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Impact of Audio Feedback Technology on Writing Instruction

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Walden University
2017

Abstract

Impact of Audio Feedback Technology on Writing Instruction

by

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Sixth Year Professional Diploma, Southern Connecticut State University, 2005

MS, Southern Connecticut State University, 2002

BA, Post University, 1999

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Educational Technology

Walden University

February 2017

Abstract

High school writing teacher self-efficacy has suffered because the workload and emotional energy of grading papers is arduous, and despite their efforts to provide formative written feedback, many teachers believe students ignore or misunderstand it. Although audio feedback holds promise for improving the clarity of instructor feedback and the self-efficacy of writing instructors in higher education, its usefulness for improving high school teacher self-efficacy has remained unexplored. This multiple case study investigated how high school teachers believed Kaizena, a digital audio feedback technology, influenced their writing instruction and self-efficacy. Participants, who were drawn from the global Kaizena user base, included a user group of 3 United States teachers and a user group of 3 international teachers to determine how both groups used Kaizena and whether differences in use occurred in either environment. Data sources included individual teacher interviews, participant journals, and artifacts such as teacher-created writing assignments and rubrics. Data analysis included both single case and cross case analyses. Single case analysis included coding and categorizing of interview and participant journal data and content analysis of artifacts. Cross case analysis included identifying emerging themes and discrepant data. Results indicated that all 6 teachers both believed they gave more high quality, personalized feedback to students in less time with the audio feature of Kaizena than with written feedback and did, in fact, provide documents confirming this higher quality. As a result, using Kaizena positively influenced their self-efficacy. This study contributes to positive social change by providing insights into a feedback tool that could improve high school writing instruction.

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Dedication

This doctoral study is dedicated to my sister, Michele; my husband, Bill; and my children, Sarah and Alex. Michele was my best friend. She was a dedicated teacher, and she not only inspired me to become a teacher, but she was also the first person to encourage me to pursue my doctoral degree. I did it, Shell, and I share this with you. My husband, Bill, inspires me every day to be the best person I can be and to continuously grow, learn, and be grateful for all that I have and all that there is to come. You continue to amaze me with your creativity and dedication to your music and writing. I could not have done this without you. Sarah and Alex, my loving daughter and son, you are beautiful inside and out. Words cannot express how proud I am of you and how much it has meant to have you cheering me on along every step of this journey. I love you both to the moon and back again.

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Chapter 1: Introduction to the Study

Introduction

The ability to communicate thoughts and ideas in writing is critical for life and work in the 21st century, and students must acquire proficient writing skills before graduating from high school (National Governors Association & Council of Chief State School Officers, 2010). The Common Core State Standards (National Governors Association & Council of Chief State School Officers, 2010) call for all students to be able to "write sound arguments on substantive topics and issues, as this ability is critical to college and career readiness" (National Governors Association Center for Best Practices & Council of Chief State School Officers, 2010, Appendix A, p. 24). Yet, according to the National Center for Education Statistics (2012), just 24% of high school seniors in 2011 performed at the proficient level, and only 3% performed at the advanced level in writing (p. 1). Despite years of effort to reform American schools and increase academic standards, too many American students graduate from high school without proficient writing skills (Achieve, Inc., 2005, 2014; Carnegie Council on Advancing Adolescent Literacy, 2010; Graham & Perin, 2007b; Graham, Harris, & Hebert, 2011; Graham, Hebert, & Harris, 2015; National Commission on Writing for America's Families, Schools, and Colleges, 2003, 2004, 2005; National Institute of Child Health and Human Development, 2000; National Governors Association Center for Best Practices & Council of Chief State School Officers, 2010). However, researchers and educational policy advocates suggest that one key to improving adolescents' writing skills is to explore ways to help teachers improve writing instruction (Achieve, Inc., 2014; Carnegie

Council on Advancing Adolescent Literacy, 2010; Graham & Harris, 2005; Graham et al., 2011; Graham, Harris, & Santangelo, 2015; Graham, Hebert, & Harris, 2015; Graham & Perin, 2007a, 2007b; National Governors Association Center for Best Practices & Council of Chief State School Officers, 2010).

Improving writing instruction is a complex task because the feedback process is challenging for both teachers and students. As Kellogg and Whiteford (2009) argued, "A major obstacle [in the teaching of writing] is the grading problem—the excessive time and effort required to evaluate lengthy written compositions to provide students with formative feedback" (p. 251). Calvo and Ellis (2008) and others (Graham, Hebert & Harris, 2015; Lee, 2011a, 2011b; Rolfe, 2011; Wingate, 2010) agreed that providing formative written feedback on student writing is an onerous challenge for teachers. The results of this challenge are twofold. First, many high school teachers rarely assign papers of more than 3,000 words in length (Center for Survey Research and Analysis, 2002; Graham, Hebert, & Harris, 2015; Kellogg & Whiteford, 2009; Kiuhara, Graham, & Hawken, 2009), yet frequent, deliberate practice has been shown to improve the quality of students' writing (Ericsson, Krampe, & Tesch-Romer, 1993; Graham & Harris, 2005; Graham & Perin, 2007; Gulley, 2012; Kellogg & Whiteford, 2009; Johnstone, Ashbaugh, & Warfield, 2002; McGarrell & Verbeem, 2007; Proske, Narciss, & McNamara, 2012; Vardi, 2009). Secondly, students perceive the written feedback that teachers provide as inadequate and often unhelpful (Bruning, Dempsey, Kauffmann, McKim, & Zumbrunn, 2013; Calvo & Ellis, 2008; Gulley, 2012; Kluger & DiNisi, 1996; Mulliner & Tucker, 2015; Shute, 2008; Vardi, 2012; Weaver, 2006; Wingate, 2010). While researchers have

yet to agree on a precise definition of feedback that improves student writing, most agree that "feedback is one of the most powerful influences on learning and achievement" (Hattie & Timperley, 2007, p. 81) for all students.

Despite these findings, few researchers have explored ways that teachers can improve the frequency, nature, and influence of formative feedback for writing, particularly in the middle and high school grades. To fill this gap, Kellogg and Whiteford (2009) suggested that feedback technology could "play an important role in the future" and that developing such technologies "is now a pressing question for educational research" (p. 263). In related research, Gouli, Gogoulou, Papanikolaou, and Grigoriadou (2006) described three different ways that feedback is provided in computer-based systems: automatically via the software, by the instructor, or by peers. Researchers have also investigated automatically generated feedback systems and found that teachers are often resistant to such technologies and that there is not enough research to prove their usefulness in supporting student learning (Calvo & Ellis, 2010; Foltz, Gilliam, & Kendall, 2000; Gouli et al., 2006; Graesser, McNamara, & VanLehn, 2005; Landauer, Lochbaum, & Dooley, 2009; Rolfe, 2011).

One promising area of research has been in the use of audio feedback, which has shown to be advantageous to both students and teachers (Cann, 2014; Cavanaugh & Song, 2014, 2015; DiBaptista, 2014; Knauf, 2015; McCarthy, 2015; McCullagh, 2010; McKeown, Kimball, & Ledford, 2015; Middleton, 2010a, 2010b, 2013a, 2013b; Nerantzi, 2013). The majority of existing research on audio feedback has been conducted at the higher education level; none has been conducted at the high school level.

Therefore, I developed this study to address this underresearched area of teacher-generated audio feedback enabled by technology.

Chapter 1 of this dissertation will include an introduction to the study and a description of the problem that I sought to ameliorate with this study. In Chapter 1, I will also provide a brief overview of research literature related to the study and a description of the conceptual framework that guided the study. In addition, Chapter 1 will include a description of the research methodology, data collection and analysis procedures, and the research questions. In the chapter, I will also present the operational definitions of key terms and descriptions of the assumptions, scope, limitations, and significance of the study.

Problem Statement

The social problem underlying this study was the poor literacy skills of adolescent students brought about, in part, by low teacher efficacy for literacy instruction and inadequate direct literacy instruction in the secondary grades. Evidence in the research literature indicated that when teachers provide targeted, timely formative feedback to students, students' academic writing performance improves (Hattie & Timperley, 2007). Yet secondary teachers rarely assign long papers and struggle to provide enough feedback on even short student writing assignments (Center for Survey Research and Analysis, 2002; Kellogg & Whiteford, 2009; Kiuhara et al., 2009). While much has been written about the role of automated feedback technologies in ameliorating this problem, few studies have explored ways to enhance writing instruction through technologies that facilitate teacher-generated formative feedback. Therefore, the research problem under

investigation was that there was little understanding of teachers' use of feedback technology tools that enable teacher-generated feedback. Furthermore, a lack of empirical knowledge exists about teachers' perceptions of the influence, if any, that such tools have on writing instruction.

Purpose of the Study

The purpose of this study was to investigate how teachers believed Kaizena impacted their writing instruction, particularly in relation to teacher self-efficacy. Kaizena (2016) is a software application that facilitates the provision of teacher-generated digital audio feedback. To accomplish that purpose, I interviewed high school teachers to gather and analyze their perceptions about their experiences with Kaizena. Teachers' perceptions about the impact of Kaizena on their beliefs about their capabilities as writing instructors were also collected and analyzed. In addition, I also gathered artifacts related to writing assignments of the participants to elucidate how teachers used Kaizena in their writing instruction.

Conceptual Framework

The framework for this study was Bandura's (1991) social cognitive theory, which underscored the value of models in the learning process. A key tenet of social cognitive theory is that human motivation and self-regulation are affected by people's ability to "pay adequate attention to their own performances, the conditions under which they occur, and the immediate and distal effects they produce" (Bandura, 1991, p. 250). Bandura further stated that as people self-reflect and compare "the attained performance, one's personal standards, and the performance of others" (p. 254), they develop self-

theories that affect personal goal setting, self-efficacy beliefs, and goal attainment. One key factor in developing these self-theories is the clarity, instructiveness, and "temporal proximity" (Bandura, 1991, p. 25) of the models that people witness and the performance feedback that people receive. Citing social cognitive theory, Hattie and Timperley (2007) asserted that feedback is a critical component in student achievement and that its main purpose is to "reduce discrepancies between current understandings and performance and a goal" (p. 86). Bandura's social cognitive theory informed this study because it asserts that timely and clear performance feedback enhances performance, whereas feedback that is ambiguous or that is provided well after an event has little effect on self-regulatory behaviors.

Social cognitive theory (Bandura, 1991) also informed this study because it underscores the critical role that self-efficacy plays in forming beliefs about one's own abilities. Bandura (1993) contended that students' self-efficacy "determine[s] their level of aspiration, motivation, and level of accomplishments [and that] teacher's beliefs in their personal self-efficacy to motivate and promote learning affect the types of learning environments they create and the level of academic progress their students achieve" (p. 117). Self-efficacy beliefs affect intrinsic motivation for learning, especially when domain-specific tasks are demanding, and according to Bruning et al. (2013), "Writing is one such domain" (p. 25). Indeed, research confirms that one contributing factor to the problem of adolescents' poor writing skills is their lack of self-efficacy about writing (Bruning et al., 2013). This negative self-image is created in part by receiving inadequate or unhelpful formative feedback from instructors (Weaver, 2006). The problem is

compounded by the time-consuming nature of providing formative written feedback on student papers and the lack of scholarly agreement about the definition of effective feedback (Applebee & Langer, 2009, 2011; Bangert-Drowns, Hurley, & Wilkinson, 2004; Dunn, 2011; Fazio, Huelser, Johnson, & Marsh, 2010; Kellogg & Whiteford, 2009; McGarrell & Verbeem, 2007; Shute, 2008; Stagg Peterson & McClay, 2010, 2014). Given these challenges, instructors' self-efficacy about their ability to provide adequate and effective formative feedback to students may also be contributing to the problem (Kiuhara et al., 2009). Recent research, however, suggested that technology tools can improve teachers' ability to respond to student work with greater promptness, frequency, and depth and that more research is needed in this area (Cann, 2014; Hattie & Temperley, 2007; Hennessy & Forrester, 2014; Kellogg & Whiteford, 2009; Landauer et al., 2009; McFarlane & Wakeman, 2011). Therefore, Bandura's theory supported the research questions for this study.

Research Questions

I developed the following research questions based on the conceptual framework for this study. The central research question was: How do teachers believe Kaizena as an online digital audio feedback tool impacts writing instruction, particularly in relation to teacher self-efficacy? The related research questions were:

1. What are teachers' perceptions about their experiences with Kaizena?

2. What are teachers' perceptions about how Kaizena impacts their confidence as writing instructors?

3. What do artifacts reveal about how teachers use Kaizena in their writing

instruction?

Nature of the Study

For this study, I used a qualitative approach with a multiple case study design.

Yin (2014) defined the case study as a form of in-depth inquiry that explores a

phenomenon in an authentic setting (p. 16). Yin contended that data collection and data

analysis for case study research is guided by a theoretical proposition. In addition, case

study research involves the investigation of multivariate situations through the collection

and analysis of multiple data sources, including interviews, observations, documents,

archival records, and/or artifacts (Yin, 2014).

The single case for this study was defined as one user group of the audio feature

of Kaizena. I focused on two separate cases. The first case was a group of English

teachers who were employed at high schools or precollege English programs in the

United States and were current users of the audio feature of Kaizena, and the second case

was a group of high school English teachers who were employed at high schools in

international locations and were current users of the audio feature of Kaizena. I selected

three participants for each case or user group. Data were collected from three sources,

including individual teacher interviews reflective journals; and artifacts, which included

three teacher-created writing assignments and one writing rubric from each participant. I

conducted data analysis at two levels. At the first level, data were coded and categorized

for each data source in relation to each unit of analysis. I used a content analysis for the

artifacts, which included a description of the purpose, structure, content, and use of the

teacher-created writing assignments and rubrics. At the second level, all data sources across both units of analysis were analyzed for emerging themes and discrepant data, which formed the key findings for the study. I analyzed these findings in relation to the central and related research questions and interpreted in relation to the conceptual framework and the literature review for this study.

Operational Definitions

Throughout this study, the following terms were used:

Audio feedback: Any instructor feedback that is spoken and recorded rather than written by hand or typed in a digital document.

Feedback: "A dynamic, dialogic process that uses evidence to engage a learner… in constructing knowledge about practice and self" (Killion, 2015, p. 13).

Kaizena: An online digital technology that enables teachers to provide written and audio feedback on student writing and peers to provide written and audio feedback to each other. Kaizena is a free plugin for Google Drive and is integrated into Google Classroom (Kaizena, 2016).

Online digital audio feedback tool: A technology software tool that enables users to record spoken feedback and save it as digitized audio files that are embedded into the specific places on a digital document to which the feedback pertains (Kaizena, 2016).

Urban, suburban, and rural schools: The differences between these types of schools are:

Schools classified as urban are located in central cities of Metropolitan Statistical Areas (MSAs); schools classified as suburban are located within the area

surrounding a central city within a county constituting the MSA; and schools

classified as rural are outside of an MSA. (Lippman, Burns, & McArthur, 1996, p.

D-4)

A MSA is a geographical area and its adjacent communities that has a population of

50,000 and that is socially and economically integrated (U. S. Census Bureau, 2010).

Assumptions

During the data collection process, I made several assumptions. The first

assumption was that participants provided truthful answers during the interviews and in

their reflective journals. Another assumption I made was that participants were

competent writing instructors who possessed a depth of knowledge in the use of Standard

English grammar and writing conventions. A third assumption was that participants

spent a significant amount of time providing quality formative feedback on student

writing. These assumptions were important because the credibility of the findings

depended on participant responses that were honest and that demonstrated an

understanding of how to provide quality feedback for student writing.

Scope and Delimitations

A case study is a bounded study (Yin, 2014); therefore, for this study, the scope or

boundaries were the two cases of user groups, and each case or user group included three

high school English teachers who provided student feedback in their writing instruction

using Kaizena, an online digital audio feedback tool. I chose this specific focus because

high school English teachers face a significant challenge in providing feedback on

student writing. Given the number of students they teach, high school English teachers

struggle to provide quality feedback on student writing because it is time consuming, is often perceived as a fruitless endeavor (Orsmond & Merry, 2011), and teachers often lack self-efficacy or the belief that they are able to provide quality writing instruction for students (Kiuhara et al., 2009). As a result, they assign fewer and shorter writing assignments, which minimize the opportunities that students have to practice and improve their writing skills (Graham & Perin, 2007a, 2007b; Kiuhara et al., 2009). Research has shown that audio technology has the potential to improve feedback processes (Cann, 2014; Hennessy & Forrester, 2014), yet there is little understanding of high school teachers' perceptions and use of audio feedback technology tools.

Delimitations for this study arose from the sample, time, and resources. The small sample size delimited or narrowed the study's scope because participants were drawn from the global user base of a technology company, and they may have possessed a higher level of technology skills than the overall population of high school teachers. Thus, their experiences with Kaizena may have been more positive than those of teachers whose technology skills are limited as compared to the sample. In addition, using Kaizena may be only one of multiple factors that contributed to participants' perceptions of their writing instruction.

This study was also delimited by time because all data were collected over the course of one month during the 2016–2017 school year. In addition, I was a single researcher with limited time and resources. However, these limitations were addressed through the use of specific strategies to enhance the trustworthiness of this qualitative

study, such as triangulation of data sources; the use of rich, thick description; and reflexivity (Merriam, 2009).

Limitations

Limitations of a study are often related to the design of the study (Yin, 2014). For this study, one of the potential limitations was related to the selection of two cases. Yin (2014) contended that theoretical replication may not be possible unless at least four cases are presented. Therefore, because this study included two cases, only literal replication was possible. Another limitation was the sample size, which may limit the transferability of the study findings because the beliefs of these two user groups may not represent the beliefs of all English teachers at the high school level who provide feedback for student writing. Another limitation was that all the data collected and analyzed for this multiple case study were self-reported data, which can be flawed because people may embellish or leave out details, or may not remember events exactly as they happened.

Significance

Through the results of this study, I offer an original contribution to the underresearched area of the use of technology tools to enhance high school writing instruction. In the knowledge economy of the 21st century, the ability to comprehend and produce written text is vital, and yet, educators in many schools fall short in their efforts to equip students with the literacy skills they need for success (College Board, 2012; Connecticut Commission on Educational Achievement, 2011; Monrad, 2011; National Center for Education Statistics, 2015; U. S. Department of Education, 2009). Moreover, in the wake of numerous educational reform initiatives that have failed to

improve student outcomes, the public has grown skeptical that the educational system can be improved (National Center for Educational Statistics, 2011a; 2011b; Tyack & Cuban, 1995), and teachers have become increasingly demoralized (Darling-Hammond, Amrein-Beardsley, Haertel, & Rothstein, 2012; Leana, 2011).

