven students (70%) strongly agreed they received enough feedback from their teacher, while two students (20%) agreed. Two (10%) students disagreed, reporting they did not receive enough feedback from their teacher, while no students strongly disagreed.

In the second subject area (combined course C and D), 29 students took the survey. Eight students (63%) strongly agreed they received enough feedback from their teacher, and 19 students (27%) agreed. Two students (10%) disagreed, reporting they did not receive enough feedback from their teacher. No students strongly disagreed.

In course C, 18 students took the survey. Four students (22%) strongly agreed they received enough feedback from their teacher, and 13 students (67%) agreed. One student (11%) disagreed, stating he/she did not receive enough feedback from the teacher. No students strongly disagreed.

In course D, 11 students took the survey. Four students (36%) strongly agreed and six students (55%) agreed they received enough feedback from their teacher. One student (9%) disagreed, and no students strongly disagreed.

In the third subject area (combined course E and F), 37 students took the survey. Ten (27%) students strongly agreed they received enough feedback, while 22 (59%) agreed. Three students (11%) disagreed they received enough feedback, and one student (3%) strongly disagreed.

In course E, 20 students took the survey. Five students (25%) reported they strongly agreed they received enough feedback from their teacher, and 14 students (69%) reported they agreed. One student (6%) disagreed, reporting he/she did not receive enough feedback, and no students strongly disagreed.

In course F, 17 students took the survey. Five students (30%) strongly agreed they received enough feedback, and eight students (50%) agreed. Three students (15%) disagreed and reported they did not receive enough feedback, and one student (5%) strongly disagreed.

Table 1

Descriptive Statistics of Responses to Survey Question 1

Course	Total *n*	Strongly Agree *n*	Agree *n*	Disagree *n*	Strongly Disagree *n*
All Courses	83	27	46	8	2
Course A & B	18	9	5	4	0
Course A	7	2	3	2	0
Course B	11	7	2	2	0
Course C & D	29	8	19	2	0
Course C	18	4	13	1	0
Course D	11	4	6	1	0
Course E & F	36	10	22	3	1
Course E	20	5	14	1	0
Course F	17	5	8	3	1

Note: n = Number of responses.

After reviewing the data presented in the student surveys, it was determined that overall, the students who participated in the district online learning course were satisfied with the amount of feedback they received. Hattie (2012) recognized the importance of feedback throughout his synthesis of over 800 meta-analyses relating to student achievement, but noted that frequency of feedback was not enough:

There has been much evidence about the frequency of feedback and most of it is not that informative- because there are more important factors than merely increasing the amount of feedback, or whether it is immediate or delayed. (p. 122)

The analysis of student perception of teacher feedback in this study continued into the discussion of student perception of the quality of feedback provided by the teacher through the use of another question provided on the survey.

Survey question 2. The feedback I received was helpful to my learning.

Of the 83 student responses, 25 students (31%) reported they strongly agreed that the feedback they received from their teacher was helpful to their learning, while 49 students (59%) reported they agreed with this statement. Conversely, seven students (8%) disagreed with the statement that the feedback they received from their teacher was helpful, and two students (2%) strongly disagreed (see Table 2).

In the first subject area (combined course A and B), 17 students took the survey. Seven students (42%) strongly agreed the feedback they received was helpful to their learning, while nine students (53%) agreed with the statement. One student (5%) disagreed with the statement, reporting the feedback was not helpful to his/her learning, while no students strongly disagreed. In course A, seven students took the survey. Four students (58%) reported they strongly agreed the feedback they received was helpful,

while two students (28%) agreed. One student (14%) disagreed that the feedback received was helpful. No students strongly disagreed.

In course B, 10 students took the survey. Three students (30%) strongly agreed the feedback they received was helpful, while seven students (70%) agreed. No students in this class disagreed or strongly disagreed with the statement.

In the second subject area (combined course C and D), 29 students took the survey. Nine students (32%) strongly agreed the feedback they received was helpful, and 17 students (58%) agreed. Two students (7%) disagreed, reporting feedback from their teacher was not helpful to their learning, and one student (3%) strongly disagreed. In course C, 18 students took the survey. Four students (22%) strongly agreed the feedback they received from their teacher was helpful, and 12 students (68%) agreed. One student (5%) disagreed, stating he/she did not agree the feedback was helpful, and one student (5%) strongly disagreed.

In course D, 11 students took the survey. Two students (19%) strongly agreed and eight students (72%) agreed the feedback was helpful to their learning. One student (9%) disagreed, and no students strongly disagreed.

In the third subject area (combined course E and F), 37 students took the survey. Nine (24%) students strongly agreed feedback they received was helpful, while 23 (62%) agreed. Four students (11%) disagreed that feedback from the teacher was helpful to their learning, and one student (3%) strongly disagreed. In course E, 20 students took the survey. Six students (30%) reported they strongly agreed the feedback from their teacher was helpful, and 10 students (50%) reported they agreed. Four students (15%) disagreed, reporting they did not find the feedback helpful, and one student (5%) strongly disagreed.

In course F, 17 students took the survey. Three students (19%) strongly agreed the teacher feedback was helpful to their learning, and 13 students (76%) agreed. One student (5%) disagreed and reported he/she did not receive enough feedback, and no students strongly disagreed.

Table 2

Descriptive Statistics of Responses to Survey Question 2

Course	Total *n*	Strongly Agree *n*	Agree *n*	Disagree *n*	Strongly Disagree *n*
All Courses	83	25	49	7	2
Course A & B	18	7	9	1	0
Course A	7	4	2	1	0
Course B	11	3	7	0	0
Course C & D	29	9	17	2	1
Course C	18	4	12	1	1
Course D	11	2	8	1	0
Course E & F	36	9	23	4	1
Course E	20	6	10	4	1
Course F	17	3	13	0	1

Note: n = Number of responses.

Hattie (2012) recognized that, for most students, they "have little notion of what mastery looks like" (p. 117). Therefore, feedback is critical for providing students with an understanding of when they have achieved the learning goal (Hattie, 2012). Students who are dissatisfied with the feedback they received may still be feeling as though they misunderstand the success criteria even after the completion of a task. According to

Hattie (2012), "Teachers need to know, and communicate to students, the goals of the lesson- hence the importance of learning intentions and success criteria" (p. 116). After reviewing the data presented in the student surveys, it was determined that overall, the students who participated in the district online learning courses felt the feedback they received was helpful to their learning. Overall, the courses aligned closely with each other showing no statistical differences between teachers or subject areas.

       Survey question 3. Overall, how satisfied are you with this online class.

       The final question analyzed from the online student survey related to how satisfied students were with the overall course. These data were used as feedback to the course providers to determine how students perceived the course as a whole. Requesting feedback from students is, according to Hattie (2009) one of the most under-used but important forms of feedback:

> It was only when I discovered that feedback was most powerful when it is from the student to the teacher that I started to understand it better. When teachers seek feedback from students as to… when they are engaged – then teaching and learning can be synchronized and powerful. Feedback to teachers makes learning visible. (p. 173)

       Of the 83 student responses, 23 students (27%) strongly agreed they were satisfied with the online course, while 36 students (45%) reported they agreed with this statement. Conversely, 17 students (20%) disagreed that they were satisfied with the online course, and seven students (8%) strongly disagreed (see Table 3).

       In the first subject area (combined course A and B), 17 students took the survey. Eight students (48%) strongly agreed they were satisfied with the online course, while

four students (23%) agreed with the statement. Three students (18%) disagreed with the

statement, reporting they were not satisfied with the online course, while two (11%)

students strongly disagreed. In course A, seven students took the survey. Four students

(58%) reported they strongly agreed they were satisfied with the online course, while one

student (14%) agreed. One student (14%) disagreed and was not satisfied overall with

the online course, and one student (14%) strongly disagreed.

In course B, 10 students took the survey. Four students (40%) strongly agreed

they were satisfied with the online class overall, while three students (30%) agreed. Two

students (20%) disagreed, stating they were not satisfied with the online class, and one

student (10%) strongly disagreed.

In the second subject area, (combined course C and D), 29 students took the

survey. Seven students (24%) strongly agreed that they were satisfied with the course

overall, and 18 students (62%) agreed. One student (3%) disagreed, reporting he/she was

not satisfied with the course, and three students (10%) strongly disagreed. In course C,

18 students took the survey. Five students (17%) strongly agreed they were satisfied with

the course, and nine students (31%) agreed. One student (3%) disagreed, stating he/she

was not satisfied overall, and three students (10%) strongly disagreed.