The results of this study provided insights about the practical application of a newly developed online digital audio feedback technology tool and how high school English teachers believed this tool impacted their writing instruction. Findings from this study contributed to positive social change by providing insights into the problems that teachers faced in the teaching of writing, which could in turn, improve the chances that more students will graduate from high school with proficient writing skills. Increasing the number of students who graduate from high school and are prepared for the challenges of postsecondary education and careers will help to ensure that they are prepared to compete and thrive in a global economy.

Summary

This dissertation contains five chapters. Chapter 1 included an introduction to the study and a rationale for investigating the problem that teachers face in providing formative feedback on student writing that results in improved written work. In Chapter 1, I also provided the central and related research questions, the conceptual framework, operational definitions, and the assumptions, scope, delimitations, limitations, and significance of the study. Chapter 2 will include a comprehensive review and analysis of current research about high school writing instruction, teacher efficacy, formative feedback, and an identification of themes and gaps in the research literature that

supported the rationale for the study. In Chapter 3, I will discuss the research

methodology, including the selection and protection of the participants, the role of the

researcher, data collection instruments, and data collection and analysis procedures.

Chapter 4 will include a discussion of the results and key findings of the data analysis in

connection to the central and related research questions of this study. Chapter 4 will also

contain an exposition of the data collection methods, timeline, data analysis, and key

findings in relation to the research questions. In Chapter 4, I will also discuss the

evidence of the trustworthiness of the data collection and analysis methods for this study.

In Chapter 5, I will present an interpretation of the study findings in relation to the

research questions and the conceptual framework for this study. Chapter 5 will also

include a discussion of the limitations of the study, recommendations for future research,

and implications for social change.

Chapter 2: Literature Review

Introduction

The research problem under investigation in this study was that little research has been conducted about how teachers use audio feedback technology tools to generate feedback in relation to student writing, particularly at the high school level. Furthermore, there was a lack of empirical knowledge about teachers' perceptions of the influence, if any, that such tools have on writing instruction, particularly in relation to teacher self-efficacy. Therefore, the purpose of this study was to investigate how teachers believe Kaizena, as an online digital audio feedback tool, impacts their writing instruction, particularly in relation to teacher self-efficacy.

My brief summary of the research literature in Chapter 1 established the relevance of the problem. Even though formative feedback has a significant positive impact on performance outcomes (Graham, Harris, & Santangelo, 2015; Graham, Hebert, & Harris, 2015; Hattie & Timperley, 2007), feedback practices, for both teachers and students, are problematic for several reasons: Teachers struggle to provide feedback on student writing (Orsmond & Merry, 2011); many students do not understand or do not use the feedback they receive (Carless et al., 2011); and some teachers lack self-efficacy for writing instruction (Kiuhara et al., 2009). Studies have shown that audio feedback has the potential to improve feedback practices (Cavanaugh & Song, 2014; Cullen, 2010; Hennessey & Forrester, 2014; McCullagh, 2010; Middleton, 2010a, 2010b, 2013a, 2013b; Nerantzi, 2013; Nortcliffe & Middleton, 2011; Rossiter et al., 2010), but not enough is known about how teachers use audio feedback to improve student writing, and

no studies have been conducted on high school teacher perceptions of audio feedback. Therefore, I conducted a comprehensive review of the literature on high school writing instruction, teacher efficacy, and feedback practices. The purpose of this literature review was to uncover credible information, gleaned from current research, on best practices in high school writing instruction, high school teachers' perceptions of their self-efficacy and the challenges they face in writing instruction, definitions of feedback, and how technology has been used in the provision of feedback on student writing. I used the conceptual framework of social cognitive theory, particularly in relation to teacher self-efficacy, to analyze and synthesize findings from the literature review and provide support for the study.

Literature Search Strategy

For this review, I conducted searches in the Academic Search Complete, Academic Search Premier, EBSCO, Education Research Complete, Educational Resource Information Center (ERIC), PsychINDEX, and SAGE databases through the Walden University Library and the CONSULS database through the Connecticut State University Library system. I also conducted online searches in Google Scholar and on the U.S. Department of Education's Institute of Education Science National Center for Education Statistics website. I used the following keywords and terms in my searches: *writing instruction*, *high school writing*, *high school teacher efficacy*, *teacher workload*, *feedback*, *formative feedback*, *technology mediated feedback*, and *audio feedback*.

I limited the searches to full text, peer-reviewed journals and books by noted experts. In the first round of searches, I filtered results by publication dates between

2011 and 2016. In the second round of searches, I chose not to filter the search by date so as to uncover seminal research on writing instruction, efficacy, and feedback. In addition to using key words in database searches, I used the strategy of snowballing by locating peer-reviewed journal articles listed in the reference sections for each of the articles I found through database searches.

Literature Review

I organized the following literature review into five main sections: (a) conceptual framework on social cognitive theory, (b) current research on teacher efficacy, (c) current research on high school writing instruction, (d) current research on technology enhanced writing instruction, and (e) current research on definitions and practices of formative feedback for learning. The formative feedback section will be further divided into three subsections: (a) teacher and student perceptions of feedback, (b) technology mediated feedback, and (c) audio feedback. This review of the literature will be concluded with a summary and culminating discussion of the themes and gaps that emerged from the review.

Conceptual Framework

A conceptual framework helped me understand and describe the relationships between and among all of the phenomena that I investigated in the study. In qualitative research, Maxwell (2013) stated that theory "explains . . . the main things to be studied . . . and the presumed relationships among them" (p. 39). Maxwell also cautioned qualitative researchers about the use of theory by arguing that they should not get bogged down or limited by theory but use it as a guide to construct an analysis of the phenomena

under investigation. The conceptual framework should be aligned to the researcher's

epistemological and ontological beliefs (Creswell, 2007; Maxwell, 2013; Miles et al.,

2014; Patton, 2002). I believe that learning is socially constructed (Vygotsky, 1978) and

that learning is enhanced when teachers provide students with opportunities for social

discourse in the learning environment. Therefore, in this study, I used Bandura's (1991)

social cognitive theory as the conceptual framework.

Bandura's (1991) social cognitive theory is based on several tenets. The

overarching concept is that human behavior and learning occur through the observation

of cognitive and behavioral models in particular environments and that replication of a

cognitive or behavior model is mediated by one's self-efficacy, outcome expectancy, and

identification with the model (Bandura, 1977, 1991). Bandura (1977) stated that "much

of human behavior is developed through modeling" (p. 192). In social cognitive theory,

behavior and learning are the result of three interactive, reciprocal factors (Bandura,

1977, 1991). The first factor in determining behavior is the extent to which an individual

has a positive self-efficacy for acquiring a behavior (Bandura, 1977, 1991). Bandura

(1997) defined perceived self-efficacy as an individual's "beliefs in one's capabilities to

organize and execute the courses of action required to produce given attainments" (p. 3).

The second factor is the internal and external responses an individual receives after

exhibiting a behavior (Bandura, 1977, 1991). In other words, a key factor in cognitive or

behavioral change is the feedback an individual receives and the self-reflection one

engages in after exhibiting a behavior. The third determinant of behavior is

environmental factors that may influence one's ability to effectively replicate a particular

behavior (Bandura, 1977, 1991). These three interactive factors determine self-regulatory systems that "not only mediate the effects of most internal influences, but provide the very basis of purposeful action" (Bandura, 1991, p. 248).

Self-efficacy is a particularly important concept of social cognitive theory. According to Bandura (1997), "Perceived self-efficacy plays a pivotal role in social cognitive theory" (p. 35) because it influences how an individual perceives feedback and the learning environment, the other the two factors that make up the self-regulatory system. Self-efficacy affects an individual's choice of activity, motivation, and expectancy outcome for a given task (Bandura, 1977, 1991). Self-efficacy also governs "how much effort people will expend and how long they will persist in the face of obstacles and aversive experiences" (Bandura, 1977, p. 194). According to Bandura, self-efficacy is influenced by four factors, including "mastery experiences, vicarious experiences, social persuasion, and psychological and emotional states" (Gredler, 2001, p. 327). Mastery experiences provide concrete evidence of one's capabilities, whereas vicarious experiences provide models of behavior for individuals to emulate or avoid (Bandura, 1977, 1991). Social persuasion affects self-efficacy beliefs by providing individuals with positive verbal feedback that can override mild self-doubts (Bandura, 1977, 1991). Bandura also believed that psychological and emotional reactions to stress influence self-efficacy beliefs. Individuals who perceive stressors as catalysts for action have higher self-efficacy than those who perceive stressors as attacks on their self-concept (Bandura, 1977, 1991). As Hargreaves (1998) pointed out, teaching is "a form of emotional labor [and] teachers' emotions are inseparable from their moral purposes and

their ability to achieve those purposes" (p. 838). Teaching is "inextricably emotional" (Hargreaves, 2001, p. 1057), and therefore, emotions most certainly influence teachers' perceptions about their own agency and their self-efficacy beliefs. However, in their review of the literature on emotions and teaching, Sutton and Wheatley (2003) found that researchers know "surprisingly little about… how teachers' emotional experiences relate" (p. 328) to their instructional practices.

Building upon Bandura's (1977, 1997) work on self-efficacy, researchers have examined the role of teacher self-efficacy in relation to positive change in student behavior and outcomes. In earlier research, Berman et al. (1977) defined teacher self-efficacy as "the extent to which the teacher believes he or she has the capacity to affect student performance" (p. 137). Gibson and Dembo (1984) found differences in the feedback practices and expectation levels of teachers with high and low self-efficacy. They also found that teachers with high self-efficacy had higher expectations of their students and were less critical of students who struggle to learn. Tschannen-Moran, Woolfolk Hoy, and Hoy (1998) examined the concept of teacher efficacy and various ways to measure it and found that teacher self-efficacy "has been shown to be a powerful construct related to student outcomes," (p. 222) vis a vis academic achievement. Tschannen-Moran and Woolfolk Hoy (2001) stated that teachers' self-efficacy "affects the effort they invest in teaching, the goals they set, and their level of aspiration" (p. 783) for professional growth and student achievement. Kihuara et al. (2009) found that some teachers have low perceived self-efficacy about their writing instruction and that they question their ability to provide adequate and effective formative feedback to students.

Findings from the research on teacher self-efficacy directly connect to this study, in which I investigated the impact of use of audio feedback on high school teachers' perceptions about their self-efficacy as writing instructors.

In related research, Pajares (2003) applied Bandura's (1977, 1997) socio-cognitive perspective in examining the role of self-efficacy on students' motivation and achievement in writing. Pajares found that self-efficacy for writing varies across all domains and types of writing and that writing self-efficacy is related to motivation for writing and writing performance. Moreover, Pajares found that students' confidence and skill in writing "increase when they are provided with process goals and regular feedback" (p. 147) on their writing performance. In light of these findings, Pajares suggested that instructors "pay as much attention to students' perceptions of competence as to actual competence" (p. 153) because, according to social cognitive theory, perceptions are accurate predictors of academic goals and motivation.

Bandura's research on self-efficacy has also been articulated in current research. Skaalvik and Skaalvik (2010) explored the relationship of teacher self-efficacy and teacher burnout and found that teachers with higher self-efficacy also had higher job satisfaction. Tschannen-Moran and Johnson's (2011) study of literacy teachers' self-efficacy beliefs revealed that "the quality of university preparation, highest level of education, participation in a book club, school level, resources available for classroom books, teachers' sense of efficacy for instructional strategies and for student engagement" (p. 751) were all contributing factors to teachers' overall self-efficacy.

On the other hand, Burdick (2015) explored the effectiveness of professional learning for teachers with low self-efficacy. Findings from the study indicated that some professional learning models resulted in higher teacher efficacy and lower burnout rates among middle school reading teachers. Ektem (2016) explored prospective teachers' self-efficacy beliefs about their implementation of a constructivist approach to instruction and found that prospective teachers' beliefs about using constructivist approaches to lesson planning, teaching, learning, and assessment were correlated to high self-efficacy. Zee, Koomen, Jellesma, Geerlings, and de Jong (2016) studied "inter- and intra-individual differences in teachers' self-efficacy" (p. 39) and found that instructional strategies, behavior management, student engagement, and emotional support are factors that affect teacher efficacy. Kunsting, Nueber, and Lipowsky (2016) conducted a study of German in-service teachers to determine if teacher self-efficacy was correlated to mastery goal orientation in students. The study findings indicated that teacher self-efficacy was a consistent long-term indicator of instructional quality. Current research indicated that Bandura's social cognitive theory is still relevant to instructional practice because teachers' self-efficacy beliefs impact their ability to effect change in student outcomes.

This study benefited from this conceptual framework because providing effective, replicable cognitive and behavioral models (Bandura, 1997) is fundamental to the job of teaching. Additionally, effort, motivation, task completion, and persistence in the face of challenge are all critical factors in the teaching and learning process in public schools. Moreover, recent research using Bandura's social cognitive theory has shown that self-

efficacy is a critical factor in improving teachers' ability to provide effective feedback to students and to effect positive cognitive and behavioral change in student achievement.

Teacher Self-Efficacy

The research literature on teacher self-efficacy informed this study by elucidating the correlation between outcome expectancy and actual performance. Teacher self-efficacy is "a teacher's belief that she/he can influence desired student outcomes" (Corkett, Hatt, & Benevides, 2011, p. 72) regardless of cognitive, affective, and behavioral variances in the student population. It has been well established that teachers who hold high self-efficacy beliefs about their own writing ability and writing instruction produce better writing outcomes for their students than teachers with low self-efficacy beliefs (Bandura, 1993, 1997; Goddard, Hoy, & Hoy, 2000). Research has also revealed that teacher self-efficacy is context specific and can change based on subject area, students, teaching environment, and years of teaching experience (Corkett et al., 2011; Goddard, Hoy & Hoy, 2000; Sarwati & Alghazo, 2006). Given these findings, it is possible that teachers' outcome expectancy for their writing instruction could also be influenced by their perceptions of the resources and tools they use to teach writing and to provide feedback, a critical component of writing instruction (Hattie & Timperley, 2007). Therefore, this study explored high school teachers' perceptions about the impact that Kaizena had on the feedback processes they used in the teaching of writing.

In groundbreaking research on teacher self-efficacy, Bandura (1993) established the tenet that "teachers' beliefs in their personal efficacy affect… the level of academic progress their students" (p. 117) attain. Building upon Bandura's (1993, 1997) work,

Goddard, Hoy and Hoy (2000) explored the impact of teacher efficacy on student achievement and found that "teacher efficacy beliefs… have a strong influence over" (p. 497) teacher practices and on student achievement. Goddard et al. concluded by recommending that school administrators provide teachers with professional development experiences that increase teachers' self-efficacy.

More recently, Lavelle (2006) conducted a study to investigate the correlation "between teachers' writing self-efficacy and writing performance" (p. 74). Findings from the study supported the hypothesis that teachers with higher writing self-efficacy beliefs performed better on a writing task than did teachers with low writing self-efficacy beliefs. Lavelle concluded by suggesting that teachers' personal writing practices and their beliefs about their own writing ability affect their approach to writing instruction. In a similar investigation of secondary teacher candidates, Daisey (2009) found that teachers "pass on their attitudes about writing to their students" (p. 158) and that teachers' success with writing instruction hinges, in part, on their beliefs and attitudes about themselves as writers.

In related research, Chambers, Cantrell, Burns, and Callaway (2009) conducted a study of middle and high school content-area teachers' perceptions about literacy instruction. Their study investigated teachers' sense of efficacy about teaching reading in their content area classes, their perceptions of the importance of literacy instruction in the content areas, and the impact of a literacy professional development program that paired workshop sessions with follow-up, job-embedded instructional coaching. Citing data from the National Assessment of Educational Progress (NAEP), Chambers et al.

discussed the problem as low achievement in literacy skills for middle and high school students in the United States, specifically, "more than one in four adolescents is achieving below basic levels in reading" (p. 77). Chambers et al. asserted that this problem is caused in part by the teacher-centered culture at the secondary level and by content-area teachers' resistance to explicitly teaching literacy skills in their content specific classes. They supported this assertion by citing numerous studies that have concluded self-efficacy plays a role in teacher resistance to implementing new pedagogies and that job-embedded, ongoing professional development may be helpful in ameliorating this problem. Chambers et al. suggested that concentrated professional development with a focus on interdisciplinary connections, collegial collaboration, and "ongoing coaching in content area literacy instruction can have a positive influence on teachers' beliefs about" (p. 90) their ability to teach literacy skills in content area classes.

Corkett, Hatt, and Benvides (2011) investigated the relationship between teachers' and students' self-efficacy beliefs and students' literacy ability. They pointed out that "verbal persuasion" in the form of teacher feedback "can increase or decrease [students' literacy] self-efficacy" (p. 68). Corkett et al. found a significant correlation between teachers' perceptions of students' self-efficacy for reading and writing and students' actual ability in literacy tasks. Corkett et al. concluded that given the vast amount of money being spent on literacy intervention, it is enormously important to study teacher and student beliefs about literacy instruction.

In socio-cognitive theory, emotions are thought to have a critical effect on self-efficacy beliefs (Bandura, 1997). Just as Hargreaves (1998, 2001) argued, Brackett,

Floman, Ashton-James, Cherkasskiy, and Salovey (2013) contended that teachers' everyday experiences "are laden with emotion" (p. 641). As such, Brackett et al. explored the influence of high school teachers' emotions on their grading practices. Brackett et al. found that teacher emotions "may bias the grades that teachers assign to their students" (p. 634) and that positive teacher emotions were correlated with higher student grades and vice versa. Given that high school students' grades have high stakes consequences for their college and career paths, Brackett et al. suggested that more research is needed to understand how teachers' emotions affect their performance and how pre-service and professional development programs may mitigate the effects of teachers' emotions.

Middle and High School Writing Instruction

Researchers have investigated instructional practices for teaching writing at the secondary school level (Applebee & Langer, 2009, 2011; Bangert-Drowns et al., 2004; Dunn, 2011; Graham & Perin, 2007a, 2007b; Hillocks, 1984; Kellogg & Whiteford, 2009; Kiuhara et al., 2009; National Commission on Writing, 2003; Stagg Peterson & McClay, 2010, 2014; Worthman, Gardner, & Thole, 2011) and uncovered a variety of obstacles affecting the quality of writing instruction in middle and high schools. Salient findings in the research on high school writing practices were relevant to this study. One key finding was that, despite changes in technologies and other instructional resources, writing instruction in high school has remained largely unchanged over time (Applebee & Langer, 2009, 2011; Gillespie, Graham, Kiuhara, & Hebert, 2014; Graham, Harris, & Hebert., 2011; Graham & Perin, 2007a, 2007b; Stagg Peterson & McClay, 2010, 2014).

Secondly, secondary school writing instruction "leaves a lot to be desired" (National Commission on Writing, 2003, p. 14) because it does not adhere to research-based practices (Gillespie et al., 2014; Graham & Perin, 2007a, 2007b; Scherff & Piazza, 2005; Stagg Peterson & McClay, 2010, 2014; Worthman et al., 2011). It is also not rigorous enough to meet the objectives for student writing in the Common Core State Standards (Gillespie at al., 2014; Graham et al., 2014; Troia & Olinghouse, 2013). Findings also suggested that an overemphasis on standardized testing has resulted in the teaching of formulaic writing, such as the five-paragraph essay. Moreover, despite recommendations from the research and those found in the Common Core State Standards (National Governors Association Center for Best Practices & Council of Chief State School Officers, 2010) that students be given more frequent, varied, and longer writing assignments, students are rarely asked to produce multi-page academic papers (Gillespie et al., 2014; Graham, Harris, & Hebert, 2011; Graham & Perin, 2007a, 2007b; Kiuhara et al., 2009; National Commission on Writing, 2003; Scherff & Piazza, 2005; Stagg Peterson & McClay, 2010, 2014). Applebee and Langer (2011) found that only 20.9% of student writing at the middle and high school levels "involved extended writing" (p. 15) and characterized as "distressingly inadequate" (p. 16) the overall amount of time dedicated to writing in high schools.

In their analysis of the Common Core State Standards for writing and language (CCSS-WL), Troia and Olinghouse (2013) reiterated the myriad impediments found in the research literature on the teaching of writing in secondary schools. They pointed out that "the variability of teachers' experiences, values, beliefs, and attitudes" (p. 345) about

writing, lack of professional development and pre-service training in writing instruction,

and a lack of widespread research-based curriculum resources have all contributed to

poor student achievement in writing. Troia and Olinghouse also highlighted the

complexity of teaching writing and learning to write in that they involve multifaceted

"cognitive, linguistic, affective, and sometimes physical acts that take place in socially

constructed and constrained environments" (p. 345). Troia and Olinghouse's content

analysis of the CCSS-WL led them to conclude that the standards are "succinct and

balanced" (p. 243) with regard to content, but they do not adequately address some

important facets of writing, such as spelling and student motivation. Troia and

Olinghouse further argued that the CCSS-WL place little emphasis on the use of text

models, a research-based strategy for writing instruction, and that they "do not provide

guidance on how to teach grammar skills" (p. 347) and will thus lead to decontextualized

grammar instruction, "which had been consistently found to yield negative effects on

student writing" (p. 347). In their discussion, Troia and Olinghouse acknowledged that

the Common Core State Standards are intended to articulate *what* to teach not *how* to

teach. Thus, Troia and Olinghouse recommended that educators consult other resources

and not rely solely on the CCSS-WL for guidance on the teaching of writing.

In order to gain a better understanding of the challenges and obstacles to teaching

and assessing writing, researchers have explored the experiences of secondary school

writing teachers (Baker, 2014; Junqueira & Payant, 2015; Parr & Timperley, 2010; Read

& Landaon-Hays, 2013; Smagorinsky, Wilson, & Moore, 2011). Parr and Timperley

(2010) studied teachers' feedback practices on student writing and found that the ability

to provide quality formative feedback is a "powerful component of teacher practice that develops student writing" (p. 68). Parr and Timperley further contended that the ability to provide such feedback requires "considerable content knowledge" (p. 65). In their study of the perceptions and experiences of new English teachers, Read and Landon-Hays (2013) described writing as a complex and contextualized skill that requires "side-by-side learning, repeated practice, modeling and scaffolding" (p. 7) and that teachers find writing difficult to teach and assess. These new teachers believed that they had not received quality writing instruction in their own high school education and that their writing had been subjectively assessed, "was assigned rather than taught," (p. 9) and did not did not reflect evidence-based instructional practices for writing. Teachers also perceived that their pre-service programs placed a low emphasis on writing instruction and assessment. Read and Landon-Hays's study also found that, although they "had a sense of what effective writing instruction should be," the high school teachers felt frustrated in that they "were not able to provide their students with enough time or opportunities to write because" (p. 11) their workloads typically included 150 or more students. Read and Landon-Hays concluded by arguing that high school English teachers must possess deep pedagogical and content knowledge in order to effectively teach writing.

Smagorinsky, Wilson, and Moore (2011) reached a similar conclusion in their longitudinal case study of one high school English teacher's experiences. Smagorinsky, Wilson, and Moore found that the teacher in their study "did not teach a great deal of writing and grammar" while student teaching. As a result, they noted, "grammar and

writing have proven to be particularly nettlesome areas of the curriculum" (p. 262) for new teachers. Baker's (2014) case study of first-year composition teachers identified various ways that new teachers contend with the "tedious, repetitive, and time-consuming" (p. 36) work involved in the teaching of writing, particularly in the "emotionally-draining, paper-grading workload" (p. 37). Baker found that goal setting, "dividing the work into manageable chunks, using physical and psychological tools, such as information charts and rewards, and managing criticism from their paper-grading communities" (p. 36) were all strategies that teachers used to cope with the onerous workload of grading papers.

In a recent study, Junqueira and Payant (2015) explored the feedback beliefs and practices of preservice L2 writing teachers and uncovered themes consistent with those of Smagorinsky, Wilson, and Moore (2011) and Baker (2014). Junqueira and Payant (2015) found inconsistencies in the preservice teachers' beliefs about effective writing assessment and their actual assessment practices. Whereas teachers believed that providing detailed, timely feedback was optimal for student achievement in writing, the time-consuming and complex nature of providing feedback on student writing posed a significant barrier to the teachers' writing assessment practices.

In related research, DelleBovi (2012) investigated the writing assessment instruction in the literacy courses required of preservice secondary school teachers in Grades 7–12. DelleBovi noted that preservice secondary teachers "feel unprepared to assess students' writing skills" and that despite this, "graduate teacher education programs do not typically include instruction in assessing writing" (p. 272). DelleBovi's

study yielded several key findings. The first was that including writing assessment instruction into preservice programs for secondary teachers will constitute a positive step in improving teacher preparation. Specifically, DelleBovi found that "studying aspects of holistic scoring as one of several writing assessment methodologies" and teaching preservice teachers how to create purposeful, goal-based writing rubrics were effective ways to improve teacher training programs. DelleBovi also found that in order to improve secondary teachers' preparation to teach writing, preservice training programs must engage in student-centered instruction and develop partnerships with "neighboring public and private secondary schools" (p. 281) in order to give teaching candidates with real-world practicum experiences

Researchers have also conducted several national surveys to shed light on instructional practices in secondary writing instruction (Gillespie et al., 2014; Graham et al., 2014; Graham, Harris, & Hebert, 2011; Graham, Harris, & Santangelo, 2015; Graham, Hebert, & Harris, 2015). Graham et al. (2014) conducted a national survey of language arts, social studies, and science teachers in Grades 6 through 8 and found that a significant portion of the teachers felt their preservice preparation in writing pedagogy was insufficient. Over 40% of the teachers indicated that they had not taken any college courses on the teaching of writing. Conversely, teachers who had taken pre-service courses in writing instruction felt more efficacious about their own ability to teach writing, articulated more robust beliefs about the importance of writing, and were more likely to use evidence-based strategies for teaching writing. Graham et al. also found that language arts and social studies teachers believed it was their responsibility to teach

writing more so than did science teachers and that despite this belief, the teachers spent an average of just 6 minutes per day teaching writing and that "the four most common writing activities were short answer responses, note taking, completing worksheets, and writing in response to material read" (p. 1040). Another troubling finding was that a majority of the teachers said they seldom used writing assessment to drive their instruction. Furthermore, Graham et al. found that middle school teachers rarely used technology other than word processing software, in their writing instruction and that teachers rarely provided supplemented instruction with technology or required students to use internet technologies, such as blogs, to produce or publish writing. Given these findings, Graham et al. suggested that in order to meet the writing demands articulated in the Common Core State Standards, schools and teachers will need to dedicate a substantially greater number of resources and pay considerably more attention to digital applications for writing.

Gillespie et al. (2014) conducted a national survey to investigate how high school language arts, social studies, science, and mathematics teachers use writing to promote learning. Results of the survey indicated that although "four out of five teachers reported they used writing to support learning," the writing activities they employed "involved little or no analysis, interpretation or personalization" (p. 1043) to make learning more rigorous and relevant for students. Gillespie et al. also found that most teachers felt inadequately prepared to use writing-to-learn activities and that teachers' use of writing-to-learn activities correlated to their preservice preparation efficacy for teaching writing. The survey results led Gillespie et al. to conclude that there is a sizeable gap between

high school teaching practices and the expectations articulated in the Common Core State Standards.

Most notably for this study, research has confirmed that student writing "improves when teachers and peers provide students with feedback" (Graham, Harris & Hebert, 2011, p. 24) on their writing. In two recent works, Graham, Harris, and Santangelo (2015) and Graham, Hebert, and Harris (2015) conducted analyses to explore teachers' practices in writing instruction and their impact on student writing performance. Graham, Harris, and Santangelo conducted a meta-synthesis of qualitative studies that examined the teaching practices of effective literacy teachers and presented a list of recommendations based on their findings. Among the list of recommended instructional practices were the use of technology tools that can provide opportunities for students to share their writing with others, and the ongoing provision of formative feedback from instructors. Citing the findings from previous studies on feedback (e.g., Black & Wiliam, 1988; Sadler, 1989), Graham, Hebert, and Harris noted that a central part of their investigation was to explore "the impact of feedback to students on their writing" (p. 526). Their studies revealed that feedback from "adults, peers, self, and computers statistically enhanced writing quality" (p. 523). In light of this, these researchers called upon teachers to routinely provide formative feedback on student writing. However, the workload of providing written comments on student papers has been found to be a substantial obstacle to writing instruction, particularly to assigning more and longer pieces of writing (Dunn, 2011; Kellogg & Whiteford, 2009; National Commission on Writing, 2003; Stagg Peterson & McClay, 2014; Worthman et al., 2011). Kellogg and

Whiteford (2009) argued that "the grading problem—the excessive time and effort required to evaluate lengthy written compositions to provide students with formative feedback" (p. 251) is a significant barrier to writing instruction. Stagg Peterson and McClay (2014) found that, while "the importance of feedback on students' writing development has been well documented," (p. 36) teachers reported that lack of time for providing feedback posed a significant challenge for writing instruction. In Dunn's (2011) study, teachers expressed the need for more resources to aid the provision of feedback to students. Graham, Harris, and Hebert (2011) argued that empirical evidence that sheds light on teachers' writing assessment practices is sparse and reiterated the need for more research into "the development of better assessment tools" (p. 7) for improving writing instruction. Accordingly, this study added to the knowledge base on high school writing instruction by providing research on a technology tool for facilitating feedback processes.

Formative Teacher Feedback

Instructor feedback is a key component in the formative assessment process, and it is also instrumental in helping students become self-directed learners (Black & Wiliam, 1998; Gibbs & Simpson, 2005; Graham, Hebert & Harris, 2015; Hattie & Timperley, 2007; Nicol & Macfarlane-Dick, 2006; Sadler, 1989). In investigating feedback for learning, researchers have found that variations in the effectiveness of different forms of feedback exist. For example, some researchers have found differences in the effectiveness of verbal and written feedback messages (e.g., Bibro, Iluzada, & Clark, 2013; Cavanaugh & Song, 2014; Hennessy & Forrester, 2014; McCullagh; 2010).

Researchers have also found that contextual, task, and learner considerations factor into these variances (Calvo & Ellis, 2010; Fazio et al., 2010; Kluger & DeNisi, 1996; Lee, 2011a, 2011b). Others have concluded that feedback is an essential component for academic growth and development and that effective feedback can be defined and codified (Hattie & Timperley, 2007; Hennessy & Forrester, 2014; Killion, 2015; Kluger & DeNisi, 1996; Nicol & MacFarlane-Dick, 2006; Sadler, 1989; Shute, 2007). Regardless of the debate about the form that feedback takes, most researchers agree that offering feedback to students is not only a necessary part of the teaching and learning process, but it is also particularly critical to the teaching of writing (Cann, 2014; Graham & Harris, 2005; Graham, Harris, & Santangelo, 2015; Graham & Perin, 2007a, 2007b; Hennessy & Forrester, 2014; Kellogg & Whiteford, 2009).

In an article about formative assessment, Sadler (1989) stated that feedback is a central component of formative assessment. Sadler further argued that the learning of "physical, intellectual, or social skills . . . require[s] practice in a supportive environment which incorporates feedback loops" (p. 120). Sadler stated that in order for formative feedback to be effective, it must be a two-way communication with duel purposes. Feedback must inform students about the strengths and weaknesses of their performance, and it must also inform teachers about instructional or programmatic shifts they may need to make in response to students' readiness level and overall performance. In light of this, Sadler defined feedback in terms of its use by both students and teachers. According to Sadler, "information . . . is considered feedback *only when it is used to alter the gap*" (p. 121, emphasis in original) between actual and desired performance. In a more recent

article, Sadler (2010) expanded his discussion of the role of the student in the feedback process, arguing that students should only use feedback to improve their performance if they possess "a cache of relevant tacit knowledge" (p. 535) similar to that which teachers attain through experience with a wide range of student work at varying degrees of quality. Sadler suggested that one way to help students attain such tacit knowledge is to provide students with "appraisal experiences that [are] similar to the teacher's" (p. 541) by engaging them in peer assessment. Sadler further recommended a move away from one-way, teacher directed feedback practices and towards an approach that engages students in the feedback process and helps them develop skills for judging the quality of their work and the work of their peers.

Straub (1996) explored the concept of teacher control in feedback responses and investigated how "different comments exert control over" (p. 225) students' written texts. Straub examined teachers' written comments and suggested that teachers develop responding styles that impose varying levels of control over student work. According to Straub, "the more comments a teacher makes on a piece of writing, the more controlling" (p. 233) that teacher is; whereas, teachers who provide reflective comments directed toward "the student behind the text and her ongoing work as a writer" (p. 234) are less controlling. Straub further contended that, from the student's perspective "the image of the teacher that comes off the page *becomes* the teacher for that student" (p. 235, emphasis in original). Straub pointed out that "what teachers value in student writing, how they communicate those values, and what they say individually on student papers the most important factors in writing instruction. Accordingly, given the power relationships

that naturally exist in a classroom, Straub recommended that instructors balance their feedback comments on a continuum between directive and facilitative.

Building on the work of Sadler (1989), Kluger and DeNisi's (1996) seminal meta-analysis provided a foundational investigation of the effects of feedback and a preliminary feedback intervention theory (FIT). Kluger and DeNisi reviewed 607 effect sizes and 23,663 observations with the following four goals in mind: "(1) to record inconsistencies in feedback intervention effects and the disregard for these inconsistencies in the literature, (2) to quantify the variability of feedback intervention effects, (3) "to attempt the integration of varying theoretical . . . perspectives, and (4) to provide a preliminary test of FIT" (pp. 254–256). Kluger and DeNisis asserted that much of the research on feedback effectiveness had been uncritical, misinterpreted, or ignored. They argued that "a considerable body of evidence suggesting that feedback intervention effects on performance are quite variable has been historically disregarded" (p. 254) and offered their FIT as a means of correcting this oversight, quantifying the variability of feedback interventions, and shedding light on effective versus ineffective feedback interventions. Kluger and DeNisi defined feedback interventions as *actions taken by (an) external agent(s) to provide information regarding some aspect(s) of one's task performance*" (p. 255, emphasis in original). They explored existing theories that sought to explain the role of feedback in "task motivation, task learning, and meta-task processes" (p. 259), such as self-regulation and goal orientation. They criticized these theories, suggesting that existing theories in which "behavior is [perceived to be] regulated through feedback-standard comparisons and discrepancy reduction [are] too

simple" (p. 261). Their meta-analysis revealed variability in the effects of feedback interventions, including some interventions that reduced performance rather than enhanced it. Kluger and DeNisi concluded that an FIT should take into account the variances in feedback intervention effectiveness caused by differences in task-related learning, task-related motivation, and self-related processes (p. 275).

In their review of the literature on classroom formative assessment, which built on the work of Sadler (1989) and Kluger and DeNisi (1996), Black and Wiliam (1998) averred that the concepts of formative assessment and feedback "overlap strongly" (p. 47) and that feedback is fundamental to formative assessment. Black and Wiliam described the following four elements that comprise the feedback system:

> data on the actual level of some measurable attribute; data on the reference level of that attribute; a mechanism for comparing the two levels and generating information about the gap between the two levels; [and] a mechanism by which the information can be used to alter the gap (p. 48).

Black and Wiliam also underscored that feedback has been shown to have negative effects on student performance, particularly when feedback is formulated as praise and "other cues which draw attention to self-esteem and away from the task" (p. 49). In light of this finding, Black and Wiliam maintained that feedback is more effective when it focuses on task attainment than on student characteristics.

In another study on feedback effectiveness, Goodman and Wood (2004) explored feedback specificity and its relationship to learning by conducting an experimental study on undergraduate management students' responses to receiving high or low levels of

feedback on their performance in a simulated management decision-making scenario.

Goodman and Wood defined feedback specificity as "the level of information presented

in feedback messages" (p. 809). The researchers found that increased feedback

specificity afforded students with more opportunities to learn from their performance but

that it also caused some students to develop "negative self-evaluations that interfere with

effective information processing and problem solving" (p. 819) when their performance

is poor. Therefore, Goodman and Wood recommended that instructors "think about

exactly what we want [students] to learn with regard to a task" (p. 818) and design

feedback that affords students multiple opportunities to learn how to respond to feedback

messages and practice the task.

In related research, Hyatt (2005) and Gibbs and Simpson (2004) presented

recommendations for the provision of formative feedback. Hyatt conducted an analysis

of feedback provided to students with master's degrees in education. Citing literature

indicating that the majority of instructors provided feedback is negative (Chanock, 2000),

Hyatt cautioned instructors to be aware of the "potentially damaging impact of ill-

considered and inconsistent feedback" (p. 340) and suggested that instructors can

minimize the hegemonic nature of feedback messages by adopting a dialogic approach to

feedback. Gibbs and Simpson argued that assessments should facilitate learning, and

they forwarded a list of conditions under which assessments can support learning rather

than simply measure it. One of the key conditions these researchers discussed was the

provision of sufficient formative feedback. They contended that despite increased class

sizes and onerous teacher workloads, the bulk of the feedback that teachers provide to

students continues to be written comments on their student work. Gibbs and Simpson stated that feedback for learning must be aligned to the learning task and to students' understanding of the expected outcomes for the task. Moreover, feedback should vary in form and specificity by academic discipline. Gibbs and Simpson also recommended that instructors consider students' self-efficacy, motivation, and knowledge of discipline specific discourse when designing feedback messages and that regardless of how well-crafted instructor feedback may be, students do not always understand it or act upon it. Accordingly, Gibbs and Simpson concluded that students "need to be taught how to use feedback to develop metacognitive control" (p. 25), and instructors need to provide students with opportunities to act upon the feedback and require students to self-assess.