In course D, 11 students took the survey. Two students (19%) strongly agreed

and nine students (81%) agreed they were satisfied with the course. No students were

dissatisfied. Course D was the only course to have 100% of students report they were

satisfied with the online course overall.

In the third subject area (combined course E and F), 37 students took the survey.

Eight (22%) students strongly agreed they were satisfied with the online course, while 14

(37%) agreed. Thirteen students (35%) disagreed that they were satisfied with the course, and two students (6%) strongly disagreed. In course E, 20 students took the survey. Four students (30%) reported they strongly agreed they were satisfied with the course overall, and10 students (50%) reported they agreed. Five students (15%) disagreed, reporting they were not satisfied with the course, and one student (5%) strongly disagreed.

In course F, 17 students took the survey. Four students (23%) strongly agreed they were satisfied with the course, and four students (23%) agreed. Eight students (4%) disagreed and reported they were not satisfied with the course, and one student (5%) strongly disagreed. Subject area E and F had the lowest overall course satisfaction rates of all other courses, with 41% of students reporting they were dissatisfied with their online course.

Table 3

Descriptive Statistics of Responses to Survey Question 3

Course	Total *n*	Strongly Agree *n*	Agree *n*	Disagree *n*	Strongly Disagree *n*
All Courses	83	23	36	17	7
Course A & B	18	8	4	3	2
Course A	7	4	1	2	1
Course B	11	4	3	1	1
Course C & D	29	7	18	1	3
Course C	18	5	9	1	3
Course D	11	2	9	0	0
Course E & F	36	8	14	13	2
Course E	20	4	10	5	1
Course F	17	4	4	8	1

Note: n = Number of responses.

Stage Two: Analysis of Feedback Levels

In stage one, secondary data were analyzed to determine at what level students were satisfied with the amount of feedback they received from their teacher and how helpful they found the feedback to be to their learning. Overall course satisfaction data were also analyzed. In stage two, feedback provided to students by teachers was analyzed using secondary research analysis.

Using a simple random sample of 10 students per class, or 60 students total, 37 assignments were analyzed per student (or 2,220 assignments total). A coding scheme

was used during the stage of this study to place the feedback provided to students into one of four categories (Hattie, 2009).

For course A, 10 students were selected using a simple random sample. Feedback from 37 assignments were analyzed using the district's Learning Management System. The teacher was found to provide mostly level one feedback to the students (see Table 4). According to Hattie (2012), level one feedback "is at the task or product level. It is often termed 'corrective feedback', or 'knowledge of results'" (p. 118). Hattie (2012) stated, examples of level one feedback were "indicating correct or incorrect responses, needing more or different responses, and providing more or different information relevant to the task" (p. 119). Teacher A provided feedback mostly in the form of rubrics and only provided individual comments to students when the students incorrectly completed the task.

When the level of feedback was analyzed from the student survey responses, no students reported to be dissatisfied with the level of feedback provided by Teacher A. Three students, however, did report they disagreed that they were receiving enough feedback from their teacher. Two students reported they were dissatisfied with the class overall.

Table 4

Descriptive Statistics of Secondary Data Analysis for Class A

Student	Amount of Feedback	Level of Feedback	Overall Satisfaction	Feedback Level
A	2	3	3	1
B	3	3	1	1
C	3	3	3	1
D	2	3	3	1
E	3	3	3	1
F	4	4	2	1
G	2	3	4	1
H	3	3	3	1
I	3	3	1	1
J	3	3	3	1

Note. Amount of feedback, Level of feedback, and Overall satisfaction were reported on a survey using a Likert scale. The answers ranged from Strongly Agree, Agree, Disagree, Strongly Disagree. Each answer was assigned a number. Strongly Agree = 4, Agree = 3, Disagree = 2, Strongly Disagree = 1. Analyzed feedback levels are adapted from Hattie, J. (2009). Visible learning: A synthesis of over 800 meta-analyses relating to achievement. Abingdon, England: Routledge .

For course B, 10 students were selected using a simple random sample. Feedback from 37 assignments were analyzed using the district's Learning Management System. The teacher provided mostly level four feedback to the students (see Table 5). According to Hattie (2012):

The fourth level is feedback directed to the 'self' and is commonly subsumed

under the notion of 'praise.' Praise is often used to comfort and support. Praise

usually contains little task-related information and is rarely converted into more

engagement, commitment to the learning goals, enhanced self-efficacy, or

understanding about the task. (p. 120)

Teacher B provided feedback mostly in the form of narratives after completing

the rubrics provided in the Learning Management System. These narratives included

terms most associated with praise (for example, "Good job" or "Well done").

When the level of feedback was analyzed with student responses on surveys

provided as secondary data in the first stage of research, no students reported to be

dissatisfied with the level of feedback provided. One student, however, disagreed he/she

had received enough feedback from the teacher. This class had an overall low

satisfaction rate with 50% of students from the sample reporting they were dissatisfied

with the class.

Table 5

Descriptive Statistics of Secondary Data Analysis for Class B

Student	Amount of Feedback	Level of Feedback	Overall Satisfaction	Feedback Level
A	3	4	1	4
B	4	4	4	4
C	4	4	3	4
D	4	3	4	4
E	4	3	2	4
F	4	3	4	4
G	4	3	2	4
H	2	4	3	4
I	4	3	2	4
J	4	3	2	4

Note. Amount of feedback, Level of feedback, and Overall satisfaction were reported on a survey using a Likert scale. The answers ranged from Strongly Agree, Agree, Disagree, Strongly Disagree. Each answer was assigned a number. Strongly Agree = 4, Agree = 3, Disagree = 2, Strongly Disagree = 1. Analyzed feedback levels are adapted from Hattie, J. (2009). Visible learning: A synthesis of over 800 meta-analyses relating to achievement. Abingdon, England: Routledge .

For course C, 10 students were selected using a simple random sample. Feedback from 37 assignments were analyzed using the district's Learning Management System. The teacher was found to provide almost exclusively level one feedback (see Table 6). According to Hattie (2012), level one feedback is aimed at the task or product level. This

teacher completed rubrics provided in the Learning Management System as the most frequent form of feedback with very few personalized statements.

When the level of feedback was analyzed with student responses, one student reported to be dissatisfied with the level of feedback provided. All students reported to be satisfied with the amount of feedback received. Two students were dissatisfied with the class overall.

Table 6

Descriptive Statistics of Secondary Data Analysis for Class C

Student	Amount of Feedback	Level of Feedback	Overall Satisfaction	Feedback Level
A	3	3	3	1
B	3	3	3	1
C	3	3	4	1
D	3	1	1	1
E	3	3	2	2
F	4	4	4	1
G	3	3	3	1
H	3	3	3	1
I	3	1	1	1
J	4	4	4	1

Note. Amount of feedback, Level of feedback, and Overall satisfaction were reported on a survey using a Likert scale. The answers ranged from Strongly Agree, Agree, Disagree, Strongly Disagree. Each answer was assigned a number. Strongly Agree = 4, Agree = 3, Disagree = 2, Strongly Disagree = 1. Analyzed feedback levels are adapted from Hattie, J. (2009). Visible learning: A synthesis of over 800 meta-analyses relating to achievement. Abingdon, England: Routledge .

For course D, 10 students were selected using a simple random sample. Feedback from 37 assignments were analyzed using the district's Learning Management System. Teacher D had the most varied levels of feedback provided to students (see Table 7). The most commonly analyzed level of feedback was level one. According to Hattie (2012),

level one feedback is aimed at the task or product level.

When the level of feedback was analyzed with student responses on surveys provided as secondary data in the first stage of research, one student reported to be dissatisfied with the level of feedback provided. The same student also disagreed he/she had received enough feedback from the teacher. This class had a high satisfaction rate with 100% of the sample reporting they were satisfied with the class overall, including the student who was dissatisfied with the feedback he/she received from the instructor.

Table 7

Descriptive Statistics of Secondary Data Analysis for Class D

Student	Amount of Feedback	Level of Feedback	Overall Satisfaction	Feedback Level
A	4	4	3	1
B	2	2	3	1
C	4	4	4	1
D	3	3	3	2
E	3	3	3	4
F	3	3	3	2
G	4	3	4	1
H	3	3	3	1
I	3	3	3	1
J	3	3	3	2

Note. Amount of feedback, Level of feedback, and Overall satisfaction were reported on a survey using a Likert scale. The answers ranged from Strongly Agree, Agree, Disagree, Strongly Disagree. Each answer was assigned a number. Strongly Agree = 4, Agree = 3, Disagree = 2, Strongly Disagree = 1. Analyzed feedback levels are adapted from Hattie, J. (2009). Visible learning: A synthesis of over 800 meta-analyses relating to achievement. Abingdon, England: Routledge .