In line with Sadler (1989), Hyatt (2004), and Gibbs and Simpson's (2004) assertions, Nicol and MacFarlane-Dick (2006) affirmed that feedback is most effective when it is clear, aligned to the task, dialogic, and acted upon. In their review of the literature, Nicol and MacFarlane-Dick pointed out that "beliefs can regulate the effects of feedback messages" (p. 201) making the feedback process complex. From the students' perspective, feedback can be difficult to understand and can influence self-efficacy and motivation positively or negatively (Bandura, 1991; Dweck, 1986; Dweck & Leggart, 1988). From the teacher's perspective, providing formative feedback is an enormously time consuming endeavor that may not yield the desired results on student performance, which can in turn negatively affect teachers' self-efficacy. To combat these issues, Nicol and MacFarlane-Dick argued that feedback should promote self-regulation, and they proposed "seven principles of good feedback" (p. 205), which they defined as any

information that supports students' capacity to self-regulate as they learn. According to

Nicol and McFarlane-Dick, effective:

> feedback practice: (1) helps clarify what good performance is… (2) facilitates the
> development of self-assessment… (3) delivers high quality information to
> students about their learning; (4) encourages teacher and peer dialogue around
> learning; (5) encourages positive motivational beliefs and self-esteem; (6)
> provides opportunities to close the gap between current and desired performance;
> [and] (7) provides information to teachers that can be used to help shape teaching
> (p. 205).

In discussing the third principle, Nicol and McFarlane-Dick pointed out that the medium

used to present feedback affects the quality of the message, and they suggested that

instructors consider "the strengths of alternative modes" (p. 209), such as audio, when

providing feedback.

In a study on written feedback, Nicol (2010) stated that effective feedback is

"understandable . . . selective . . . specific . . . timely . . . contextualised [sic] . . . non-

judgmental… balanced… forward looking… transferable… [and] personal" (p. 512–

513), yet most instructors find it challenging to meet these standards, given the workload

of large classes in higher education settings. Nicol further argued that researchers have

failed to understand how to improve the feedback process. Nicol reviewed research on

written feedback between 1990 and 2010 and concluded that most researchers take one of

two approaches. The first approach was to conceptualize feedback as "an input message .

. . that is often unclear and deficient in quality" (p. 502). The second approach was to

examine the role of the student in the feedback process. Nicol argued that neither of these approaches was adequate and called for researchers to take a different approach in which feedback is understood as a "dialogical and contingent two-way process that involves coordinated teacher-student and peer-to-peer interaction as well as active learner engagement" (p. 503). Thus, Nicol suggested that student participation in the feedback process is critical if feedback is to achieve its aim of improving student work. Nicol also suggested that audio feedback is a promising approach to delivering feedback because students perceive it as "closer to dialogue" (p. 508) than written feedback alone.

Nicol (2013) reiterated and added to these assertions in a more recent article describing two key cognitive processes that instructors must foster in students in order for them to reap the full value potential of instructor feedback. Nicol stated that students must develop cognitive skill in evaluating their own work and in building knowledge by "using the results of these evaluative processes to repair misunderstandings" (p. 35) and improve subsequent work. In line with other researchers (Carless, 2013; Carless et al., 2011; McArthur & Huxham, 2013; Merry, Price, Carless, & Taras, 2013; Nicol & Mcfarlane-Dick, 2006; Taras, 2013), Nicol asserted that students should be afforded opportunities to engage in self and peer evaluation and that instructor feedback should be dialogical. Audio feedback technologies, such as Kaizena, facilitate the two-way student and peer-to-peer dialogues that Nicol (2010; 2013) recommended.

Stern and Solomon (2006) conducted a content analysis of 598 undergraduate student papers across 30 different higher education departments to determine if faculty feedback practices were aligned to three effective feedback principles outlined in the

research literature. The three principles included (a) providing encouraging as well as corrective feedback (b) giving feedback on a small number of key areas and (c) identifying patterns of weaknesses, strengths, and errors. Stern and Solomon declared that "providing effective feedback at every opportunity is the best way to encourage and promote learning" (p. 38), yet research has revealed ongoing problems in the feedback process. Stern and Solomon also highlighted difficulties with feedback practices. For example, they characterized the practice of providing written feedback on student writing as "mundane, taken for granted . . . and one of the most grueling and anxiety-ridden tasks" (p. 23) for teachers to engage in. In addition, as other researchers have described, students often do not understand the feedback that instructors laboriously produce. The results of their study revealed that the majority of comments addressed surface level issues, "such as grammar, word choice, spelling, and missing words" (p. 35), but instructors did not identify patterns of error. Moreover, "few comments addressed the macro or holistic" (p. 34) aspects of the papers, including content and organization, and only a minority of the comments provided information about the overall quality of the paper. Most teacher comments were negative; very few instructors provided positive comments. Stern and Solomon concluded that faculty members were not providing feedback according to the effective principles identified in the literature.

Building on Kluger and DeNisi's (1996) work and the corpus of feedback research, Hattie and Timperley (2007) conducted a meta-analysis in which they discussed the role of feedback in learning and proposed a model of feedback that described the characteristics and contexts that render it effective. According to Hattie and Timperley,

feedback affects learners' efforts and motivation for engaging in cognitive processes that lead to improved academic performance, and its effectiveness is both complex and highly contextual. They began their discussion by pointing out that few studies had been conducted to investigate the meaning of instructor feedback. In light of this gap in the research, Hattie and Timperley argued that developing a definition of feedback within the context of teaching methodology is essential because "feedback has no effect in a vacuum; to be powerful in its effect, there must be a learning context" (p. 82). Thus, in their view, providing instruction and providing feedback are interwoven, cyclical processes that lie on the same continuum of instructor actions within the teaching-learning cycle. However, in an assertion similar to Kluger and DeNisi's criticism of simplistic theories, Hattie and Timperley differentiated their concept of the teaching process from the behaviorist stimulus-response model by stating that defining feedback effectiveness is more complex "because feedback can be accepted, modified, or rejected" (p. 82) by the learner and because feedback can be misaligned to learners' needs and dispositions. Hattie and Timperley also discussed the characteristics of effective, as well as ineffective, forms of feedback.

Citing Hattie's (1999) "synthesis of over 500 meta–analyses, involving 450,000 effect sizes from 180,000 studies, representing approximately 20–30 million students" (2007, p. 82), Hattie and Timperley (2007) found that feedback "fell in the top 5 to 10 highest influences on achievement" (p. 83) and significant differences in the effect sizes of various types of feedback. For example, Hattie and Timperley noted that "receiving information about the task and how to do it more effectively" was much more effective

than "programmed instruction, praise, punishment, and extrinsic rewards" (p. 84). In fact, Hattie and Timperley found that extrinsic rewards have a negative effect on learning because they diminish self-motivation and self-regulating behaviors, such as taking responsibility (p. 84). Given this finding, they proposed a model of feedback and cited Bandura's (1991) social cognitive theory as the conceptual framework that supports their model. They maintained that the primary purpose of feedback is to fill the learner's knowledge gap between current and desired levels of performance. Their model stated that "effective feedback must answer three questions . . . Where am I going? (What are the goals?) How and I doing? (What progress is being made toward the goal?), and Where to next? (What activities need to be undertaken to make better progress)" (p. 86). The model included a description of feedback that works on four levels: the task level, process level, self-regulation level, and the self-level. Among these levels, feedback is the least effective when it targets the self-level because it perpetuates negative learner behaviors.

Hattie and Timperley's (2007) assertions correlated with other studies (Bandura, 1991; Braumeister, Hutton, & Cairns, 1990; Dweck, 1986; Dweck & Leggett, 1988; Pulfrey, Buchs, & Butera, 2011; Senko & Harackiewicz, 2005; Tolli & Schmidt, 2008; VandeWalle, Cron & Slocum, 2001; Venables & Fairclough, 2009) in which researchers found that extrinsic rewards lead to lower levels of self-efficacy and maladaptive behaviors, such as setting less rigorous achievement goals, "avoidance of challenge, and a deterioration of performance in the face of obstacles" (Dweck & Leggett, 1988, p. 256). In order to avoid potential negative effects of feedback and define effective feedback,

Hattie and Timperley (2007) concluded that (1) instructors must avoid giving students feedback on the self-level and align their feedback to the appropriate student level, and (2) that "feedback needs to be clear, purposeful, meaningful, and compatible with the students' prior knowledge" (p. 104) in order for it to be effective.

In related research, Shute's (2008) review of the literature on formative feedback yielded findings similar to those of Kluger and DeNisi (1996) and Hattie and Timplerley (2007). That is, Shute found that despite inconsistencies in both the findings and conclusions in the body of research on feedback, the principle undergirding most feedback research "is that good feedback can significantly improve learning processes and outcomes *if delivered correctly*" (p. 154, emphasis added). What Shute and others (Hattie & Timperley, 2007; Kluger & DeNisi, 1996) pointed out was that the definition of *correct delivery* has remained elusive because of variables in the task, learner, context, and forms that feedback messages can take. Shute defined formative feedback as "information communicated to the learner that is intended to modify the learner's thinking or behavior for the purpose of improving learning" (p. 154) and contended that the purpose of such feedback is "to increase student knowledge, skills, and understanding in some content area or" (p. 156) overall achievement. Shute discussed the variables that feedback researchers have investigated and developed a list of recommendations for feedback providers, which included both things to do and things to avoid. For example, Shute recommended that feedback should be directed toward the task, not the learner and, citing Dweck's (1986) study on goal orientation, that feedback should be crafted to "emphasize that effort yields increased learning and performance, and mistakes are an

important part of the learning process" (p. 177). The practices to avoid included giving

feedback that "directs attention to 'self' (p. 178)" and "avoid[ing] cognitive overload . . .

by consider[ing] alternative modes of presentation" (p. 179), such as audio. This

recommendation is aligned with Kellogg and Whiteford's (2009) contention that

feedback technologies should be investigated because they enable the delivery of

multimodal feedback and could play a significant role in the future. In concluding the

review, along with a call for additional research on feedback, Shute suggested that a key

factor in delivering feedback correctly is that feedback givers align the form and function

of the feedback to the needs and dispositions of the learner.

Carless et al. (2011) and Merry et al. (2013) reiterated Nicol and McFarlane-Dick

(2006) and Nicol's (2010) call for a dialogic approach to instructor feedback. Carless et

al. proposed that sustainable feedback is "dialogic processes and activities which can

support and inform the students on the current task, whilst also developing the ability to

self-regulate performance on future tasks" (p. 397). Carless et al. conducted a study in

which they interviewed 10 award-winning higher education faculty members at a

university in Hong Kong in order to further refine the authors' definition of sustainable

feedback. Based on their analysis of the study data, Carless et al. recommended a

reduction in conventional one-way feedback practices and a move toward feedback

practices that promote "students' autonomy and self-monitoring capacities… [that]

eventually make the feedback provider unnecessary" (p. 404). They recommended that

instructors incorporate self and peer evaluation into their teaching, allow students

opportunities to act on the feedback they receive, and employ technologies that facilitate interactive dialogue among students, peers, and the teacher.

In a related article, Yang and Carless (2013) discussed barriers to feedback practices and cited findings from the research literature that indicate students' dissatisfaction with instructor feedback. Yang and Carless contended that instructors could improve their feedback practices by adopting a dialogic approach, and they forwarded a framework for dialogic feedback. The framework organized feedback into its cognitive, social-affective, and structural aspects, which correspond respectively to the discipline specific content, the relationships and emotions, and the "timing, sequencing and modes" (p. 290) of feedback. The framework also included "six features of optimal feedback practice" (p. 287), which are stimulating student engagement, student self-regulation, trusting teacher-student relationships, sensitivity to students' emotional responses, flexibility in the provision, timing, forms, and sequencing of feedback, and using disciplinary and non-disciplinary resources for providing feedback, especially new technologies. Yang and Carless highlighted the use of technology-enhanced feedback for its potential to improve both instructors' provision and students' understanding of feedback. Yang and Carless concluded by stating that a fertile area for more research is in the area of technology-enhanced feedback to discover its potential to improve feedback practices in the three dimensions described in their framework.

Vardi (2012) highlighted the intellectual challenge that many students face with academic writing and the significant hurdle that instructors face in improving student writing. Vardi suggested that instructors use the process approach to writing pedagogy

because it requires students to write multiple drafts and revise according to feedback they receive from peers and the instructors. The quality of the feedback and the opportunity to revise, Vardi argued, are two key variables affecting students' ability to produce better writing. Therefore, Vardi conducted a linguistic analysis of student papers to explore how each had changed as a result of receiving detailed written instructor feedback and opportunities to rewrite. The textual analyses "covered coherence, citation, referencing and sources, academic expression and mechanics, and adherence to additional task requirements and expectations" (p. 171). The study results revealed that students' texts changed in terms of task requirements, coherence and citation, but not in academic expression or mechanics. Based on the study results, Vardi found that, "prescriptive, text-specific feedback that addresses content, form, and context" (p. 167) was effective in "changing the characteristics of students' written texts" (p. 175). Vardi further suggested that instructor feedback "need not be copious, just carefully targeted" (p. 176–177) in order to effect positive changes in student writing. Vardi concluded by calling for more faculty professional development in writing pedagogy.

In a meta-analysis of the research literature, Jonsson (2012) analyzed 103 peer-reviewed articles to uncover the reasons why some undergraduate students do not use the feedback they receive from instructors. In addition to the perceived usefulness of instructor feedback, Jonsson found that several other key factors influenced students' use of feedback. Students were more likely to use feedback to improve their work if it was specific and individualized. Students were also influenced by their perception of the teacher-student relationship. If instructors were perceived as authoritative rather than

collaborative in the feedback relationship, students were far less apt to use feedback. Another factor that inhibits students' use of feedback is grading. Jonsson found that earning low grades can have an injurious effect on students with low self-esteem and that students who earn high grades often do not read their feedback. Jonsson also found that students do not possess specific strategies for using feedback, and they do not understand the academic discourse in the feedback. As a result, students benefit from feedback when instructors provide dialogic feedback in multiple forms, including both written and audio feedback.

Van der Schaaf, Baartman, Prins, Oosterbaan, and Schaap (2013) made a similar assertion based on their study of secondary students' perceptions of written feedback versus teacher dialogue feedback. Study results indicated that students who received engaged in a feedback dialogue with their teacher viewed the feedback as more helpful than those students who received written feedback alone. Thus, Jonsson (2013) and Van der Schaaf et al.'s (2013) findings are in line with the findings of Nicol and MacFarlane-Dick (2006), Carless et al. (2011) and Merry et al. (2013), who found that in order for students to use instructor feedback, it must be dialogic in nature.

In similar research, Evans (2013) conducted an extensive review of the literature on assessment feedback in higher education, analyzing 270 peer-reviewed articles on assessment feedback in higher education. Evans asserted that the within the higher education field, widespread agreement exists about the factors that render feedback effective. Evans organized these factors into the following six categories:

(a) feedback is ongoing and an integral part of assessment, (b) assessment

feedback guidance is explicit, (c) greater emphasis is placed on feed-forward

compared to feedback activities, (d) students are engaged in and with the process;

(e) the technicalities of feedback are attended to in order to support learning, (f)

training in assessment feedback/forward is an integral part of assessment design

(pp. 80–83).

Evans concluded that although the research literature is clear about definition of effective

feedback, less is understood about students' acceptance and use of feedback. Evans also

concluded that the factors contributing to students' use of instructor feedback are

complex because students' beliefs about learning significantly influence their views about

the role of feedback. Evans added, "To what an individual attributes their [sic] success or

failure is fundamental to understanding how students use feedback; learned helplessness,

self-worth, and mastery orientation" (p. 96) and self-efficacy are key factors in this

regard (as cited in Dweck, 1986). Evans contended that few studies on assessment

feedback have considered these constructs, which has resulted in a gap in the knowledge

about students' perceptions and use of instructor feedback. To fill this gap, Evans

forwarded the concept of "the feedback landscape [which] allows for consideration of the

nature of feedback exchanges, the roles of those involved, the nature of networks,

exploration of facilitators, barriers, and mediators of feedback" (p. 97) within particular

higher education settings. Evans suggested that this multi-dimensional approach to the

study of feedback is necessary, given that feedback exchanges occur within multiple

individual and collective levels, which include individual, peer, instructor, and institutional beliefs about the nature and purpose of assessment feedback.

In another study, Butler, Godbole, and Marsh (2013) explored the effectiveness of various types of feedback and investigated the differences between explanation feedback and correct answer feedback. Citing previous research by Kluger and DeNisi (1996), Hattie and Timperley (2007), and Shute (2008), Butler et al. argued that while "the content of the feedback is arguably the most important aspect of any feedback procedure" (p. 290) the effectiveness of feedback messages "depend[s] on how learning is assessed" (p. 292). Butler et al. conducted two experimental studies and found that when an assessment required mere recall of facts, correct answer feedback was equally as effective as explanation feedback. However, when an assessment required students to transfer knowledge from one context to another, explanation feedback was more effective. They concluded by calling for more research on how instructor feedback affects students' comprehension and their ability to apply knowledge in various contexts.

Ruiz-Primo and Li (2013) investigated teacher feedback practices in science classrooms to determine the frequency, content, and thoroughness of teachers' written comments. The researchers analyzed the feedback comments that 26 elementary and middle school teachers provided in students' science notebooks and found that just 17 of the 26 teachers provided some form of written feedback to students. Of all the feedback messages that teacher provided, 61% were grades or symbols, and just 33% were written comments (p. 171). In their discussion of the study results, Ruiz-Primo and Li reported that a consistent finding "was the low occurrence of high quality comments . . . a finding

consistent with other studies that indicate written feedback practice is poorly implemented by most teachers" (p. 173). Ruiz-Primo and Li concluded that "there are many unknowns about teachers' feedback practices," (p. 173), particularly at the elementary and secondary level, and called for more research that elucidates teachers' feedback practices and proposes ways to improve them.