For course E, 10 students were selected using a simple random sample. Feedback from 37 assignments were analyzed using the district's Learning Management System. The most commonly analyzed level of feedback was level one (see Table 8). Teacher E almost exclusively completed rubrics with very little personalized feedback to students.

The feedback that was provided was most frequently task-oriented. In a few instances, the teacher provided level 2 feedback. According to Hattie (2012):

> The second level is feedback aimed at the processes used to create the product or to complete the task. Such feedback can lead to providing alternative processing, reducing cognitive load, helping to develop learning strategies and error detection, cueing to seek a more effective information search, recognizing relationships between ideas, and employing task strategies. (p. 119)

When the level of feedback were analyzed with student responses on surveys provided as secondary data in the first stage of research, no students reported to be dissatisfied with the level of feedback provided, and all students reported they had received enough feedback from the teacher. Three students reported they were dissatisfied with the class overall.

Table 8

Descriptive Statistics of Secondary Data Analysis for Class E

Student	Amount of Feedback	Level of Feedback	Overall Satisfaction	Feedback Level
A	3	3	2	1
B	4	4	3	1
C	3	3	3	1
D	3	3	2	1
E	3	3	3	2
F	3	3	3	1
G	3	3	2	1
H	4	4	3	1
I	3	3	3	2
J	4	3	4	2

Note. Amount of feedback, Level of feedback, and Overall satisfaction were reported on

a survey using a Likert scale. The answers ranged from Strongly Agree, Agree, Disagree,

Strongly Disagree. Each answer was assigned a number. Strongly Agree = 4, Agree = 3,

Disagree = 2, Strongly Disagree = 1. Analyzed feedback levels are adapted from Hattie,

J. (2009). Visible learning: A synthesis of over 800 meta-analyses relating to

achievement. Abingdon, England: Routledge .

For course F, 10 students were selected using a simple random sample. Feedback

from 37 assignments were analyzed using the district's Learning Management System.

The most commonly analyzed level of feedback was level four (see Table 9). Hattie

(2012) described level four feedback as feedback aimed at the individual, usually in the

form of praise. Teacher F was a very positive teacher who provided many personalized

comments to the students, but almost all comments contained words of praise.

When the level of feedback was analyzed with student responses on surveys

provided as secondary data in the first stage of research, one student reported to be

dissatisfied with the amount of feedback provided, and three students reported to be

dissatisfied with the level of feedback provided. Overall, this course had the lowest

satisfaction rate of all of the courses with 60% of the students reporting they were

dissatisfied with the course overall.

Table 9

Descriptive Statistics of Secondary Data Analysis for Class F

Student	Amount of feedback	Level of feedback	Overall satisfaction	Feedback Level
A	3	3	4	4
B	3	3	2	4
C	2	2	2	4
D	3	2	2	4
E	3	3	2	4
F	3	3	3	4
G	3	3	3	4
H	4	4	2	4
I	2	2	2	4
J	4	4	2	4

Note. Amount of feedback, Level of feedback, and Overall satisfaction were reported on a survey using a Likert scale. The answers ranged from Strongly Agree, Agree, Disagree, Strongly Disagree. Each answer was assigned a number. Strongly Agree = 4, Agree = 3, Disagree = 2, Strongly Disagree = 1. Analyzed feedback levels are adapted from Hattie, J. (2009). Visible learning: A synthesis of over 800 meta-analyses relating to achievement. Abingdon, England: Routledge .

Stage Three: Relationship Between Data Points

Data analysis from stage one determined the level of student-reported satisfaction with teacher feedback quality and quantity, as well as overall course satisfaction. In stage two, data were analyzed to determine what level of feedback students most frequently

received from their online teachers based on Hattie's (2009) four levels of feedback.

The data in this stage of the study were analyzed using quantitative correlation methods. Correlational research seeks to determine the relationship between data sets (Fraenkel et al., 2012,). The goal of quantitative research is to ensure the research is repeatable and not limited to the single instances of a particular study (Fraenkel et al., 2012).

A Pearson correlation coefficient was used to determine the extent of the relationship between the data points (Fraenkel et al., 2012). Fraenkel et al. (2010) explained:

> If there is a strong positive linear relationship between the variables, the value of r will be close to +1. If there is a strong negative relationship between the variables, the value of r will be close to -1. When there is no linear relationship between the variables or only a weak relationship, the value of r will be close to 0. (p. 64)

Following the Pearson correlation statistical analysis, a t-test for r was applied to determine the statistical significance of the research findings (Fraenkel et al., 2012). Once the Pearson correlation was established, a t-test for r ($\alpha = .05$, two-tailed) was applied to determine if the data were significant (Fraenkel et al., 2012). According to Fraenkel et al. (2012):

> It is customary in educational research to view as unlikely an outcome that has a probability of .05 (p= .05) or less. This is referred to as the .05 level of significance. When we reject the null hypothesis at the .05 level, we are saying that the probability of obtaining such an outcome is only 5 times (or less) in 100.

(p. 228)

The first set of data examined was an observation of the relationship between student satisfaction with the amount of teacher feedback provided and overall course satisfaction (see Table 10). The null hypothesis was that no correlation existed between student satisfaction with the amount of teacher feedback students received and overall course satisfaction ($H_0 : \beta1 = 0$). The alternative hypothesis was that a correlation between the two variables existed ($H_a : \beta \neq 0$). For course A, the correlation coefficient determined was 0 ($r^2 = 0$). This correlation coefficient established that no statistically significant relationship existed between the level of satisfaction with the amount of teacher feedback and overall course satisfaction. The *t*-test for *r* determined the significance level to be .557 ($r = .557 > .05$). The *t*-test for *r* score demonstrated no strong evidence there was a relationship between the two variables. Therefore, for course A, the null hypothesis was not rejected, as no significant correlation was determined.

For course B, the correlation coefficient determined was .170 ($r^2 = .170$). This correlation coefficient established that a very slight positive correlation existed in course B demonstrating a minimal relationship between the satisfaction students had with the amount of feedback they received and overall course satisfaction. The *t*-test for *r* determined the significance level to be .021 ($r = .021 < .05$); therefore, the null hypothesis was rejected and in this instance, the alternative hypothesis was considered, as a relationship existed between the two variables at a significant level.

When reviewing course A and B, combined as a subject area, the correlation coefficient was determined to be .084 ($r^2 = .084$). This correlation showed a slight positive linear relationship between the students' satisfaction with the amount of

feedback received and their satisfaction with the course overall. The *t*-test for *r*

determined the significance level to be .028 (*r* = .028 < .05); therefore, the null

hypothesis was rejected, and when observing the first subject area group, the alternate

hypothesis was considered as a relationship did exist between the amount of feedback

students received and their overall satisfaction with the online course.

For course C, the correlation coefficient determined was .557 (r^2 = .557). This

correlation coefficient established that a positive relationship existed between the level of

satisfaction with the amount of teacher feedback and overall course satisfaction. The *t*-

test for *r* determined the significance level to be .310 (*r* = .310 > .05). The *t*-test for *r*

score demonstrated no strong evidence there was a statistically significant relationship

between the two variables. Therefore, for course C the null hypothesis was not rejected,

as no significant correlation was determined.

For course D, the correlation coefficient determined was .666 (r^2 = .666). This

correlation coefficient established that a positive correlation existed in course D and

demonstrated a positive relationship between the satisfaction students had with the

amount of feedback they received and overall course satisfaction. The *t*-test for *r*

determined the significance level to be .400 (*r* = .400 > .05); therefore, the null

hypothesis was not rejected, as no statistically significant relationship existed between the

two variables.

When reviewing course C and D combined as a subject area, the correlation

coefficient was determined to be .468 (r^2 = .468). This correlation showed a positive

linear relationship between the students' satisfaction with the amount of feedback

received and their satisfaction with the course overall. The *t*-test for *r* determined the

significance level to be .379 ($r = .379 > .05$); therefore, the null hypothesis was not

rejected. While a positive correlation existed between student satisfaction with the

amount of feedback they received and overall course satisfaction, a statistically

significant relationship did not exist between the two variables.