Feedback in English Language (L2) Classrooms

Researchers have also investigated the role of feedback in English language (L2) classrooms (Ferris, 2007, 2014; Harran, 2011; Lee, 2008, 2011a, 2011b; McGarrell & Verbeem, 2007). McGarrell and Verbeem (2007) investigated the role of formative feedback in motivating students to write drafts in process-oriented writing instruction for English language learners. The researchers contended that "teachers are torn in their conflicting roles as collaborators in the writing process and evaluators of the final product" (p 228). Moreover, much of the written feedback that teachers provide is not helpful to students because it focuses on sentence-level corrections rather than the content and organizational components of the writing. Hence, feedback practices vary widely amongst L2 writing instructors, which results in confusion and diminished writing motivation for students. McGarreell and Verbeem argued that many of the written comments teachers provide, including single word comments such as *good* and questions such as *What do you mean here?* are unhelpful and unclear. According to McGarreell and Verbeem, instructors should focus on providing clear formative feedback because "it is most consistent with the objective of creating motivation for immediate and substantive

revision on intermediate drafts" (p. 229). In addition, feedback on early drafts should focus on content rather than sentence-level corrections such as punctuation.

Ferris (2007) further elaborated on the problems that L2 students often have with instructors' feedback, arguing that such problems are in part the result of teachers' pre-service training in the teaching of writing. Ferris highlighted the complexity of providing feedback on student writing, saying that it is "extremely difficult to do well" (p. 179). Ferris also described her own approach to teaching writing pedagogy, which "includes a judicious mixture of teacher feedback, which can be oral, hand written, or electronic, peer review, and guided self-evaluation" (p.167). Ferris further contended that when giving feedback, the teacher's goal is not to help students produce a perfect text; instead, his or her goal is "to find the correct balance between *intervention* (helpful) and *appropriation* (harmful)" (p. 167). Ferris contended that "feedback is a gift, and perhaps the most important thing a writing instructor can do for his/her students" (p. 169). Ferris concluded by suggesting that reflective practice is a vital skill for writing teachers to develop in order to improve their feedback practices.

In another study, Ferris (2014) investigated the feedback philosophies and practices of higher education writing instructors and compared those philosophies and practices with best practices found in the research literature on L2 writing instruction. Ferris analyzed survey response and interview data from writing teachers in the English departments of eight higher education institutions, all of whom taught first-year or developmental writing courses. Ferris also analyzed sample student texts and instructor feedback on those texts. Data analysis revealed that although the instructors' reported

philosophies about effective feedback were aligned to best practices in the literature, their actual practices were not consistently aligned. Ferris found that most instructors reported using "a process-oriented model for the writing/response/revision cycle" (p. 13) of student text production, yet many instructors did not provide feedback on subsequent drafts of student texts. Additionally, Ferris found that although most instructors "expressed great enthusiasm for writing conferences" (p. 15) few instructors actually conducted them, and most instructors reported not having the time to conduct them. Moreover, Ferris found that none of the instructors used digital tools to provide either written or oral feedback, and few instructors reported they routinely required students to analyze, reflect upon, or respond to instructor feedback. Ferris recommended that instructors "pay more attention to what students do after receiving feedback" (p. 21) and that they utilize computer-based tools to facilitate their feedback practices.

In related research, Lee (2008) analyzed survey data to understand variances between teachers' philosophies and practices in written feedback. Citing findings from the research on teacher feedback, Lee stated that although providing feedback on student writing is important, teachers often described the task as "frustrating, grueling, anxiety-ridden, tedious, and unrewarding" (p. 13). Lee sought to understand why teachers held these beliefs and identified "ten mismatches" (p. 13) between what teachers believe about feedback and the feedback they actually provide. The study results revealed that teachers focused primarily on sentence-level errors and provided feedback that students find difficult to understand or that they cannot act on. Teachers continued to engage in these practices despite believing that they were not effective. Lee concluded by calling for

more research to understand why teachers continue to engage in feedback practices they deem ineffective and frustrating.

In another study, Lee (2009) investigated L2 teachers' inclination to implement changes in their feedback practices and their opinions about what facilitates or inhibits change. The researcher identified ten research-based feedback practices and questioned study participants about their use of the ten practices and their perceptions of them after participating in a summer professional development workshop. The study results revealed a majority of teachers were not using many of the ten practices, and that they perceived major stumbling blocks to be lack of professional development in specific research-based feedback practices and large class sizes that make the feedback process overly time consuming. The results also revealed a "chasm between what teachers think they should do in feedback and what they do . . . in reality" (p. 9). In response to this chasm, Lee argued that teachers must better "understand how feedback practices are tied to their philosophy of the teaching and learning of writing" (p. 9) in order for them to change their instructional practices with regard to feedback. Lee concluded by calling for more teacher education on feedback practices.

Lee (2011b) conducted another study by analyzing the written feedback comments on compositions from students in Grades 7–11 and interviewing L2 teachers to understand the teacher feedback and uncover problems with feedback practices. The interview data revealed that many teachers were "overwhelmed by enormous marking loads" (p. 379) and that most considered "marking students' writing as a chore, something to be gotten out of the way as soon as possible" (p. 378–379). The analysis of

written feedback comments revealed that the majority of comments focused on direct correction of sentence-level errors and that many instructors were acting as copy editors for student papers. The analysis also revealed that some instructors provided "detailed written commentary" but did not give students opportunities to act on the feedback (p. 389). Lee contended that such teacher-centered practices not only add to instructors' frustration with the marking process but that they also amount to "inept feedback" (p. 287) because they cause students to become "passive recipients of learning" (p. 387). Lee concluded by suggesting that instructors shift their focus from a teacher-centered approach to a student-centered approach by focusing less on error correction and technical aspects of writing, allowing students to write multiple drafts, and by having students engage in peer and self-evaluation of their writing.

In another recent study, Lee (2014) sought to understand the perspectives of secondary school teachers in Hong Kong who had implemented innovative feedback approaches. Lee contended that there is a "huge gap between the ideal and the reality" (p. 24) of feedback practices in writing classrooms. Lee asked teachers what innovative feedback practices they used, why they used them, and what challenges they faced in doing so. Teachers reported that they use practices such as focused coded feedback and peer evaluation in order to promote students' self-regulation and reflective practices in connection with the writing and revision process. One challenge that the teachers faced was a dearth of cooperation and support from colleagues, which left them feeling isolated and hindered their attempts to innovate their feedback practices. Other challenges included the embedded school culture with regard to feedback on student writing,

increased workload, and time constraints in implementing the feedback innovations.

Despite these challenges, teachers reported that they "formed a better understanding of

effective feedback in writing" (p. 35), which led to an increase in their self-efficacy as

writing teachers. Lee concluded that when teachers challenge themselves to innovate

their pedagogical practices, they engage in professional development. In order for such

innovations to be successful, however, Lee recommended that teachers' efforts be

supported by school system as a whole.

In two related studies, Harran (2011) and Hyland (2013) investigated L2 students'

perceptions of teacher feedback. Harran found that the effect of feedback on writing

performance was minimal unless students were given multiple opportunities to revise

based on teacher feedback. Harran further suggested that teachers take into account

cultural differences in perceptions about how much student-teacher dialogue is normal

and expected. Hyland explored undergraduate L2 students' "perceptions of hidden

messages" in instructors' written comments and the impact such perceptions have on

"students' attitudes to their field of study, disciplinary writing, to learning and to teacher-

student relationships" (p. 180). According to Hyland, students perceived that teacher

comments "convey the idea . . . that writing is merely a summative activity" (p. 184) as

opposed to an opportunity to learn about their discipline. Hyland also found that students

perceived their teachers believed writing conferences were of minimal value, and

students held that teachers' feedback practices communicated the message that they were

a low priority for many professors. Hyland concluded by calling for more research to

elucidate effective feedback practices and align L2 student perceptions with instructors'
feedback practices.

Junqueira and Payant (2015) conducted a case study of one novice L2 teacher to
compare the teacher's perceptions of best practices for writing feedback and the actual
feedback practices in which the teacher engaged. Data from the teacher interviews
revealed that the teacher's perceptions of effective feedback were consistent with best
practices for L2 writing instruction. However, the teacher was surprised at the amount of
help L2 students would need and reported that providing effective feedback was a time-
consuming process. The teacher also reported "feelings of exhaustion and conflict" (p.
28) resulting from the desire to help students, combined with limited time constraints.
The teacher concluded that she needed more practice in providing feedback to make it
useful for students and manageable in terms of teacher workload. In their concluding
discussion of the case study, Junqueira and Payant indicated that the study findings could
provide insights into teacher preparation programs for L2 writing teachers. In related
research, Martin (2015) conducted a study to analyze the rhetoric of teacher comments on
student writing in an undergraduate L2 writing course. Martin's analysis revealed that
"the most common type of comment . . . was grammar/mechanics feedback" (p. 22).
Martin also found that the length and content of teacher comments affected the degree
and quality of student revisions; longer comments often resulted in faulty student
revisions on subsequent papers whereas comments that included questions or provided
students with specific suggestions resulted in positive student revisions.

Drawing from the corpus of research on feedback, the authors (Killion, 2015; Stone & Heen, 2014) of two recent texts have each forwarded a definition of effective feedback. According to Stone and Heen (2014), feedback is:

> any information we get about ourselves. In the broadest sense, it is how we learn about ourselves from our experiences and from other people . . . Feedback can be formal or informal, direct or implicit; it can be blunt or opaque, totally obvious, or so subtle that you're not sure what it is (p. 4).

Similar to Price, Handley, and Millar (2011), Killion (2015) defined feedback as "a dynamic, dialogic process that uses evidence to engage a learner . . . in constructing knowledge about practice and self" (p. 13). These definitions align with findings from the research and support the conceptualization of feedback as a dialogic process as opposed to a one-way transaction between the instructor and the learner. In the context of this study, by enabling teachers, students, and peers to engage in ongoing written and oral feedback dialogue about student writing, Kaizena is aligned with this conceptualization of effective feedback.

Student and Teacher Perceptions of Feedback

Differences exist in student and teacher perceptions of feedback. Straub (1996) surveyed first year college writing students to uncover their perceptions about instructor feedback and found they preferred comments that were detailed, not controlling, and that provided specific information about how to improve their writing. Students disliked comments that they perceived as overly critical and directive or vague, for example, one word comments such as *awkward*. Noting these results, Straub recommended that

teachers consider possible differences between their own intentions in the feedback and how students perceive it. Bardine (1999) conducted a similar study with high school students in an honors English class to determine their feedback preferences. The results were similar to Straub's in that students wanted more specific comments from teachers, and they found some written comments, such as symbols or crossing out, difficult to understand. Students in the study also expressed a preference for receiving praise comments because they boosted their self-esteem and made them feel as though they were improving. Bardine made several recommendations based on the study results, including that teachers be specific and detailed, that they include positive as well as corrective comments, and that they ensure students understand the symbols they use in written feedback comments.

In another study, Chanock (2000) explored the gap in perception between students and instructors' understanding of written feedback comments. Chanock asked higher education students and their instructors, in various disciplines to interpret a common marking comment:"Too much description; not enough analysis" (p. 95). Results showed that "almost half of the students did not understand this comment in the way their tutors intended it" (p. 95), whereas over 80% of instructors perceived that they had adequately explained the differences between analysis and description.

Higgins, Hartley, and Skelton (2001, 2002) investigated he value and effect of assessment feedback for higher education students. Writing from the perspective that feedback is "an essentially *problematic* form of communication" (2001, p. 273, emphasis in original), Higgins et al. (2001) argued for the development of new feedback

communication models that are more dialogical and that take into account "issues of discourse, identity, power, control, [and] social relationships" (p. 269). In their 2002 study, the researchers found that higher education students viewed feedback negatively if it lacked detail, was too impersonal, or was vague. Students also expressed difficulty in interpreting instructors' handwriting. Despite these negative views, students reported that they deserved and expected feedback and that "97% of the students indicated that they usually read the written feedback [and] . . . 82% claimed to pay close attention" (p. 57) to it. As other feedback researchers, cited above, have suggested, Higgins et al. (2002) recommended that instructor feedback should do more than point out errors on surface-level details, such as grammar and spelling; it should provide students with specific information they need to improve their written texts.

Weaver's (2006) mixed methods study of business and art and design higher education students' perceptions of feedback yielded similar results to earlier studies (Chanock, 2000; Straub, 1997). Students reported that while they valued instructor feedback, they also believed that it could be improved. They suggested that feedback is often too general and vague, that it lacks specificity, and it focuses primarily on what they did wrong. Weaver discussed various reasons why instructors' feedback is inadequate, including that some instructors believe students do not read feedback and that instructors may incorrectly assume students understand discipline and assessment specific discourses. Given these findings, Weaver suggested that teachers reexamine "their beliefs on the purpose of feedback" (p. 392) and their own assumptions about students' ability to comprehend discipline and assessment specific discourses.

Using a conceptual framework of discourse, power, and emotion in which feedback is conceived of as a social process, Carless (2006) examined survey data from eight universities in Hong Kong to decipher differences in the perceptions of feedback between students and instructors. The results indicated that instructors thought they provided detailed, helpful, and fair feedback to students, and they believed students were primarily interested in grades. Conversely, students thought instructor feedback was vague, difficult to read, and unhelpful, and they had mixed feelings about how fair it was. The data revealed two areas of agreement between the groups. Students and instructors both agreed that students struggle with understanding feedback and that feedback messages engender emotion. Carless concluded, as have other researchers cited above, by calling for the adoption of a dialogic approach to feedback.

Glover and Brown (2006) noted similar results in their investigation of higher education science students' perceptions about instructor feedback. They discovered that students believe they receive very little written feedback and that the written feedback they do receive is unhelpful. Just as Weaver (2006) and Carless (2006) argued, Glover and Brown reiterated the point that "students increasingly appear not to understand the taken-for-granted academic discourse that underpins assessment criteria and the language of feedback" (para. 38). In their review of instructors' feedback practices, Glover and Brown also found that much of the feedback was focused on justifying a grade as opposed to providing specific suggestions for improvement. The researchers contended that written comments that serve only to justify grades "may as well not be given at all" (para. 65). Based upon their findings, Glover and Brown suggested that faculty

emphasize achievement over grades, ensure alignment between the assessment criteria and written feedback, and provide statements that explain both the strengths and the macro-level weaknesses in student papers.

In related research, Smith (2008) argued that providing comments on students' essays is "one of the most time consuming, frustrating tasks" that faculty engage in and that grading papers is "a lonely and often painful" endeavor (p. 325). In order to get a sense of how students use the feedback that instructors spend so much time producing, Smith surveyed higher education students in an introductory marketing course to identify how they used instructor feedback on their essays. The results indicated that students did read the comments, found them helpful for improving subsequent papers, and wanted to know what they did correctly and incorrectly. Results also indicated that students found instructors' written symbols difficult to decipher and that they were "lukewarm" (p. 328) about instructor comments on mechanics, grammar, and spelling and were less likely to use these feedback comments to improve future papers. Smith concluded that instructors should not feel "that their time spent in commenting on essays . . . was wasted" because, according to the study results, students valued and used teachers' comments to improve future essays.

Poulos and Mahony (2008) investigated the effectiveness of instructor feedback by conducting focus group interviews with higher education students in Sydney, Australia. Results of their study indicated that feedback effectiveness depended upon students' perceptions of the accessibility of feedback, its impact on their academic work, and the perceived credibility of the instructor providing it. While some differences in

students' perceptions were found, overall, students in the focus groups expressed preferences for timely, detailed feedback and clear and consistent assessment criteria (p. 153).

In a similar investigation, Walker (2009) found that higher education students preferred explanatory, actionable feedback that would help them improve future work. Walker also found that students perceived over half of the comments they received as unusable because they either could not understand them or needed more explanation to improve their work. Pokorny and Pickford (2010) conducted interviews with higher education students, which revealed similar findings to Poulos and Mahony (2008) and Walker (2009) in that students perceived written feedback as unhelpful when they had no opportunity to act on the feedback and revise their work. In addition, Pokorny and Pickford found that classroom climate and student teacher relationships affected how students viewed feedback effectiveness. Ferguson's (2011) results were similar to those of Poulos and Mahony, Walker (2009), and Pokorny and Pickford (2010). Ferguson's student perception study revealed that students preferred feedback that was personalized, timely, and detailed enough to be actionable. Students also expressed their dissatisfaction with feedback that was largely corrective and did not provide positive comments on their work.

Ackerman and Gross's (2010) study of students' perceptions about written feedback comments yielded different results than the results from the Poulos and Mahony (2008) study and the Walker (2009) study. Ackerman and Gross used an experimental design in which marketing students were randomly assigned to the following three

different hypothetical feedback scenarios: no feedback, low feedback, and high feedback.

Students were then surveyed about their perceptions of the feedback they received.

Results showed that students favored "fewer rather than more feedback comments" and

that more feedback "may have as negative an effect on students' perceptions as does

providing no feedback" (p. 176). Ackerman and Gross highlighted the emotional

components inherent in the feedback process and suggested that high amounts of written

feedback were "discouraging and threatening to a student's self-perception, and,

particularly for weaker students, carr[ied] substantial risk of being misunderstood" (p.

174). Ackerman and Gross further reported that students in the high feedback group

viewed instructors as overly critical, unfair, and unlikeable. A limitation of this study,

however, was the hypothetical scenarios in which students had no opportunity to improve

their grade. Thus, Ackerman and Gross suggested that in some cases, high amounts of

feedback "may be seen as quite desirable" (p. 179) but cautioned instructors to be

sensitive to the emotional responses that high amounts of feedback may produce,

specifically in weaker students who may need the feedback the most.

Price, Handley, Millar, and O'Donovan (2010) investigated student and faculty

perceptions about written feedback by drawing on data from a three-year student

engagement study. The study revealed that although students wanted feedback, they did

not consistently read it and frequently did not comprehend it for various reasons.

Students reported that feedback was often illegible, negative, and vague. Price et al.

contended that the ambiguity of feedback was due to students' lack knowledge about the

discourse within particular disciplines and their lack understanding of "pedagogic

concepts and processes" (p. 286). Faculty surveyed in the study reported that they

believed feedback "made a contribution to learning" yet they also "lived with dissonance

about its benefits" (p. 282), citing their belief that students rarely act on the feedback they

receive. Price et al. suggested that measuring feedback effectiveness is "difficult and

perhaps impossible" (p. 287), but in their view, students are the best judges of feedback

effectiveness. Just as Nicol (2010) and others (Carless et al., 2011; Stern & Solomon,

2006) have suggested, Price et al. concluded that feedback is most effective when

instructors take a dialogical approach because it can uncover instructors' tacit knowledge,

thereby bridging gaps in students' understanding of pedagogic and discipline specific

discourses. In a more recent study, Price et al. (2011) rejected the notion that feedback is

a product and reiterated their call for a "more holistic, socially-embedded

conceptualisation [sic]" (p. 879) of feedback for learning. Study data revealed that the

extent to which students engaged with instructor feedback was "largely dependent on

previous feedback experiences" (p. 894). Given this finding, Price et al. recommended

that instructors perceive feedback not as a product but as a dialogic and ongoing process.

In this way, they asserted, students will have more positive feedback experiences and as a

result will engage more frequently and in more depth with instructor feedback.