For course E, the correlation coefficient determined was .581 ($r^2 = .581$). This

correlation coefficient established that a positive relationship existed between the level of

satisfaction with the amount of teacher feedback and overall course satisfaction. The t-

test for r determined the significance level to be .062 ($r = .062 > .05$). The t-test for r

score demonstrated no strong evidence there was a statistically significant relationship

between the two variables. Therefore, for course E the null hypothesis was not rejected

as no significant correlation was determined.

For course F, the correlation coefficient determined was 0 ($r^2 = 0$). This

correlation coefficient established that no correlation, either positive or negative, existed

between student perception of the amount of feedback they received from their teacher

and overall course satisfaction. The t-test for r determined the significance level to be

.065 ($r = .065 > .05$); therefore, the null hypothesis was not rejected as no statistically

significant relationship existed between the two variables.

When reviewing course E and F combined as a subject area, the correlation

coefficient was determined to be .289 ($r^2 = .289$). This correlation showed a slight

positive linear relationship between the students' satisfaction with the amount of

feedback received and their satisfaction with the course overall. The t-test for r

determined the significance level to be .009 ($r = .009 < .05$); therefore, the null

hypothesis was rejected. When observing at the third subject area group, the alternate

hypothesis was considered. A positive correlation between student satisfaction with the amount of feedback they received and overall course satisfaction existed at a statistically significant level.

When reviewing all courses combined, the correlation coefficient was determined to be .289 (r^2 = .289). This correlation showed a slight positive linear relationship between the students satisfaction with the amount of feedback received and their satisfaction with the course overall. The *t*-test for *r* determined the significance level to be .004 (*r* = .004 < .05); therefore, the null hypothesis was rejected. When reviewing all subject areas, the alternate hypothesis was considered. A positive correlation between student satisfaction with the amount of feedback they received and overall course satisfaction existed at a statistically significant level.

Table 10

Inferential Statistics of Responses to Survey Questions 1 and 3

Course	Total n	r^2	r
All Courses	83	.289	.004
Course A & B Combined	18	.084	.028
Course A	7	0	.557
Course B	11	.170	.021
Course C & D Combined	29	.468	.379
Course C	18	.557	.310
Course D	11	.666	.100
Course E & F Combined	36	.289	.009
Course E	20	.581	.062
Course F	17	0	.065

Note: n = number of responses, r^2 = coefficient correlation, r = t-test for r.

The second set of data examined was an analysis of the relationship between

students' satisfaction with the helpfulness of the feedback they received from their

teacher and overall course satisfaction (see Table 11). The null hypothesis was that no

correlation existed between student satisfaction with teacher feedback helpfulness and

overall course satisfaction (H_0: ß1 = 0). The alternative hypothesis was that a correlation

between the two variables existed (H_a: ß ≠ 0). For course A, the correlation coefficient

determined was -0.33 (r^2 = -0.33). This correlation coefficient established that there was

a slight negative correlation between satisfaction with the helpfulness of teacher feedback

and overall course satisfaction. In other words, the more helpful the students thought the

feedback from their teacher, the less satisfied they were with the course. The *t*-test for *r* determined the significance level to be .289 ($r = .289 > .05$). The *t*-test for *r* score demonstrated no strong statistical evidence there was a relationship between the two variables. Therefore, for course A, the null hypothesis was not rejected as no significant correlation was determined.

For course B, the correlation coefficient determined was .040 ($r^2 = .040$). This correlation coefficient established that a very slight positive correlation existed in course B demonstrating a minimal relationship between the satisfaction students had with the helpfulness of feedback they received and overall course satisfaction. The *t*-test for *r* determined the significance level to be .021 ($r = .021 < .05$); therefore, the null hypothesis was rejected, and in this instance, the alternative hypothesis was considered, as a relationship existed between the two variables at a significant level.

When reviewing course A and B combined as a subject area, the correlation coefficient was determined to be .084 ($r^2 = .084$). This correlation showed a slight positive linear relationship between the students' satisfaction with the amount of feedback received and their satisfaction with the course overall. The *t*-test for *r* determined the significance level to be .076 ($r = .076 > .05$); therefore, the null hypothesis was not rejected, and when observing the first subject area group, there was no statistically significant relationship between the two variables.

For course C, the correlation coefficient was determined to be .719 ($r^2 = .719$). This correlation showed a fairly strong positive linear relationship between the students satisfaction with the helpfulness of feedback received and their satisfaction with the course overall. The *t*-test for *r* determined the significance level to be .379 ($r = .379 >$

.05); therefore, the null hypothesis was not rejected. While a positive correlation existed between student satisfaction with the amount of feedback they received and overall course satisfaction, a statistically significant relationship did not exist between the two variables.

For course D, the correlation coefficient determined was .371 ($r^2 = .371$). This correlation coefficient established that a positive correlation existed in course D and demonstrated a minimal relationship between the satisfaction students had with the amount of feedback they received and overall course satisfaction. The t-test for r determined the significance level to be .660 ($r = .660 > .05$); therefore, the null hypothesis was not rejected, as no statistically significant relationship existed between the two variables.

When reviewing course C and D combined as a subject area, the correlation coefficient was determined to be .625 ($r^2 = .625$). This correlation showed a fairly strong positive linear relationship between the students' satisfaction with the helpfulness of feedback received and their satisfaction with the course overall. The t-test for r determined the significance level to be .839 ($r = .839 > .05$); therefore, the null hypothesis was not rejected. When analyzing the second subject area group, the alternate hypothesis was considered. While a positive correlation between student satisfaction with the amount of feedback they received and overall course satisfaction existed, a statistically significant relationship did not exist between the two variables.

For course E, the correlation coefficient determined was .166 ($r^2 = .166$). This correlation coefficient established that a positive relationship existed between the level of satisfaction with the amount of teacher feedback and overall course satisfaction. The t-

test for *r* determined the significance level to be 1 (*r* = 1 > .05). The *t*-test for *r* score

demonstrated no strong evidence there was a statistically significant relationship between

the two variables. Therefore, for course E, the null hypothesis was not rejected, as no

significant correlation was determined.

For course F, the correlation coefficient determined was 0 (r^2 = 0). This

correlation coefficient established that no correlation, either positive or negative, existed

between student perception of the amount of feedback they received from their teacher

and overall course satisfaction. The *t*-test for *r* determined the significance level to be

.065 (*r* = .065 > .05); therefore, the null hypothesis was not rejected, as no statistically

significant relationship existed between the two variables.

When reviewing course E and F combined as a subject area, the correlation

coefficient was determined to be .086 (r^2 = .086). This correlation showed a slight

positive linear relationship between the students' satisfaction with the amount of

feedback received and their satisfaction with the course overall. The *t*-test for *r*

determined the significance level to be .137 (*r* = .137 > .05); therefore, the null

hypothesis was not rejected. While a strong relationship existed between the two

variables, it was not at a statistically significant level. When reviewing the third subject

area group, the relationship between student perception of teacher helpfulness and overall

course satisfaction was not statistically significant.

Therefore, when analyzing the potential correlation or relationship between

student satisfaction with the level of feedback they received and overall satisfaction with

the course, the correlation coefficient was determined to be .267 (r^2 = .267). This

correlation showed a slight positive linear relationship between the students' satisfaction

with the amount of feedback received and their satisfaction with the course overall. The

t-test for *r* determined the significance level to be .011 (r = .011 < .05); therefore, the null

hypothesis was rejected. When reviewing all subject areas, the alternate hypothesis was

considered. A positive correlation between student satisfaction with the level of feedback

they received and overall course satisfaction existed at a statistically significant level.

Table 11

Inferential Statistics of Responses to Survey Questions 2 and 3

Course	Total *n*	r^2	*r*
All Courses	83	.267	.011
Course A & B Combined	18	-.071	.033
Course A	7	-0.33	.289
Course B	11	.040	.076
Course C & D Combined	29	.625	.839
Course C	18	.719	.656
Course D	11	.371	.660
Course E & F Combined	36	.179	.033
Course E	20	.166	1
Course F	17	.086	.137

Note: n = number of responses, r^2 = coefficient correlation, *r* = *t*-test for *r*.

Summary

Data analysis was conducted in three stages. In stage one, secondary data from

survey results conducted by the district online office studied were analyzed. Descriptive

statistics were used to determine at what level students were satisfied with the amount of

feedback they received from their online teachers, how helpful the students found the feedback, and overall satisfaction with the online course.

In stage two, feedback provided to students by teachers were analyzed. Using a simple random sample of 10 students per class, or 60 students total, 37 assignments were analyzed per student (or 2,220 assignments total). A coding scheme was used to label the feedback provided with one of the four levels of feedback outlined in Hattie's (2009) work. Following the analysis, an average was calculated to determine what level of feedback teachers provided to students most frequently in an online course.

In the final stage of analysis, stage three, data were analyzed using inferential statistics to determine the extent to which relationships existed between different data points used in the study. A Pearson correlation coefficient was used to determine if a relationship existed, and to what extent, while a *t*-test for *r* was applied to determine if the correlation was statistically significant.

In Chapter Five, the purpose of the study, the procedures chosen, the summary of findings, the research questions, the limitations of the findings, and the conclusion of the research findings were explained. Additionally, implications for practice and recommendations for future research were discussed.

Chapter Five: Summary and Conclusions

The purpose of this study was to explore a K-12 online learning program with an analysis of the levels of feedback students received, student perception of feedback quality and quantity, and how satisfied students were overall with their online learning experience. The ultimate goal was to determine if a correlation existed between student perception of teacher feedback quality and quantity and student satisfaction. This study also analyzed feedback provided by online teachers in this K-12 online program and determined what level was provided most frequently to students.

Hattie's (2009, 2012, 2014) research on the levels of feedback and impact of feedback on student satisfaction within an online learning environment served as a foundation for this study. The Community of Inquiry Framework established by Garrison et al. (2000) also provided necessary context for what a quality online learning experience should include. According to Garrison (2011):

> A theoretical framework for teaching and learning will reflect fundamental values and beliefs about an educational experience. It is by making explicit the theoretical elements that we reveal our educational ideals that will have a profound influence on practice. E-learning has become the protagonist for change, but the plot needs a purpose and direction. (p. 9)

This study provided review of current literature on quality online learning opportunities as well as an analysis of the role feedback played in student-reported satisfaction levels.

For the purpose of this study, data collection included (a) survey results from surveys given to online high school students at one large accredited school district in Missouri provided to the researcher as secondary data, and (b) secondary research from

the district's Learning Management System These data were analyzed to determine the level of feedback most commonly provided to a simple random sample of 60 students in the district online program. The following research questions guided this study:

1. What levels of feedback (task, process, self-regulation, personal) are an online teacher using when responding to student work?

2. According to online students, at what level are students satisfied with the quality and quantity of feedback they are receiving from their online teacher?

3. At what level are students satisfied with the online course?

4. What correlation exists between satisfaction with feedback quality and quantity and overall course satisfaction?

The alternate hypothesis for this study was that a correlation did exist between satisfaction with feedback quality and quantity and overall course satisfaction. The null hypothesis for this study was that a correlation did not exist between satisfaction with feedback quality and quantity and overall course satisfaction.

Literature related to this study included a historical study of the development of distance education, the purpose of online education and growth in K-12 online learning, the Community of Inquiry conceptual framework, an analysis of student-to-teacher feedback, online feedback research, and student satisfaction and perception research.

The population and sample of this study was comprised of 83 students and six teachers participating in an online course as part of a district-led online learning program in one large accredited district in Missouri. Students completed surveys as part of the general online program evaluation throughout the semester using electronic surveys embedded in the Learning Management System used to deliver course work. Secondary

data gathered from student surveys were used for this study. In addition to using survey results, feedback from 10 random students in each course was analyzed for the level of feedback provided. Students were selected using a simple random sample. Secondary data were analyzed to determine the feedback levels provided by each teacher to the 10 students selected on 37 assignments completed throughout the semester (or 2,200 assignments total).

Summary of the Findings

The survey results and the secondary data analysis were analyzed in three stages. In stage one secondary research was conducted using existing surveys conducted with 83 high school online learning students. All surveys were analyzed to determine the level of satisfaction with teacher feedback quantity and quality as well as overall course satisfaction. Data were reported at individual course, subject area, and overall program levels.

In stage two, secondary data were analyzed to determine the level of feedback provided by each teacher to 10 students in each of the six classes, or 60 students total. The 37 assignments were analyzed for each student for a total of 2,220 assignments. Teacher feedback to student work was analyzed using the district's Learning Management System and placed into one of four levels of feedback based on Hattie's (2009) four levels of feedback. A third-party researcher was used to ensure inter-rater reliability.

In stage three, data from stage one were analyzed to determine if a relationship existed using a correlation coefficient. To further determine the nature of the relationship and the statistical significance, a t-test for r was used. Correlation and statistical

significance were reported at the course, subject area, and overall program level.

Stage One: Data Analysis of Survey Responses. Students responded to 20 survey questions using a Likert scale ranging from strongly agree, agree, disagree, strongly disagree. For the purpose of this study, three questions were analyzed. The first survey question analyzed was, "I am receiving enough feedback from my teacher." Of the 83 student responses, 27 students (34%) reported they strongly agreed that they received enough feedback from their teacher, while 46 students (53%) reported they agreed with this statement. Conversely, eight students (12%) disagreed with the statement that they received enough feedback from their teacher, and two students (1%) strongly disagreed. Overall, students were satisfied with the amount of feedback they received in all six courses reviewed.

The second question analyzed was, "The feedback I am getting from my teacher is helpful to my learning." When reviewing all six courses combined, of the 83 student responses, 25 students (31%) reported they strongly agreed that the feedback they received from their teacher was helpful to their learning, while 49 students (59%) reported they agreed with this statement. Conversely, seven students (8%) disagreed with the statement that the feedback they received from their teacher was helpful, and two students (2%) strongly disagreed. More students were satisfied with the level of feedback they received from their teacher than the amount of feedback they were receiving.

The third question analyzed in this study was the final question of the survey, "Overall, I am satisfied with this online course." Of the 83 student responses, 23 students (27%) strongly agreed they were satisfied with the online course, while 36 students (45%) reported they agreed with this statement. Conversely, 17 students (20%) disagreed

that they were satisfied with the online course, and seven students (8%) strongly disagreed. Overall, course satisfaction numbers were lower than the satisfaction students reported with the feedback they received.

While there are a number of variables that come into play when reviewing overall course satisfaction, Green et al. (2012) observed five factors impacting learner satisfaction in an online course. They discovered "an online learning environment is complex and multi-dimensional and includes a wide range of factors" (Green et al., 2012, p. 190). Green et al. (2012) categorized satisfaction factors into five dimensions: "the learner dimension, the instructor dimension, the technology dimension, the course dimension, and the design dimensions" (p. 190). These survey questions only examined to a great extent the instructor dimension. These overall satisfaction numbers differed from the first two questions analyzed in that more students disagreed or strongly disagreed when asked about course satisfaction overall when compared with teacher feedback quantity and quality. With that considered, however, the number of students satisfied with the courses was statistically higher (59%) than those dissatisfied (41%).

Stage Two: Analyze Feedback Levels. Using a simple random sample of 10 students per class, or 60 students total, 37 assignments were analyzed per student (or 2,220 assignments total) using the district's Learning Management System. A coding scheme was used during this stage of the study to place the feedback into one of four levels based on Hattie's (2009) levels of feedback: task, process, self-regulation, or self.

For course A, the teacher provided mostly level one feedback to the students. According to Hattie (2012), level one feedback is "task or process level" (p. 118).

Teacher A provided little personalized feedback, and what was provided was a statement on the task completed, commenting on what was either correct or incorrect.

For course B, the teacher provided mostly level four feedback to the students. According to Hattie (2012), the fourth level of feedback is most commonly given in the form of praise. Teacher B provided feedback mostly in the form of narratives after completing the rubrics provided in the Learning Management System. These narratives included terms most associated with praise (for example, "Good job" or "Well done").

For course C, D, and E, the teachers both provided mostly level one feedback. Teachers C and E rarely commented beyond the provided assignment rubrics, and what comments were provided were level one, task oriented. Teacher D had the most varied levels of feedback provided to students out of the six teachers analyzed, but the most commonly provided level of feedback was level one. For course F, the most commonly given level of feedback was level four. Teacher F was a very positive teacher who provided many personalized comments to the students, but almost all comments contained words of praise.