Bailey and Garner (2010) examined teachers' perceptions of written feedback and

found that faculty understood the formative function of feedback but believed that

institutional policies and student misunderstanding were barriers to feedback

effectiveness. Bailey and Garner stated that faculty "have many reservations about both

the processes of providing feedback and its pedagogical value" (p. 194). Citing the

varied findings in the literature, they called for further research on the conditions under which students and teachers perceive feedback as effective.

In other research, Wingate (2010) found differences in the extent to which first year writing intervention students used feedback to improve subsequent drafts. Some students used the feedback and improved their drafts, while others largely ignored it. Interviews with the students revealed that motivation, enjoyment of the subject, self-perceptions, and perceptions about the usefulness of the feedback accounted for differences in the way students responded to feedback comments. Wingate's study also revealed significant differences in instructors' "comments' style and tone" (p. 526) that served as barriers to students' application of feedback, particularly for weaker students, as Ackerman and Gross (2010) also pointed out. Wingate suggested that teachers consider students' motivation and writing self-perception when they provide comments on student drafts.

Orsmond and Merry's (2011) study revealed a similar disconnect between student and teacher perceptions of feedback usefulness. The researchers interviewed higher education instructors and students and found that the instructors' "intentions may not be accurately perceived and acted on by students" (p. 125). These findings led Orsmond and Merry to conclude that students did not perceive the potential for feedback to enhance learning because tutors provided one-way feedback that did not promote dialogue. Orsmond, Maw, Park, Gomez, and Crook (2013) furthered these assertions by proposing a framework for implementing dialogic feedback. Orsmond et al. developed the GOALS (Grasp, Orient, Actions, Learning, Strategies) framework as a synthesis of other proposed

models for dialogic feedback (Carless et al., 2011; Hattie & Timperley, 2007; Nicol & MacFarlane-Dick, 2006). The acronym's five components state that students must understand the objective or purpose for learning; become self-regulated learners; engage in active dialogue, self-evaluation, and peer evaluation; and implement strategies for improving their work. The role of the instructor, according to this model, is to facilitate opportunities for students to engage in each component of the framework.

In another recent study, Orsmond and Merry (2013) explored differences in feedback uptake between high and non-high achieving biology undergraduate students. Orsmond and Merry found that high achieving students had stronger self-assessment skills and a keener awareness of the role that self-regulation and peer discussion plays in the learning process than non-high achieving students. Nonhigh achieving students "seemed to be primarily externally regulated" (p. 747) and relied more on teacher comments than self-assessment of peer dialogue to develop their sense of agency for writing. Orsmond and Merry called for more research into students' experiences with teacher feedback and the development of more student-oriented models of effective feedback (p. 748).

Chang et al. (2012) conducted a study to compare undergraduate students' perceptions of handwritten and electronically written feedback. The results were consistent with the literature in that students perceived electronically written feedback as more timely and legible and of higher quality than handwritten feedback. The results prompted Chang et al. to declare that teachers should use technology to "enhance or strengthen their capabilities to provide feedback" (p. 19) on student writing.

In two similar studies, Blair and McGinty (2013) and Gamlem and Smith (2013) explored students' perceptions of feedback in higher education and lower secondary schools, respectively. Blair and McGinty hypothesized that a difference exists between the literature and students' actual experiences with instructor feedback in higher education courses. Therefore, Blair and McGinty investigated students' perceptions about whether or not feedback dialogues occur in the learning process and "the value they place on them" (p. 466). Blair and McGinty found that students valued dialogic feedback, yet the most common form of feedback they received was "a transmission process with lecturers telling students about their feedback" (p. 474), rather than engaging in dialogues with them. Gamlem and Smith interviewed students in Grades 8–10 to determine their perceptions about the usefulness of the feedback they received. Citing previous findings in the research literature, Gamlem and Smith highlighted the importance of the social context, in particular classroom climate, in determining how feedback is received. Gamlem and Smith's findings were consistent with those of Jonsson (2012) and Evans (2013) in that students reported that the classroom culture and their relationship with the teacher and their peers influenced their perceptions of feedback and the extent to which they provided feedback to peers and used teacher and peer feedback. Additionally, students perceived grades to be "useless" (p. 162) because they did nothing to further their understanding of their performance or how to improve it in the future. Gamlem and Smith also found that although students said they valued opportunities for dialogic feedback, they rarely experienced such opportunities.

A recent large-scale study that Turnitin (2013) conducted was consistent with earlier findings from studies of students' perceptions of feedback. Key findings of the investigation were that most instructors' feedback was handwritten, despite the ubiquity of digital technologies. Of the higher education and high school students surveyed, 66.5% said they received "general, overall comments" (p. 3) and fewer than half of students rated feedback as helpful. Finally, a salient point for the present study was the finding that 45% of students "rated voice/audio comments as helpful, but only 3%" (p. 7) said their teachers provided audio feedback. Of note was the fact that both higher education and high school students and faculty were included in this study. A significant limitation of this study, however, is that it was conducted and authored by the Turnitin corporation and was not published in a peer-reviewed journal.

Two other recent studies (Brown, Harris, & Harnett, 2012; Harris, Brown, & Harnett, 2014) have provided more reliable insights into primary and secondary students' perceptions of feedback. Brown, Harris, and Harnett (2012) explored the beliefs that primary and secondary school teachers in New Zealand held about the purpose of feedback. Brown, Harris, and Harnett found that these teachers believed assessment feedback should be formative in nature and its purpose is to focus on "improved learning instead of student well-being" (p. 968). In a similar study, Harris, Brown, and Harnett (2014) surveyed primary and secondary students in New Zealand "to examine how they experience, understand, and respond to feedback" (p. 107). Findings from the study indicated that despite efforts in New Zealand to promote student-centered assessment, most students still experienced and endorsed teacher-directed feedback. Despite this, a

majority of students' reported that their emotional experience of feedback was positive and that "while they struggle with the consequences of assessment, they are positive about the benefit of feedback for their learning even when" (p. 127) feedback came in the form of grades or scores. These results prompted Harris, Brown, and Harnett to recommend that teachers "shoulder the burden of providing feedback from every assessment opportunity" (p. 127) so that students will continue to regard all forms of feedback as opportunities to learn as opposed to forms of judgement.

In related research, Watkins et al. (2014) conducted a study of healthcare students' perceptions of feedback received through the GradeMark feature of Turnitin (2016). Watkins et al. found that differences in the content of instructors' comments affected students' perceptions of the feedback but that these were "issues that GradeMark may not necessarily address" (p. 27). As a result, Watkins et al. advocated for a "pragmatic and planned approach" (p. 27) to the provision of electronic feedback.

Similar to Orsmond et al. (2013), Bols and Wicklow (2013) drew from the research literature on instructor feedback to propose a framework to describe students' expectations for effective instructor feedback. Bols and Wicklow described the TALK acronym by stating that, according to the research, students want feedback to be timely, accessible, legible, and "konstructive" [sic] (p. 19). In a recent volume of complied articles about dialogical feedback (Merry et al., 2013), Bols and Wicklow, Carless (2013), McArthur and Huxham (2013), and Taras (2013) all argued that dialogic feedback, which promotes social interaction among students, peers, and instructors, is more effective than one-way feedback from the instructor only.

In their recent study on student and teacher perceptions of feedback in higher education, Weatherly, Jennings, and Hall (2014) found that "significant discord" (p. 1) in perceptions of feedback effectiveness persist. Weatherly et al. reported that a majority of students expressed a preference for verbal feedback, but that teachers preferred to provide written feedback. Weatherly et al.'s study revealed that some higher education students "may not want extensive feedback throughout the paper" (p. 21) and prefer receiving a grade along with "comments to explain major errors" in the students' work. Citing the time-consuming nature of providing feedback, Weatherly et al. recommended that instructors provide targeted, as opposed to copious, feedback. They concluded by recommending the use of new technologies that "have afforded many new and innovative ways" (p. 25) for instructors to provide feedback.

In related research, Ekholm, Zumbrunn, and Conklin (2015) investigated how higher education students' perceptions about feedback on their writing influenced their writing self-efficacy. Ekholm et al. believed that students' perceptions of feedback could be a mitigating factor in their writing self-efficacy, motivation for writing, and their performance on writing tasks. Ekholm et al.'s analysis of student survey responses revealed that "writing self-efficacy was determined to have a significant effect on writing feedback perceptions" (p. 202) and that writing self-efficacy and writing self-regulation were also significantly related. These findings are consistent with Bandura's (1991) social cognitive theory in that self-efficacy beliefs are a mediating factor in students' self-regulatory behavior and their perceptions of the writing feedback they receive.

Technology-Mediated Feedback for Student Writing

Although the focus of this study was on teacher-generated feedback, findings

from some of the literature on computer-generated feedback and the role of technology in

writing instruction informed the study and are, therefore, discussed here. Landauer et al.

(2009) investigated a web-based formative assessment technology and found that

students reacted positively to the immediacy of the feedback they received through the

program. As a result, Landauer et al. suggested that technologies can be used to enhance

writing assessment and instruction by increasing the "speed, frequency, focus, [and]

flexibility" (p. 51) of feedback messages. In a related work, Ebyary and Windeatt (2010)

studied the "impact of computer-based feedback" (p. 121) on Egyptian higher education

students' attitudes towards writing and their writing achievement. Ebyary and Windeatt

found that the computer-based feedback prompted 100% of students to produce "second

revised drafts of essays . . . [which] represented a significant change in their normal

writing" (p. 138) habits. Ebyary and Windeatt concluded that their results were not

generalizable and that more research is needed to determine if a combination of computer

and teacher-generated feedback would be optimal.

In related research, Boling and Beatty (2010) explored feedback processes in

online discussion forums and found that students benefitted from providing and receiving

peer feedback, a finding that supports Bandura's (1991) social cognitive theory and the

conceptualization of feedback as a dialogic process (Carless, 2013; Carless, Salter, Yang,

& Lam, 2011; McArthur & Huxham, 2013; Merry, Price, Carless & Taras, 2013; Nicol,

2013; Nicol & McFarlane-Dick, 2006; Taras, 2013). Wollak and Koppenhaver (2011)

explored the use of an online technology that "promoted writing in a virtual environment" (p. 2) and peer interaction among "adolescents with significant writing disabilities" (p. 1). Findings indicated that use of the technology increased students' motivation for and achievement in writing, in part as a result of "writing for real audiences in valued social contexts" (p. 13). Wollak and Koppenhaver concluded by calling for more research into the role of technology in writing instruction for adolescent students.

In other related research, Hepplestone, Holden, Irwin, Parkin, and Thorpe (2011) conducted a review of the literature on technologies that teachers might use to "encourage students to engage with" (p. 117) and act upon assessment feedback. Through their review, Hepplestone et al. concluded that "a growing number of studies support the hypothesis that technology has the potential to enhance student engagement with" (p. 123) instructor feedback. In two separate studies, Rolfe (2011) and Buckley and Cowap (2013) explored instructors' perceptions of using Turnitin (Turnitin, 2016) as a formative assessment tool. Rolfe (2011) found that both students and instructors responded positively to Turnitin as a formative feedback tool and that it "encouraged students to develop their writing" (p. 701). Buckley and Cowap found that teachers had mixed feelings about the tool. Some teachers reported that Turnitin saved them time while others encountered difficulties with it. Wilson, Olinghouse, and Andrada (2014) conducted a study of the effects of automated feedback on students' writing in Grades 4–8. Study findings indicated that the automated feedback produced "a very minor [pre-revision] gain" (p. 111) but that the gain increased over time with subsequent drafts.

Wilson, Olinghouse, and Andrada also found that the automated feedback had no effect on students' ability to transfer learning from one written assignment in which they received automated feedback to another in which they received no automated feedback. In discussing their findings, Wilson, Olinghouse, and Andrada called for more research on the role that differences in the content of automated feedback play in students' ability to transfer learning gained through feedback on various writing tasks.

Purcell, Buchanan, and Friedrich (2013) conducted a national survey of high school Advanced Placement (AP) and National Writing Project teachers to determine their perceptions of the impact that digital tools have on student writing and how writing is taught in high schools. Purcell et al. found that a large majority of teachers agreed that digital tools provide students with "a wider and more varied audience . . . encourage greater collaboration among students . . . encourage student creativity and personal expression" (p. 2), and their use leads to higher motivation and increased engagement for writing among students. Despite this finding, teachers also expressed concern that digital tools are a distraction for students, that they cause students to rely on formulaic writing tactics and put minimal effort into their writing, and that they can lead to student confusion about the correct application of formal versus informal writing in various genres. Moreover, despite their positive views about the use of digital tools, "more than two-thirds" of the AP and National Writing Project teachers who were surveyed rated their students' overall writing performance as "fair or poor" (p. 3). These results are troubling, given that Purcell et al. characterized the population of AP and national

Writing Project teachers who participated in the study as "leading edge teachers who are . . . beneficiaries of resources and training not common" (p. 68) to all high school teachers.

Several researchers have published recent articles describing best practices for providing digital feedback and the various digital technologies that exist for providing feedback to students (Costello & Crane, 2013; Henderson & Phillips, 2014; Leibold & Schwartz, 2015; Yuan & Kim, 2015). Costello and Crane (2013) asserted that although educators most commonly conceive of feedback as written comments on student work, "with the use of technology and thinking outside of the box" (p. 218), teachers can deliver electronic feedback to students in novel ways. Henderson and Phillips (2014) presented a review of best practices for feedback, types of assessments feedback, and various media for the provision of feedback. Referring to research conducted in the 1990s that showed promise for digital feedback tools, such as e-mail and video, Henderson and Phillips pointed out that "there is a gap of almost 10 years before researchers looked again at digital video" (p. 3) as a viable means of providing assessment feedback to students. Henderson and Phillips summarized the benefits of audio-visual feedback found in the literature, stating that audio-visual feedback is more detailed, clear, individualized, and personal than written feedback and that it may be more efficient to produce than written feedback. Henderson and Phillips concluded by calling for the development of clear guidelines for producing audio-visual feedback. Leibold and Schwartz (2015) described best practices for online feedback, which they defined as "information from an educator, peer, or other in an online format, such as the written word, audio file, video, pre-programmed automatic reply, or live web-based

conferencing" (p. 35). Citing findings from the research literature that indicate student dissatisfaction with current feedback practices, Leibold and Schwartz argued that adherence to best practices for feedback is necessary to counteract the problem. Leibold and Schwartz contended that, when providing online feedback, instructors should use students' names, convey a positive tone, ask questions to promote analysis, and provide frequent, immediate, balanced, and specific feedback. Leibold and Schwartz concluded by calling for more faculty development to improve instructors' skill in providing online feedback to students. Yuan and Kim (2015) conducted a review of the literature on effective feedback and provided suggestions for the effective use of free online technologies for providing feedback to students. Specifically, Yuan and Kim discussed the use of a media-sharing tool, a collaborative tool, and a screencasting tool and suggested that all three tools can provide students with more "opportunities for students to receive feedback from multiple sources and to engage in additional communications" (p. 427) about assessment feedback from instructors and peers.

In another recent study, Blankenship and Margarella (2014) conducted a review of the literature to explore "the relationship between writing instruction and technology" (p. 146) in secondary classrooms. Blankenship and Margarella's review revealed that technology enhanced students' motivation for writing and their writing performance, and it also enabled instructors to "give effective and efficient feedback" (p. 146) to students on their writing. These findings led Blankenship and Margarella to suggest that teachers should merge new technologies with more traditional, paper-based formative assessment

strategies in order to provide students with writing instruction that is more in keeping with the demands of the digital age.

In related research, Zheng, Lawrence, Warshauer, and Lin (2014) investigated middle school students' use of Google Docs to produce written texts and exchange written feedback with peers and the teacher in English language arts classes. The study findings revealed that students "were enthusiastic about using Google Docs" (p. 220) for writing, editing, and exchanging feedback. Zheng et al. also found that Google Docs facilitated feedback exchanges "between and among students and their teachers" (p. 222) better than word processing software because Google Docs enabled users to "interact with each other conveniently and immediately" (p. 218), making the writing and feedback process dialogic and iterative as opposed to one-way and static. Zheng et al. recommended that teachers use cloud-based tools in the teaching of writing in English Language arts classrooms.

Audio Feedback

Audio feedback is any instructor feedback that is spoken and recorded rather than written by hand or typed in a digital document. The following section presents an analysis of research on instructors' use of audio feedback on student writing. Empirical evidence indicates that instructors' use of audio feedback has developed as audio recording technologies have evolved and improved in their functionality over time. The section begins with a discussion of early research on audio feedback using nondigital technologies such as the dictation machine, the cassette tape recorder. This is followed by an analysis of research studies of audio feedback in digital online environments. The

section concludes with a discussion and analysis of research on instructors' use of digital audio feedback in face-to-face learning environments.

Audio feedback mediated by nondigital technologies. The concept of using audio technology to provide formative feedback is not new to educators and researchers who envisioned its potential to expedite the feedback process for teachers and provide individualized instruction for students. Early research, which was primarily conducted on the use of cassette tapes, produced promising results even in the face of technological glitches associated with clunky recording devices (Hunt, 1975; Johanson, 1999; Klammer, 1975; McGrew, 1969; Sommers, 1989; Yarbro & Angevine, 1982). McGrew (1969) published an experimental study comparing the use of a dictation machine to written comments in the margins of composition students' papers as a means of providing feedback. The results of the study indicated that students who received audio feedback showed improvement in their compositions more so than did those who received handwritten comments in the margins. Even though McGrew indicated that the results were "too indeterminate" (p. 13) to conclude that the audio feedback was superior, McGrew suggested that audio feedback "has merit for improving composition" (p. 13) and that it was worthy of further research.

During the 1970s, both Hunt (1975) and Klammer (1975) published reflections on their use of cassette tapes in their own teaching at the university level. Klammer noted that composition students were required to submit their essays along with a blank cassette tape upon which Klammer recorded himself reading the students' papers, and his comments, aloud. Along with the audiotape, Klammer also annotated the students'

papers by putting numbers in the margins that corresponded to each of the audio

comments. According to Klammer, the primary disadvantages of using this method were

the cumbersome quality and lack of mobility of the machinery and the expense involved

with acquiring tape recorders and cassettes. Klammer also reported that using a tape

recorder to comment on papers does not save time; in fact, he found that it took him "at

least half again as much time as the old method of writing a few cryptic comments and

hieroglyphic symbols" (p. 180). As discussed above, students perceived such comments

as vague and unhelpful. Klammer concluded that the majority of students reacted

positively to the audio feedback. Thus, Klammer argued that the advantages of using

audio feedback far outweighed the disadvantages because when using audio, the teacher

provided more and clearer feedback to the learner.