When analyzing the levels of feedback provided in this district online learning program by six instructors, the levels provided were low when using Hattie's (2009) model. None of the teachers regularly provided the higher-impact levels of feedback: process level or self-regulation level (Hattie, 2012). Hattie (2012) warned:

> The art of effective teaching is to provide the right form of feedback at, or just above, the level at which the student is working – with one exception; do not mix praise into the feedback prompt, because this dilutes the effect! When feedback draws attention to self, students try to avoid the risks involved in tackling a

challenging assignment – particularly if they have a high fear of failure (and thus aim to minimize the risk to the self). (p. 121)

Stage Three: Determine the relationship between the data points

In stage three, data from stage one were analyzed to determine if a relationship existed using a correlation coefficient. To further determine the nature of the relationship and the statistical significance, a *t*-test for *r* was used. The first data set examined was an analysis of the relationship between student satisfaction with the amount of teacher feedback provided and overall course satisfaction. The null hypothesis was that no correlation existed between student satisfaction with the amount of teacher feedback they received and overall course satisfaction ($H_0 : ß1 = 0$). The alternative hypothesis was that a correlation between the two variables existed ($H_a : ß \neq 0$).

When analyzing course A and B combined as a subject area, the correlation coefficient was determined to be .084 ($r^2 = .084$). The *t*-test for *r* determined the significance level to be .021 ($r = .028 < .05$); therefore, the null hypothesis was rejected, and when reviewing the first subject area group, the alternate hypothesis was considered as a relationship did exist between the amount of feedback students received and their overall satisfaction with the online course.

When reviewing course C and D combined as a subject area, the correlation coefficient was determined to be .625 ($r^2 = .625$). The *t*-test for *r* determined the significance level to be .839 ($r = .839 > .05$); therefore, the null hypothesis was not rejected, and the alternate hypothesis was not considered. While a positive correlation between student satisfaction with the amount of feedback received and overall course satisfaction existed, a statistically significant relationship did not exist.

When reviewing course E and F combined as a subject area, the correlation coefficient was determined to be .289 ($r^2 = .289$). The *t*-test for *r* determined the significance level to be .009 ($r = .009 < .05$); therefore, the null hypothesis was rejected. When reviewing the third subject area group, the alternate hypothesis was considered. A positive correlation between student satisfaction with the amount of feedback they received and overall course satisfaction existed at a statistically significant level.

Therefore, when analyzing the potential correlation or relationship between student satisfaction with the amount of feedback they received and overall satisfaction with the course, the correlation coefficient was determined to be .289 ($r^2 = .289$). This correlation showed a slight positive linear relationship between the students' satisfaction with the amount of feedback received and their satisfaction with the course overall. The *t*-test for *r* determined the significance level to be .004 ($r = .004 < .05$); therefore, the null hypothesis was rejected. When reviewing all subject areas, the alternate hypothesis was considered. A positive correlation between student satisfaction with the amount of feedback they received and overall course satisfaction existed at a statistically significant level.

The second data set examined was an analysis of the relationship between student satisfaction with the helpfulness of the feedback they received from their teacher and overall course satisfaction. The null hypothesis was that no correlation existed between student satisfaction with teacher feedback helpfulness and overall course satisfaction (H_0: ß1 = 0). The alternative hypothesis was that a correlation between the two variables existed (H_a: ß ≠ 0).

When reviewing course A and B combined as a subject area, the correlation coefficient was determined to be .084 ($r^2 = .084$). The *t*-test for *r* determined the significance level to be .076 ($r = .076 > .05$); therefore, the null hypothesis was not rejected, and when analyzing the first subject area group, there was no statistically significant relationship between the two variables.

When reviewing course C and D combined as a subject area, the correlation coefficient was determined to be .625 ($r^2 = .625$). The *t*-test for *r* determined the significance level to be .839 ($r = .839 > .05$); therefore, the null hypothesis was not rejected. When observing at the second subject area group, the alternate hypothesis was not considered. While a positive correlation between student satisfaction with the amount of feedback they received and overall course satisfaction existed, a statistically significant relationship did not exist between the two variables.

When reviewing course E and F combined as a subject area, the correlation coefficient was determined to be .086 ($r^2 = .086$). The *t*-test for *r* determined the significance level to be .137 ($r = .137 > .05$); therefore, the null hypothesis was not rejected. So, while a strong relationship existed between the two variables, it was not at a statistically significant level. When reviewing the third subject area group, the relationship between student perception of teacher helpfulness and overall course satisfaction was not statistically significant.

Therefore, when analyzing the potential correlation or relationship between student satisfaction with the level of feedback they received and overall satisfaction with the course, the correlation coefficient was determined to be .267 ($r^2 = .267$). This correlation showed a slight positive linear relationship between the students' satisfaction

with the amount of feedback received and their satisfaction with the course overall. The t-test for *r* determined the significance level to be .011 (r = .011 < .05); therefore, the null hypothesis was rejected. When reviewing all subject areas, the alternate hypothesis was considered. A positive correlation between student satisfaction with the level of feedback they received and overall course satisfaction existed at a statistically significant level.

When analyzing what had a greater relationship with student satisfaction in this online learning program, the *amount* of feedback received showed a stronger statistical relationship (r^2 = .289) than the *level* of feedback received (r^2 = .267). Hattie (2012) noted:

> The culture of the student may influence the feedback effects. Students
> from collectivist cultures (for example, Confucian-based Asia, South Pacific
> nations) preferred indirect and implicit feedback, more group-focused feedback,
> and no self-level feedback. Students from individualist/Socratic cultures (for
> example, the USA) preferred more direct feedback, particularly related to effort,
> were more likely to use direct enquiry to seek feedback, and preferred more
> individual, focused, self-related feedback. (p. 130)

This would help explain the findings from stage two and stage three of this research. Teachers in this online program provided mostly level one (task) and level four (self) feedback to students, so while these levels may not have the same impact on achievement as the higher levels provided by process and self-regulation, students from the United States may be more likely to be satisfied and seek out this type of feedback.

Limitations of the Findings

The limitations of this study involved the sample for the research and the design of the study chosen by the researcher as listed below:

1. This particular study focused on only one district's program.

2. The district program studied is still fairly new and has only been offering online courses for two years.

3. While the teachers do receive training related to providing feedback in online courses, most of the teachers have only been teaching online for a limited time.

4. One instrument used to conduct the research in this study was a survey. Responses to surveys can be considered subjective based on the element of human input (Fraenkel et al., 2012).

5. The study used satisfaction data based on student perception gathered from a survey. This can be an unreliable measurement since it is based on opinion and can vary from student to student (Scholder & Maguire, 2009).

6. It was an assumption that respondents answered honestly without bias.

Conclusions

Within the context of the limitations of this study, the use of feedback in an online class and its impact on student satisfaction were viewed through the lens of Garrison's et al. (2000) Community of Inquiry model and Hattie's (2009) four levels of feedback.

Research question 1. What levels of feedback (task, process, self-regulation, personal) are an online teacher using when responding to student work?

Data from analyzing the feedback provided to 2,200 assignments from 60

students inside the district's Learning Management System found four of the six teachers provided level one feedback (task) to students. Two of the teachers provided level four (personal). No teachers consistently provided the higher levels of feedback, level two (process), or level three (self-regulation).

Most of the teachers used only the rubrics provided to give feedback to students. A few teachers provided additional comments, but these were related only to the task the students were completing or contained personal feedback statements such as "Good job."

Research Question 2. According to online students, at what level are students satisfied with the quality and quantity of feedback they are receiving from their online teacher?

Selected statements in the survey were analyzed. Using a Likert scale, 83 students responded that they strongly agreed, agreed, disagreed or strongly disagreed with the statement provided. The first statement analyzed was, "I am receiving enough feedback from my teacher." Seventy-three percent of students responded favorably to this statement, either agreeing or strongly agreeing. The second statement analyzed was, "The feedback I am getting from my teacher is helpful to my learning." Ninety percent of students responded favorably to this statement, either agreeing or strongly agreeing.

Hatziapostolou and Paraskakis (2010) argued that through the use of Learning Management Systems, or online learning platforms, instructors can provide feedback that is more timely, motivational, personalized, manageable and directly related to assessment criteria. They explained that a student's perception is important for future attitude development related to online learning (Hatziapostolou & Paraskakis, 2010).

Research Question 3. At what level are students satisfied with the online course?

The final statement analyzed from student survey responses stated, "Overall I am satisfied with this online course." Seventy-two percent of students responded that they agreed or strongly agreed with this statement, showing a high percentage of high school students were satisfied with the online learning experience. Overall, these are high satisfaction numbers for a program that has been providing online high school courses to students for less than two years. Continuing to monitor student satisfaction will be an important component for districts seeking to provide online courses for students. According to Bolliger and Halupa (2012), "Student satisfaction is an important issue and should be considered in the evaluation of course and program effectiveness" (p. 48). A 2002 Sloan Consortium study listed student satisfaction as one of the five pillars of quality in online education, "together with learning effectiveness, access, faculty satisfaction and institutional cost effectiveness" (Bolliger & Halupa, 2012, p. 82).

Research Question 4. What level of correlation exists between satisfaction with feedback quality and quantity and overall course satisfaction?

The first data set examined was an analysis of the relationship between student satisfaction with the amount of teacher feedback provided and overall course satisfaction. The null hypothesis was that no correlation existed between student satisfaction with the amount of teacher feedback they received and overall course satisfaction ($H_0 : \text{ß}1 = 0$). The alternative hypothesis was that a correlation between the two variables existed ($H_a : \text{ß} \neq 0$).

Inferential statistics were used to analyze the potential correlation or relationship between student satisfaction with the amount of feedback they received and overall satisfaction with the course. The correlation coefficient was determined to be .289 (r^2 = .289). This correlation showed a slight positive linear relationship between the students' satisfaction with the amount of feedback received and their satisfaction with the course overall. The t-test for r determined the significance level to be .004 (r = .004 < .05); therefore, the null hypothesis was rejected. When reviewing all subject areas, the alternate hypothesis was considered. A positive correlation between student satisfaction with the amount of feedback they received and overall course satisfaction existed at a statistically significant level.

The second data set examined was a review of the relationship between student satisfaction with the helpfulness of the feedback they received from their teacher and overall course satisfaction. The null hypothesis was that no correlation existed between student satisfaction with teacher feedback helpfulness and overall course satisfaction (H_0 : ß1 = 0). The alternative hypothesis was that a correlation between the two variables existed (H_a : ß ≠ 0).

When analyzing the potential correlation or relationship between student satisfaction with the level of feedback they received and overall satisfaction with the course, the correlation coefficient was determined to be .267 (r^2 = .267). This correlation showed a slight positive linear relationship between the students satisfaction with the amount of feedback received and their satisfaction with the course overall. The t-test for r determined the significance level to be .011 (r = .011 < .05); therefore, the null hypothesis was rejected. When reviewing all subject areas, the alternate hypothesis was

considered. A positive correlation between student satisfaction with the level of feedback they received and overall course satisfaction existed at a statistically significant level.

These findings supported research previously conducted by Jackson et al. (2012) who attempted to define and measure student success in online education and determined the relationship between student and faculty member to be critical to overall course satisfaction.

Implications for Practice

According to the results from surveys, observations, and inferential statistics, the following practices would prove to have a positive effect on student experiences in high school online learning environments.

1. Teachers need an additional understanding of how to provide higher levels of feedback to students. Hattie (2012) suggested:

> It could be powerful to move research beyond descriptions of types of feedback towards discovering how to embed 'best fit' feedback not only in instruction, but also to help students to seek it, evaluate it (especially when provided by peers and the Internet), and use it in their learning – and towards teachers receiving feedback from students such that they then modify their teaching. This may require a move from talking less about how we teach to more about how we learn, less about reflective teaching and more about reflective learning – and more research about how to embed feedback into the learning processes. (pp. 135-36)

2. Teachers need to be willing to ask for feedback from their students. Students need more opportunities to provide feedback on how they learn and what is working,

both positively and negatively, in their learning environment. As Hattie and Yates (2014) asserted, "As a professional, it is critical to *know thy impact*. It may seem ironic but the more teachers seek feedback about their own impact, the more the benefits accrue to their students" (p. 69).

3. High school students need more opportunities in online learning environments to become familiar with feedback provided in electronic formats. As Evergreen Research Group (2013) reported, by 2019, roughly half of all college courses will be offered online. Students entering this large of a digital environment need experience with this learning medium as part of their high school career.

Recommendations for Future Research

Based on the results of this study, the following recommendations for further research are offered:

1. Focused research on how feedback levels impact student achievement in an online course.

2. This study should be furthered to include a broader sample of district-created and administered high school online learning programs.

3. Continued research on the correlation between the levels of feedback students receive and the likelihood that they take another online course in high school or college.

4. Research concerning best practices for professional development on teaching educators to navigate between the different levels of feedback.

5. Conduct similar studies in seated high school courses to determine if the findings are universal or related to different learning environments.

Summary

The purpose of this study was to explore the levels of feedback provided to students in high school online courses in one school district in Missouri. This study also sought to determine if a relationship existed between student perception of the amount of feedback they received and the quality of the feedback and how this impacted overall course satisfaction rates. The data were viewed through two lenses: Hattie's (2009) four levels of feedback and Garrison's et al. (2000) Community of Inquiry framework. It was determined that students received mostly level one (task) and level four (personal) feedback, and few students were urged to improve understanding using the two higher levels of feedback: level two (process) and level three (self-regulation). It was also determined that a slight positive correlation existed at a statistically significant level between both the amount of feedback students received and the level of feedback and overall course satisfaction, though the amount of feedback had a greater relationship.

As a result of this study, further questions were raised regarding the importance of teacher training on the impact of varied levels of feedback as well as the importance of reaching out to students for their perspectives on the learning environment. As online learning continues to grow at the high school level, further research is needed to identify the impact this new environment will have on student achievement.

Appendix A

Online Student Survey Questions

1. At this point, how comfortable are you with online learning?
        Very Comfortable
        Somewhat Comfortable
        Somewhat Uncomfortable
        Very Uncomfortable

2. So far the directions on the assignment seem clear.
        Strongly Agree
        Agree
        Disagree
        Strongly Disagree

3. I know what I am supposed to be learning in this class.
        Strongly Agree
        Agree
        Disagree
        Strongly Disagree

4. I know what I have to do to be successful in this class.
        Strongly Agree
        Agree
        Disagree
        Strongly Disagree

5. I am getting enough feedback from my teacher.
        Strongly Agree
        Agree
        Disagree
        Strongly Disagree

6. The feedback I am getting from my teacher is helpful to my learning.
        Strongly Agree
        Agree
        Disagree
        Strongly Disagree

7. I feel connected to my classmates.
        Strongly Agree
        Agree
        Disagree
        Strongly Disagree

8. So far this class challenges me.
    Strongly Agree
    Agree
    Disagree
    Strongly Disagree

9. The information I am learning is relevant to my life.
    Strongly Agree
    Agree
    Disagree
    Strongly Disagree

10. So far in this class I have been able to interact with others to share information and shape thinking.
    Strongly Agree
    Agree
    Disagree
    Strongly Disagree

11. So far in this course I have had opportunities to investigate, reflect, or solve real problems.
    Strongly Agree
    Agree
    Disagree
    Strongly Disagree

12. So far in this course I have collaborated with others to share skills and knowledge to support one another in our learning.
    Strongly Agree
    Agree
    Disagree
    Strongly Disagree

13. So far Canvas has been easy to use.
    Strongly Agree
    Agree
    Disagree
    Strongly Disagree

14. The orientation training helped me to be a successful Canvas user.
    Strongly Agree
    Agree
    Disagree
    Strongly Disagree

15. The Online office has been helpful and responsive to my requests.
    Strongly Agree
    Agree
    Disagree
    Strongly Disagree

16. The instructor knows the subject matter well.
    Strongly Agree
    Agree
    Disagree
    Strongly Disagree

17. The instructor communicates ideas and issues effectively.
    Strongly Agree
    Agree
    Disagree
    Strongly Disagree

18. The instructor is enthusiastic about the subject.
    Strongly Agree
    Agree
    Disagree
    Strongly Disagree

19. The instructor answers student questions thoroughly.
    Strongly Agree
    Agree
    Disagree
    Strongly Disagree

Appendix B

LINDENWOOD UNIVERSITY   ST. CHARLES, MISSOURI

DATE: February 19, 2014

TO: Lesli (Nichole) Lemmon
FROM: Lindenwood University Institutional Review Board

STUDY TITLE: [563011-1] Student perception of teacher feedback and the
                    relationship to learner satisfaction in an online high school
                    course
IRB REFERENCE #:
SUBMISSION TYPE: New Project

ACTION: APPROVED
APPROVAL DATE: February 19, 2014
EXPIRATION DATE: February 19, 2015
REVIEW TYPE: Expedited Review

Thank you for your submission of New Project materials for this research project. Lindenwood University Institutional Review Board has APPROVED your submission. This approval is based on an appropriate risk/benefit ratio and a study design wherein the risks have been minimized. All research must be conducted in accordance with this approved submission.

This submission has received Expedited Review based on the applicable federal regulation.