Related research about audio feedback described both the benefits and pitfalls of

using audio taped feedback. Yarboro and Angevine (1982) found similar results in their

comparison of written and tape-recorded teacher comments. Yarboro and Angevine

noted that students in the experimental group "showed strong support of the cassette tape

grading technique" (p. 396) because they found it more personal and easier to understand

than written comments. Teachers reported that the method was more time consuming,

but that students responded favorably to the audio feedback. Noting the positive findings

from the studies cited above, Sommers (1989) investigated tape-recorded feedback in a

case study of his experience with providing tape-recorded feedback for one student in an

undergraduate writing course for one semester. Sommers found providing audio

feedback enabled him to provide more detailed, clear, and individualized feedback and to

"serve as a role model for . . . students to emulate in peer" (p. 71) and self-editing. Sommers noted that technological glitches were a disadvantage, yet he concluded that the benefits of using audio feedback offset the disadvantages. LaFontana (1996) asserted a similar conclusion in a case study of her own experience with audio feedback, saying that despite some technical problems, audio feedback was her preferred method of commenting on students' work. According to LaFontana, using cassette tapes to provide comments "liberat[ed her] from the limitations of written comments [and] . . . from the confines of narrow margins" (p. 72) and allowed her to provide more detailed, personalized comments on student work. Unlike Klammer (1975) and Sommers (1989), however, LaFontana reported that using audiotapes saved time in the grading process.

Other researchers of audio feedback (Johanson, 1999; Huang, 2000) have suggested that audio feedback could be effective if used in conjunction with written feedback. Johanson's (1999) account of experience with using cassette recorded feedback to L2 students yielded similar findings to those cited above in that Johanson "found audio feedback to be an indispensable addition" (p. 43) to Johanson's writing pedagogy. Johanson suggested that audio feedback be used in tandem with written feedback comments, as Johanson found that some students preferred receiving written comments that they could refer to more easily than having to fast-forward, rewind, and pause cassette tapes to find specific comments. Huang's (2000) findings are in line with Johanson's assertion that using a combination of written and audio taped comments is optimal for instructors in L2 classrooms. Huang's investigation of student and teacher perspectives on audio versus written feedback revealed that students "viewed the audio-

taped feedback more favorably than the written feedback" and that the audio method was "more efficient in terms of teachers' time" (p. 199). In alignment with findings in the literature on the advantages and disadvantages of cassette recorded feedback, Huang found that teachers' audio feedback was more detailed than their written feedback but that technical problems were a significant disadvantage of the method.

The early research on cassette tapes revealed that instructor-provided audio feedback has some advantages over written feedback. However, problems with the technology inhibited the widespread use of audio feedback (Hunt, 1975; Johanson, 1999; Klammer, 1975; Sommers, 1989; Yarbro & Angevine, 1982). Advances in digital online and mobile technologies over the last 15 years, however, have enabled faster, more efficient production and distribution of audio files and thus, have reinvigorated interest in exploring audio as a tool for providing feedback to students.

Digital audio feedback in online learning environments. Early studies on using internet enabled technologies (e.g., France & Wheeler, 2007; Fell, 2009; Johnson & Keil, 2002; Jordan, 2004; Still, 2006) yielded similar findings to research using cassette tapes in that researchers found some advantages, but technical glitches were still a disadvantage. Throughout the 2000s and into the present decade, as Moore's (1975) Law suggested, Internet and mobile technologies have continued to evolve and improve. As a result, technological problems with audio feedback methods have diminished, and researchers have continued to uncover advantages to using audio feedback.

Johnson and Keil (2002) compared the use of voicemail an e-mail for providing feedback comments in online learning environments and found that the graduate student

participants perceived voicemail to have "significantly higher social presence" (p. 99). Johnson and Keil found that students perceived no significant difference, however, in the quality of the feedback based on the medium. They suggested that students' perceptions of quality may be more highly influenced by the content of the feedback than the medium through which it is delivered.

In their study of using asynchronous audio feedback in and online graduate Education course, Ice, Curtis, Phillips, and Wells (2007) found "extremely high student satisfaction with embedded asynchronous audio feedback" (p. 3) in comparison to text only feedback. The study further revealed that, "students were far more likely to apply higher order thinking and problem solving skills" (p. 17) when they received embedded audio feedback and that instructors reported a 75% reduction in the time it took them to provide feedback. Even though Ice et al. suggested that more research should be conducted to determine if their results would be generalizable to other subject areas, they concluded that it is "hard to argue *against* using audio commenting" given the results of their study (p. 19, emphasis in original).

In two further investigations of audio feedback, Ice and colleagues (Ice, Swan, Diaz, Kupczynski, & Swan-Dagen, 2010; Swan-Dagen, Mader, Rinehart, & Ice, 2008) found similar results. Swan-Dagen, Mader, Rinehart, and Ice (2008) investigated using Acrobat Professional (Adobe Systems, 2015) to provide audio feedback on graduate student literacy tasks and found that audio comments "contained not only more information but richer language" (p. 152) than written comments. Based on the findings, Swan-Dagen et al. maintained that using various technologies to provide audio comments

is a valuable and promising pedagogical practice. They concluded by asserting that research into technology-enhanced learning and its impact on students is imperative. In their investigation of students' perceptions of the values of various modalities of feedback, Ice et al. (2010) found that students preferred a combination of audio and written feedback. Ice et al. stated that "differing media modalities may be better suited to different feedback purposes" (p. 117); for example, they suggested that audio feedback might be less effective for providing feedback on micro-level aspects of students' work, such as punctuation, and more effective for providing macro-level comments on aspects such as content and organization. In their conclusion, Ice et al. reiterated their appeal for more research into audio feedback for learning.

In another study of asynchronous audio feedback in online learning environments, Oomen-Early, Bold, Wiginton, Gallien, and Anderson (2008) also found that students and instructors preferred audio feedback because they perceived that it improved instructors' social presence, student motivation and comprehension of course content, and student teacher relationships. Based on their findings and review of the literature, Oomen-Early et al. (2008) suggested that online instructors make audio feedback a routine component of their pedagogy.

Dixon (2009) explored the perceptions of students who received audio and text comments on a written essay submitted through a virtual learning environment and the instructors who provided the feedback. Dixon found that "an overwhelming majority of students were very enthusiastic about" (p. 1) the audio feedback. Moreover, teachers perceived that the audio feedback was more detailed, more personal and that it saved

them time in the commenting process. Thus, Dixon concluded that audio feedback "has the potential to facilitate discourse" (p. 3) that leads to enhanced student learning. In a similar study, Lunt and Curran (2010) investigated higher education students' perceptions of the use of audio feedback delivered in a virtual learning environment. The results of their study were in keeping with the findings from the research. Students in this study reported that they were "very positive and that . . . they were 10 times more likely to open audio files as compared to collecting written feedback" (p. 759). Lunt and Curran highlighted two matters for instructors to consider in their use of audio feedback, namely accessibility for hearing-impaired students, and the "potential halo effect in that audio is" a new a novel way of receiving feedback for students. Overall, however, their study affirmed the positive findings from earlier studies on audio feedback.

Moore and Wallace (2012) examined student and teacher perceptions of the effectiveness of audio feedback in an online learning environment. Teachers created audio feedback in the form of MP3 files that were distributed to students through an online learning management system (LMS). Study results revealed that both students and teachers reacted positively to the audio feedback. Teachers reported that audio feedback saved them time and allowed them to deliver more detailed comments when compared to providing written feedback in the online environment. Students perceived the audio feedback to be more personalized and more informative in helping them improve their work. Based on these findings, Moore and Wallace concluded that audio feedback could promote "inclusive online learning environments" (p. 10) in which students' backgrounds and skill levels are diverse.

In related research, Rockinson-Szapkiw (2012) compared doctoral students' perceptions about their learning outcomes when they received either written feedback only or both written and audio feedback in an online course. Rockinson-Szapkiw found that audio feedback enhanced students' perceptions of community and social presence in the course and that students who received both audio and written feedback "also had better learning outcomes" (p. 245) than those students who received text feedback alone. These results led Rockinson-Szapkiw to suggest, as other researchers recommended (Gould & Day, 2011; McFarlane and Wakeman, 2011), that providing both written and audio feedback to students is optimal for enhancing student outcomes and their perceptions about the instructor and the classroom community.

In two recent studies, Cavanaugh and Song (2014, 2015) explored the use of audio feedback in online learning environments. Cavanaugh and Song (2014) compared students' and teachers' perceptions of audio and written feedback "for student papers in online composition courses" (p. 122) and found that students reacted positively to the audio. Students reported that the instructor's tone of voice was more pleasant than the tone of the written feedback. Similar to the findings of McCullagh's (2010) study, Cavanaugh and Song found that teachers had "mixed feelings about the use of audio" due to their lack of familiarity with the technology. Cavanaugh and Song also found, as did McCullagh (2010) and Bibro et al. (2013), that teachers' written feedback tended to focus on micro-level corrections, whereas their audio feedback focused on global issues in students' papers. Cavanaugh and Song concluded by stating that, given the potential benefits of using audio feedback demonstrated in the literature, more research on

"teachers' methods of audio creation" of feedback is warranted. Cavanaugh and Song (2015) investigated "student' and instructors' approaches and preferences to audio and written" (p. 248) feedback in an online writing course. Results of the study indicated that students preferred the audio feedback because they found it to be more comprehensible than written comments. In contrast to the findings from their 2014 study, Cavanaugh and Song found that instructors also preferred audio feedback because providing it took less time than providing written feedback in an online course. Instructors also perceived audio feedback to be "a scalable option" (p. 253) for providing feedback in an online learning environment. Cavanaugh and Song's findings confirm similar findings in the research literature (Ice et al., 2010) that audio feedback has the potential to save instructors time in the feedback process.

Building on the work of Rotherham (2008) and Fell (2009), Chew (2014) investigated the impact of audio feedback on international students and their instructor in an online undergraduate business course. Chew surveyed students and the instructor to determine their perceptions of audio feedback, provided as MP3 files through the course LMS, and written feedback, provided through the GradeMark feature of Turnitin (2016). Chew found that both the international students and their instructors preferred audio feedback. Students reported that audio feedback was more personal, more engaging, and more understandable than written feedback. Students also noted that listening to the tone and expression of the instructor's voice and having the opportunity to listen repeatedly to the feedback helped them, particularly because English was a second language for many of the students. Instructors reported that providing audio feedback took the same amount

of time as providing written feedback, but they believed the audio feedback they provided was more personal and allowed them to praise and encourage students more than they could in written feedback. Despite some technical issues that students experienced, Chew recommended that audio feedback be used in providing formative feedback to international students.

In related research, Portolese Dias and Trumpy (2014) conducted a quantitative study to determine "the impact of written group feedback versus audio feedback" (p. 1) in an online learning environment. Portolese Dias and Trumpy. provided a control group of undergraduate students with individual and group written feedback; they provided the experimental group with written feedback and audio group feedback. The hypothesis for the study, which was confirmed through statistical analysis, was that "audio feedback would be viewed as more impactful to students' perceptions of instructor effectiveness and learning than written feedback" (p. 14). Portolese Dias and Trumpy also found that audio feedback increased students' perception of social presence in an online environment. Students reported that social cues, such as humor and emotions, were easier to detect when the instructor used audio feedback. Portolese Dias and Trumpy further noted that providing group audio "may take even less time than" (p. 15) providing group written feedback. Given this finding, Portolese and Trumpy suggested that audio feedback is an effective tool for providing feedback in online courses with large student enrollment.

Digital audio feedback in face-to-face learning environments. Jordan (2004) described his experience of using voice recording software to provide "a personalized

sound file of detailed oral feedback" (para. 1) to students. Jordan reported, as have the others cited above, that the students perceived oral feedback as more clear, detailed, personal, and understandable than written feedback. Disadvantages to the method included the need for shared network space and technical support from the university's computer services staff. Jordan also reported that the method was time consuming and that some students preferred receiving written feedback. Thus, Jordan suggested that instructors provide oral feedback as a supplement to their written feedback.

In a similar study, Still (2004) investigated students' reactions to receiving audio feedback "using Microsoft Word's commenting feature for embedding voice comments" (p. 460). Citing the findings from earlier research into audio feedback and her own use of it, Still contended that audio feedback is more detailed, that it "coaches rather than merely corrects . . . [and] maintains the nurturing attitude fostered by the teacher in the classroom rather than contradicting it with often nitpicky comments scrawled in red pen" (pp. 460–461). Still's survey of higher education students revealed that "an overwhelming majority" (p. 464) preferred receiving both oral and written comments as opposed to receiving written comments alone. Although Still concluded that the advantages of audio feedback outweigh the disadvantages, she acknowledged that providing audio commenting "represents a greater technological challenge" (p. 466) for instructors and recommended that instructors be provided with training before using the method.

France and Wheeler (2007) and Davis and McGrail (2009) investigated podcasting as a means of providing audio feedback to students in higher education and

elementary school, respectively. France and Wheeler's findings revealed that higher

education students' perceptions of podcast feedback were positive because the method

"provided enhanced opportunities to deliver both generic and individualised [sic]

feedback . . . and an improved student learning experience" (p. 9). An additional finding

was that some students' perceptions were influenced by the instructor's vocal tone.

France and Wheeler acknowledged that providing audio feedback via podcast was "labor

intensive" (p. 11) and that both students and instructors encountered technical glitches,

yet they maintained their stance that podcasting is a viable medium for providing

feedback for learning. Davis and McGrail described their use of "teacher podcasts to

assist [elementary] students in proofreading and revision" (p. 522). They reported that as

a result of podcasting, "students began to develop self-monitoring habits… [and] were

learning to notice how their writing sounded as it was written and to draw conclusions

about" (p. 526) how to revise and improve it.

Sipple (2007) and Merry and Orsmond (2008) explored the perceptions of higher

education students. Sipple investigated the perceptions of higher education students

enrolled in development writing courses and found that audio feedback "positively

affected students' perceptions of their motivation, self-confidence, revision practices,

student/professor bond, and overall learning" more so than did written feedback. Sipple

suggested that audio feedback might prove particularly effective for students who

struggle with writing. Merry and Orsmond investigated higher education students'

attitudes toward and use of feedback in the form of audio files sent via email. The

researchers reported that students "responded positively" (para. 3) to the audio feedback

and found it to be clearer, more in depth, and more personal than written feedback.

Students also reported that they would "implement the audio file feedback in different

and more meaningful ways" (para. 36) than written feedback. Drawbacks to receiving

audio feedback included technical difficulties, such as email system incompatibility with

the large size of the audio files. Another drawback was that instructors said the provision

of audio feedback was just as time-consuming as providing written feedback. Despite

these disadvantages, Merry and Osmond argued that audio feedback has the potential to

enhance student learning and is, therefore, worthy of further study.

In a more recent study, Macgregor, Spiers, and Taylor (2011) explored the quality

of feedback messages delivered through voice emails to higher education students.

Macgregor et al. defined quality feedback through existing models of quality feedback

(Black & William, 1998; Nicol & MacFarlane-Dick, 2006' Sadler, 1998; Shute, 2008).

Their findings were consistent with the literature in that students perceive voice email

feedback to be more personal, detailed, and understandable and that it is "almost twice as

fast as written feedback" (p. 53) for instructors to produce. Given their results,

Macgregor et al. concluded that using audio feedback in the formative assessment

process "provides improved opportunities for adhering to good pedagogical practice" (p.

55) and that the audio feedback met the definition of quality feedback in the research

literature to a greater extent than written feedback.

In other related research, King, McGugan, and Bunyan (2008) noted that

providing feedback is a time-consuming endeavor that many instructors perceive "as

wasted effort" (p. 145). In their study of higher education students and instructors'

perceptions of audio feedback, King et al. uncovered findings consistent with the literature in that audio feedback led to "improvements in both quantity and quality of feedback, [yet] savings in staff time were not realised [sic]" (p. 145). King et al. suggested that in order for audio feedback to become a routine practice, professors should be provided with professional development and guidelines for implementing "easy to use" (p. 160) audio feedback.

Rotherham (2009) conducted a large-scale study of students and teachers in three universities in the United Kingdom "to test the hypothesis that using digital audio feedback can benefit staff and students by saving professors time . . . and providing richer feedback to students" (p. 2). Data for the study were collected from questionnaires, interviews, and focus groups. The instructors in the study gave audio feedback using various methods, including podcasts and video feedback via Camtasia (TechSmith, 2015) software. Overall, Rotherham found that digital audio "can be used to give students quicker, better feedback" (p. 17) under certain conditions. The study results indicated that audio feedback was most effective when the instructor is familiar with the technology, records his or her voice rapidly, provides copious feedback, and when a quick and easy tool for creating the audio feedback is used.

In contrast to earlier findings suggesting that the personal quality of audio feedback enhances students' perception and uptake of feedback messages, Fell (2009) found that "the personal nature of the feedback was not always sufficient to enhance student learning and could in some cases negatively impact on student engagement" (para. 3). Students in the study reported that they found it difficult to connect audio

feedback messages to specific parts of their essays because unlike written feedback the audio was disconnected to the actual paper. Fell concluded that while the study findings supported a positive view of audio feedback, more research is needed to determine how factors such as vocal tone and proximity of the feedback to students' work can be mitigated.

In a study about audio and screencast feedback to support student learning, Rodway-Dyer, Dunne, and Newcombe (2009) found similar results to Fell's (2009) study in that they discovered some higher education bioscience and geography students perceived the tone of audio feedback more negatively than positively, while at the same time students reported that the advantages "of audio feedback [were its] greater depth and detail" (p. 63) and its clarity when compared with the legibility of written feedback. In a more recent case study of higher education geography students' perceptions of audio feedback, Rodway-Dyer, Knight, and Dunne (2011) found similar variance in students' perceptions about feedback in relation to the length of the audio file and the instructors' vocal tone. Similar to Fell's (2009) findings, Rodway-Dyer et al. (2011) also found that students "had difficulty finding the point in the essay to which the audio feedback referred" (p. 219) and that audio feedback did not save teachers time. Despite these disadvantages, Rodway-Dyer et al. contended that "a positive view toward audio feedback prevailed" (p. 230) among students and that further research into audio feedback technologies was needed.

Ekinsmyth's (2010) study of digital audio feedback uncovered similar student and instructor perceptions. Some students reported that the physical separation of audio

feedback from the paper was problematic, and others said the personal nature of the audio was "sometimes . . . uncomfortable" (p. 75). Despite these reservations, Ekinsmyth found that most students "were very positive" (p. 75) about audio feedback. However, Ekinsmyth also found that some instructors were reluctant and that there was "a general feeling . . . that there was little need to change the way feedback was provided because the written method worked for them in the past" (p. 76). Overcoming such resistance and tapping the potential of audio feedback demonstrated in the literature will, according to Ekinsmyth, require "a culture shift [and] a re-evaluation . . . of the goals, types, possibilities, and importance of feedback" (p. 76) among higher education faculty.