Please remember that informed consent is a process beginning with a description of the study and insurance of participant understanding followed by a signed consent form. Informed consent must continue throughout the study via a dialogue between the researcher and research participant. Federal regulations require each participant receive a copy of the signed consent document.

Please note that any revision to previously approved materials must be approved by this office prior to initiation. Please use the appropriate revision forms for this procedure.

All SERIOUS and UNEXPECTED adverse events must be reported to this office. Please use the appropriate adverse event forms for this procedure. All FDA and sponsor reporting requirements should also be followed.

All NON-COMPLIANCE issues or COMPLAINTS regarding this project must be reported promptly to the IRB.

This project has been determined to be a Minimal Risk project. Based on the risks, this project requires continuing review by this committee on an annual basis. Please use the completion/amendment form for this procedure. Your documentation for continuing review must be received with sufficient time for review and continued approval before the expiration date of February 19, 2015.

Please note that all research records must be retained for a minimum of three years.

If you have any questions, please contact Robyne Elder at (314) 566-4884 or relder@lindenwood.edu. Please include your study title and reference number in all correspondence with this office.

If you have any questions, please send them to IRB@lindenwood.edu. Please include your project title and reference number in all correspondence with this committee.

This letter has been electronically signed in accordance with all applicable regulations, and a copy is retained within Lindenwood University Institutional Review Board's records.

Appendix C

Lindenwood University
School of Education
209 S. Kingshighway
St. Charles, Missouri 63301

Informed Consent for Participation in Research Activities

"Student Perception of Teacher Feedback and the Relationship to Learner Satisfaction in an Online Course"

Principal Investigator: Lesli Nichole Lemmon

Telephone: 417-   E-mail: nichole.lemmon.1980@gmail.com

Participant _____ Contact info _____

1. You are invited to participate in a research study conducted by Lesli Nichole Lemmon under the guidance of Dr. Sherry DeVore. The purpose of the study will be to determine student satisfaction with teacher provided feedback as well as overall course satisfaction. The study will also review the levels of feedback provided to students most frequently in an online class. This study will seek to find if a correlation exists between student satisfaction with feedback and overall course satisfaction.

2. a) Your participation will involve:
    * Access to previously recorded feedback in the district's Learning Management System from Fall Semester 2014

    b) You will not be required to provide any time or resources to the study.

3. There are no anticipated risks associated with this research.

4. There are no direct benefits for you participating in this study. However, your participation will contribute to the understanding the role feedback plays in student satisfaction in high school online courses.

5. Your participation is voluntary and you may choose not to participate in this research study or to withdraw your consent at any time. You will NOT be penalized in any way should you choose not to participate or to withdraw.

6. We will do everything we can to protect your privacy. As part of this effort, your identity will not be revealed in any publication or presentation that may result from this study, and the information collected will remain password protected in the district's Learning Management System

7. If you have any questions or concerns regarding this study, would like a copy of the research findings, or if any problems arise, you may call the Investigator, (Lesli Nichole Lemmon at 417-   ) or the Supervising Faculty, (Dr. Lisa Christiansen at 417-   ). You may also ask questions of or state concerns regarding your participation to the Lindenwood Institutional Review Board (IRB) through contacting Dr. Jann Weitzel, Vice President for Academic Affairs at 636-949-4846.

I have read this consent form and have been given the opportunity to ask questions. I will also be given a copy of this consent form for my records. I consent to my participation in the research described above.

_____   _____
Participant's Signature   Date   Participant's Printed Name

_____   _____
Signature of Principal Investigator   Date   Investigator Printed Name

Appendix D

REQUEST FOR APPROVAL TO CONDUCT RESEARCH

The ▮▮▮▮▮▮ district encourages educational research by departments of the school system, advance degree candidates, agencies and institutions of higher learning. All research projects to be conducted in the schools must have prior approval by the ▮▮▮▮▮▮ Research Review committee. The following instructions identify the forms/documents that must be submitted and describes procedures of the approval process.

I. **Application for Request for Approval to Conduct Research**

1. Name of Researcher:_____ Nichole Lemmon _____ Date: 12/29/13 _____

2. Business Address of Researcher (City/State, Zip Code)

   ▮▮▮▮▮▮▮▮▮▮

3. Email Address:_____ nlemmon@▮▮▮▮ _____

4. Telephone Numbers: (Area code and daytime phone number) ▮▮▮▮

   (Area code and work phone number) _____

5. Reason for conducting research:
   a. _____ Necessary to complete a Masters level graduate course
   b. _____ Necessary to complete the requirements for a Masters degree
   c. _____ Necessary to complete the requirements of a Specialists level graduate course
   d. _____ Necessary to complete the requirements for a Specialists degree
   e. _____ Necessary to complete a Doctoral level graduate course
   f. ✓ Necessary to complete the requirements for a Doctorate degree
   g. _____ Necessary to complete research for a community project
   (*Note: If the requested research is a component of a grant application for an outside agency or community group, contact with the Quality Improvement & Accountability department should be made prior to grant submission.)

6. Name of participating institution/agency:_____ Lindenwood University _____

7. Name of Research Advisor or Project Director _____ Dr. Lisa Christiansen, Dr. Sherry DeVore _____

   Telephone Number: 417-861-6603 Email: christel@clever.k12.mo.us

8. Advisory or Project Director Signature _Dr Lisa M Christiansen_

9. If your research proposal requires specific district data, please provide a brief description of your data needs: Students in ▮▮▮▮ courses already take surveys regarding levels of satisfaction with instructor feedback and overall course satisfaction three times a semester. This data will be the source of data for the research study. Every every survey answered will be included in the research and considered secondary data.

CONDITIONS FOR MAINTAINING ANONYMITY AND SHARING PROJECT RESULTS

I agree to maintain the anonymity of individual students, staff members and schools in any report(s) and in any publication(s), e.g., journal articles(s), book(s), etc., which incorporate any information derived from the research conducted within the ████████████. If permission is granted to conduct the research described is this request, I verify the research will be conducted in compliance with all federal and state statutes and the policies of the ████████████.

I agree to provide the Quality Improvement and Accountability Department with a summary of the research results, complete documentation and information on the location of the complete research and, in the future, subsequent publications.

P. Nichole Lennion   _12/31/13_
Signature of the Researcher   Date

II. Directions for Application:

1. This form must be completed to satisfy ████████████ Administrative Practice and Procedures 6.24 "Requests to Conduct Research."
2. The University advisor/organization administrator must sign this request. He or she will accept direct responsibility related to research activities.
3. This form and all supporting documentation should be emailed to csgalland@████████ (scanned signature documents are acceptable).
4. The researcher may contact participating schools and/or departments for data collection only after the form has been officially approved by the district Research Review committee.
5. Application packets received at *least one week* before the Research and Review committee's monthly meeting will be reviewed.

III. Guidelines:

1. Researchers may request to do research with specific staff members or buildings and efforts will be made to honor these preferences.
2. Data derived from tests, school records, interviews, or survey/questionnaires, which have potential for invasion of privacy of students or their families, must have advanced written authorization of parents or guardians. These releases will be collected and filed with the building principal before the project is initiated.
3. Personnel records of the school staff are confidential and information will not be released from these records.
4. Public information will be available to researchers and other interested parties, but if time or other expense is involved, the requesting party will be responsible for such costs.
5. Instructional activities will not be interrupted unless there is clear significance for the improvement of educational programs in the ████████.
6. Decisions of the committee will be granted within two weeks of formal review of the proposal. Please note formal review occurs at monthly committee meetings.
7. Should a request be denied the applicant will be offered an opportunity to make corrections/submit further documentation for review. Resubmitted requests will be subject to formal review and issued a decision within two weeks of the monthly committee meeting.
8. A copy of your final research report will be submitted the Quality Improvement & Accountability department.

IV. Please attach the following documentation with your completed Request for Approval to Conduct Research form:

- Research Title
- Purpose
- Methodology
- Statement of Problem
- Hypothesis and/or Research Questions
- Description of variables
- Description of Sample
- Method of Sample Selection
- Data Collection Instruments (if applicable)
- Data Collection Timetable
- Samples of Consent forms (if applicable)
- Names of participating schools
- Identification of target population (i.e. teachers, administrators, students, grade levels, and expected number of participants)
- Anticipated Start Date of Research
- Completion Date of Research
- Copy of Institution of Higher Learning Internal Review Board (IRB) application form approved and signed.

Return this completed form and supporting documentation to:
csgalland@▮▮▮▮▮▮▮

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Vita

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