Middleton (2010a, 2010b, 2013a, 2013b) and colleagues (Cullen, 2010; McCullagh, 2010; Nerantzi, 2013; Nortcliffe & Middleton, 2011; Rossiter et al., 2010) have contributed several studies to the body of literature on audio feedback. In their 2010 work, Rossiter et al. (2010) described various "approaches to using audio feedback to support the learning and the learner," (p. 9) including instructor and student-generated audio notes and recording lectures using mobile technology devices. Rossiter et al. believed there is growing recognition that technology "can and should be used to enhance learning [and that] learning can be improved by engaging more of the senses" (p. 9). Thus, they advocated for the use of audio feedback as a means of improving teaching and learning. Drawing from research by Gibbs and Simpson (2004) and Nicol (2010), Nortcliffe and Middleton (2011) developed a survey to investigate higher education engineering and computing instructors and students' reactions to receiving feedback distributed via iPhone. The study results revealed that instructors found the iPhone

"more efficient than using an mp3 recorder [and that] nearly all students thought the [iPhone] feedback was timely, meaningful, detailed, and useful" (p. 287) in helping them improve. Nortcliffe and Middleton also found that iPhone audio feedback provided opportunities for students to engage in social learning because some of the students had listened to and shared the audio feedback with other students and family members.

McCullagh (2010) conducted a similar study of higher education students and writing instructors, "none of whom had previous experience in using audio" (p. 2) for giving or receiving feedback. The results showed that both students and teachers reacted positively to the audio feedback. Students found audio feedback "especially friendly, detailed, helpful, and motivating" (p. 3) and reported that it made them think teachers cared about them and devoted more time to providing the feedback because it was more personalized. Teachers found that, although it did not save them time, they "were giving more and better feedback in the same time" (p. 4) as providing written comments. McCullagh also reported that using audio feedback presented "a steep learning curve" (p. 5) for some teachers and that both teachers and students found the lack of proximity of audio feedback to the text problematic. Based on the results of the study, McCullagh recommended that instructors "aim to encourage good listening practice . . . keep an eye on time . . . do not attempt to script [audio] feedback . . . [and] use the pause" (p. 5) feature of the recording software or device. McCullagh also suggested that the use of audio be combined with written feedback and that audio feedback may be best suited for smaller classes.

Cullen (2010) compared his own use of three types of instructor feedback: using the track changes feature in Microsoft Word to provide written feedback, using video screen capture technology, and using audio feedback without video. Cullen found that track changes and video screencasts took about the same length of time as written feedback, whereas producing audio feedback "consistently required less time (up to 50% less) than" (p. 31) producing written or video feedback. Cullen further reported that students "expressed a clear preference for audio and video over written forms of feedback" (p. 32) and that recording audio was more natural and enjoyable for him than using Track Changes or recording screencasts.

Crews and Wilkinson (2010) conducted a similar comparison of undergraduate students' perceptions of visual, auditory, and written feedback. In this study, they pointed out that "postsecondary . . . educators have seen a decline in the writing skills of their students" (p. 400) and argued that providing written feedback using the Track Changes feature "does not enhance the learning process" (p. 400) because students merely accept all the changes without understanding the edits that the instructor inserted. Crews and Wilkinson advocated for a multisensory approach to feedback for two reasons. The first reason was that this approach improved the assessment of student writing. The second reason was that students perceived recorded feedback as more personal and positive that written feedback, and they enjoyed being able to listen to the recorded feedback numerous times from any mobile device. Based on the study results, Crews and Wilkinson stated that multisensory feedback "is an improvement over standard marking" (p. 410) on students' written work. In line with Crews and Wilkinson's findings,

Middleton (2010b) asserted that audio feedback is highly malleable; therefore, it enhances learner engagement by making feedback personalized. Middleton concluded by arguing that, "media-enhanced feedback can be thought of as a new operational space; one in which feedback looks, sounds, and feels different" (p. 39) yet is still in keeping with Nicol and Macfarlane-Dick's (2006) principles for effective feedback.

In two more recent works, Middleton (2013a, 2013b) reiterated these assertions and suggested educators adopt "a pedagogical, rather than technical, interest" (2013a, p. 2) in audio feedback. Middleton (2013a) pointed out that, given the ubiquity of mobile and other technological devices, audio feedback is now easy to record and listen to and that "the microphone provides an alternative to the pen" (p. 2). Citing the importance of graduates "to be confident and astute users of digital technology" (p. 3), Middleton argued that using digital media in formative assessment should be an "integral, not additional nor necessarily optional" (p. 5) pedagogical routine. In advocating for the use of audio feedback, Middleton (2013b) suggested that "educators have, in general embraced the benefits of digital writing tools" (p. 12) but are missing opportunities afforded by digital audio tools. Even though Middleton conceded that audio is "not a panacea" (p. 15), Middleton highlighted the advantages of using the spoken word. For example, Middleton stated that "audio . . . capture[s] rich interventions, exchanges and presentations [that] guide and share learning as it happens" (p. 11) and is more likely to be perceived as authentic, personal, and caring than written feedback. In addition, learners have the opportunity to listen to audio feedback an unlimited number of times and to share the feedback with other students, which not only helps students become

active, engaged listeners, but also promotes social learning through interactive discourse. Nerantzi (2013) presented similar conclusions in a case study she conducted of her own use of audio feedback. Nerantzi concluded that students perceived audio feedback positively because they were able to "relive the feedback" (p. 137), which not only improved their listening skills, but also helped them incorporate the feedback to improve their work.

In other related research, Wood, Moskovitz, and Valiga (2011) and Gould and Day (2013) explored student and instructor perceptions of audio feedback on learning in undergraduate nursing programs and uncovered similar results to those of previous studies (e. g., McCullagh, 2010). Wood Moscovitz and Valiga found that students' reactions to the audio feedback were positive overall, with the exception that "comments not embedded into the text [made] it harder to match particular comments with the text" (p. 542). The researchers also found that while most instructors found the process "efficient and pleasurable," (p. 542) some instructors found the learning curve for providing audio feedback difficult. Gould and Day suggested that "specialized training" might be necessary for some faculty members to be able to incorporate audio feedback into their assessment practice. In addition, Gould and Day reported "the majority of students" found the audio feedback to be "more detailed, personalised, [sic] and supportive" (p. 554) than written feedback. Gould and Day also found that instructors had mixed reactions to the audio feedback process. Some instructors thought it was "brilliant" (p. 563) while others felt less efficacious about it and reported feeling discomfort "hearing [their] own voice" (p. 563) and with the technical aspect of the

process. Despite the misgivings of some faculty, Gould and Day concluded that audio feedback "could contribute greatly to a student's learning" (p. 564) and recommended using audio as a complement to traditional written feedback.

McFarlane and Wakeman (2011) explored the use of audio feedback with higher education faculty members enrolled in a professional development module of study. McFarlane and Wakeman's findings were consistent with the research literature on audio feedback in that participants perceived the audio feedback as individualized, personal, detailed, and actionable. An impediment to the audio feedback was technical difficulties in understanding the sometimes-muffled recordings. In addition, the researchers found that audio feedback provoked strong emotional reactions—both positive and negative—in some participants. Thus, McFarlane and Wakeman concluded that although audio feedback is effective for many learners, instructors might consider offering students a choice in how they receive their feedback.

Davis and Ryder (2012) investigated postgraduate students' perceptions of receiving audio feedback following an observation of their teaching. The participants in the study were enrolled in a higher education post graduate course in which teaching observations were an assessment component. Following the observation, these post graduate students were provided with 15–20 minutes of audio feedback via a virtual learning environment. Davis and Ryder surveyed students to understand their perceptions about the audio feedback and found that they believed the audio feedback was more detailed, more in depth, and more nuanced than written feedback. Participants also commented on the flexibility of the audio in that they could listen to the feedback

numerous times anytime and anywhere they had access to a computer. Some participants found the length of the audio file to be too long, and others said they would prefer to receive both audio and written feedback. Davis and Ryder concluded by suggesting that academics "continue to embrace developing technologies" (p. 38) as part of an overall strategy for providing feedback to instructors.

Attenborough, Gulati, and Abbott (2012) conducted a study to determine the perceptions of health care students and their instructors about written and audio feedback. These students, who were qualified nurses participating in a 5-day professional development course, reported that they preferred audio feedback because they found it more personal than written feedback. Most students also reported that they preferred a blend of both written and audio feedback because receiving both forms of feedback would be most helpful to their learning process. Instructors however, reported that they were concerned about the increased workload of providing both audio and written feedback. Instructors also believed that providing effective feedback required them to develop a personal relationship with students, which they could not accomplish in a 5-day course with 35 enrolled students. Attenborough et al. concluded that the study findings were in line with other research evidence (Higgins et al. 2001) suggesting that feedback effectiveness is mediated by the quality of the teacher-student relationship.

In a related study, Bourgault, Mundy, and Joshua (2013) investigated the relationship between learning style preference and the provision of either audio or written feedback provided to clinical nursing students. Statistical analysis revealed no significant relationship between audio and written feedback and various learning style preferences.

However, survey data revealed that all of the nursing students reported that audio feedback was more personal than written feedback. These results led Bougault et al. to conclude that audio feedback "is an innovative method" (p. 45) for providing feedback to nursing students.

Noting a lack of quantitative studies in the literature about audio feedback, Bibro et al. (2013) conducted a quantitative study to compare higher education composition students' perceptions of audio and written feedback. Although most students in the study reported a preference for audio feedback, some students reported a preference for written feedback. Analysis of the survey data revealed that this difference was due to the students' preferences for either global or local level comments. Students who preferred "comments regarding the big picture of their writing, such as their ideas and organization" expressed a preference for audio feedback, whereas students who preferred comments "that focus on concrete, local issues," (p. 64), such as fixing errors in grammar and punctuation, expressed a preference for written feedback. In accounting for these differences, Bibro et al. suggested that some students might not understand which comments are most helpful for improving their writing. Bibro et al. concluded that providing audio feedback as an option to students enables them to "enter more fully into a partnership with their instructor" (p. 47) and strengthens their efforts to improve their written work.

In a recent mixed methods study, Laughton (2013) evaluated higher education microeconomics students' reactions to written feedback and audio feedback delivered to them as MP3 files through a virtual learning environment. Laughton found that although

providing audio feedback was "no less efficient" (p. 1) in terms of time than providing written feedback, the instructor reported that "the physiological intensity (degree of concentration, stress, and marking ennui) . . . was much lower when producing audio files over a prolonged period" (p. 10) when compared with providing word-processed written feedback. Using word cloud technology to analyze and code the qualitative student perception data about the feedback, Laughton found that students perceived the audio feedback to be more "beneficial, positive, informative, personal, clear, and detailed" (p. 13) than word-processed written feedback. Laughton noted that the findings were in line with Nicol and MacFarlane-Dick's (2006) typology of effective feedback.

Blackburn, Stroud, and Taylor (2013) investigated the impact of audio feedback on part time "mature learners" (p. 143) and traditional undergraduate students with learning disabilities. Each of the two groups were given feedback on a writing assessment in the form of MP3 audio files that ranged in duration from 10 to 25 minutes. Consistent with the literature on the benefits of audio feedback, Blackburn et al. found that both groups of students responded positively to the audio feedback because they found it to be clearer, more detailed, and more emotion-filled than written feedback. The mature learners reported that the audio feedback "had a strong emotional impact" on them. The survey results led Blackburn et al. to advocate for the use of audio feedback and suggest that a teachers' "approach to developing audio feedback must take into account the needs of diverse learners" (p. 154).

Hyde (2013) conducted a study of undergraduate student and instructor perceptions about using screencasting software to produce assessment feedback in the

form of MP3 and MP4 files. Hyde reported that the instructor audiovisual feedback was more detailed and personalized than written feedback and that students viewed it positively because they could access the feedback from any internet-enabled device. Hyde concluded that the audiovisual format enhanced instructor feedback considerably and that its continued use is warranted because it improved students' experiences with the feedback.

Killoran (2013) analyzed the literature on instructors' use of audio feedback through the lens of Rogers' (2003) diffusion of innovations model. Killoran focused on "the five attributes of recorded audio response—its observability, compatibility, complexity, trialability and relative advantage" in comparison with written feedback to explore reasons why audio feedback has "remained a marginal method" for instructors who provide feedback on student writing (p. 37). Killoran suggested that one reason audio feedback has not been more widely adopted is that the complexity of "the technology itself seems off-putting" (p. 41) to some instructors. Despite its perceived complexity, Killoran cited findings in the research that indicate the promise of audio feedback in terms of improved student and teacher perceptions. Killion concluded that audio feedback "deserves to be adopted more widely than it already has been" (p. 47) as a tool for providing feedback on student writing.

Citing evidence from the literature that audio feedback is "highly acceptable to students but underused" (p. 1), Cann (2014) conducted a study to explore various methods for producing and disseminating audio feedback to increase students' engagement with feedback and to work "towards a framework" (p. 1) to expand faculty

use of audio feedback. Cann compared biology students' perceptions of feedback

produced with three different technology products. Study results showed that students

were "generally positive" (p. 5) about the audio feedback overall, but they preferred the

audio disseminated via SoundCloud (n.d.) and Dropbox (n.d.) more than audio delivered

through GradeMark (Turnitin, 2016). Cann stated that students found the audio in

GradeMark (Turnitin, 2016) "difficult to find [and that] it does not allow markers to

know whether students" (p. 5) accessed the feedback, whereas SoundCloud (n.d.) and

Dropbox (n.d.) both provided data on student downloads of the audio files. Cann's

findings confirmed those found in the literature that audio feedback is "popular with

students and . . . has at least the potential to save staff time" (p. 7). Cann posited that a

key reason why more teachers do not use audio feedback is "technical inertia—teaching

staff who are unfamiliar with new tools remain to be convinced" (p. 8) of the benefits of

audio feedback. Cann concluded by listing the benefits and best practices of audio

feedback found in the literature and by advocating for more widespread use of audio

feedback.

In a similar study, McKittrick, Mitchum, and Spangler (2014) explored teacher

and student perceptions of audio feedback, produced on SoundCloud and provided as a

supplement to instructors' written feedback. McKittrick et al. reported results similar to

Cann (2014) in that both students and instructors reacted positively to audio feedback.

McKittrick et al. concluded that audio feedback "greatly enhances written feedback,

providing clarity and personal connection that can be lost" (p, 46) in written feedback

alone.

In related research, Martini and Di Battista (2014) examined higher education students and teachers' responses to audio feedback. In congruence with other findings from the literature, the study indicated that students found audio feedback to be detailed and understandable, and Martini and Di Battista contended that they would be able to transfer what they had learned via audio feedback" (para.1) to subsequent papers. Quantitative analysis of the students' work indicated that when students were given audio feedback, "grades received on [an] introduction paper were significantly higher" than those received on the final paper. The study results led the researchers to assert that audio feedback "is a method that shows promise and should be explored further" as a pedagogical practice. In a similar study comparing the effects of audio feedback versus written feedback on student achievement, however, Chalmers, MacCullem, Mowatt, and Fulton (2014) found that although the audio feedback included "richer language" (p. 64) than the written feedback, there was no significant difference in the achievement scores of students who received audio feedback. Despite these results, Chalmers et al. concluded that audio feedback "has the potential to fulfill some of the criteria for good feedback" (p. 72) because it is more timely, detailed, and perceived as more personal than written feedback.

Hennessy and Forrester (2014) highlighted best practices for audio feedback drawn from the research literature in their mixed methods study that explored "the extent to which students respond to and engage with" (p. 778) audio feedback, which they defined as "a digital sound file containing formative and summative verbal feedback" (p. 778) provided by the instructor. Study data indicated that students believed audio

feedback was clear, effective, less technical, and more nuanced in comparison to written feedback. As previous researchers (e.g. Cann, 2014; McFarlane & Wakeman, 2011) have noted, Hennessy and Forrester also found that technological difficulties, for example email system incompatibility with large MP3 files, led some students and instructors to respond negatively to audio feedback. Despite technical difficulties, Hennessy and Forrester found that most students believed the audio feedback was more personalized, and they valued the "level of appreciation they experienced from being spoken to" by the instructor. Moreover, Hennessy and Forrester recommended that technical impediments be minimized for instructors by choosing audio feedback tools that they felt more comfortable using. They concluded by supporting Cavanaugh and Song's (2014) call for more investigation into students and instructors' use of audio feedback by stating that audio feedback has "become more popular, yet evaluating its role in feedback delivery" (p. 777) is a nascent area of research.

In three recent studies, Munro and Hollingworth (2014), Weld (2014), and Voelkel and Mello (2014) explored the perceptions of higher education instructors and students about audio feedback, and they found similar results. Munro and Hollingworth surveyed physiotherapy students and instructors about their perceptions of audio feedback and found that they supported the use of audio feedback for its increased promptness, clarity, and detail as compared to written feedback. Weld conducted a case study about providing audio feedback to higher education mathematics students and found that audio feedback had "substantial benefits" (p. 513) over written feedback because it was "significantly more detailed" (p. 521) than written feedback. Voelkel and

Mello conducted two case studies of audio feedback and found that audio feedback was "received favourably [sic] as students found it clear, detailed and personal" (p. 16). Voelkel and Mello also reported that instructors believed providing audio feedback was more time consuming than providing written feedback, but it was more efficient because the feedback was more detailed and of higher quality that their written feedback.

McCarthy (2015) also investigated student and instructor perceptions of audio feedback in a higher education course. McCarthy explored student and instructors' perceptions of written, audio, and video feedback on summative assessments in a course titled, Design Language and Media Arts. The majority of students preferred video feedback because they perceived it to be the comprehensive in helping them understand their performance on the assessment. Students also expressed a preference for audio feedback because they found it more personal and more detailed than written feedback. Instructors' perceptions about the mode of feedback related to their workload. Most instructors reported that audio feedback "proved to be the quickest and easiest model of the three" (p. 165) feedback modes. Moreover, instructors found that video feedback took the most time to produce and to disseminate to students, which was due in part to the large file size of the video feedback. Given these differing perspectives, McCarthy concluded that "there is no one size fits all" (p. 166) solution for feedback and suggested that instructors consider the type of assessment, the student population, and the reality of their workload when deciding which feedback modality is optimal.

In related research, Knauf (2015) surveyed students who had received both audio and written feedback to determine the students' preferences. Survey results revealed that

the majority of students had "a positive attitude to the audio feedback and welcome[ed] the integration of non-written" (p. 3) feedback. Students perceived the audio feedback to be more understandable and more personal than written feedback. Some students expressed a preference for receiving both audio and written feedback. Instructors found that audio feedback saved time in that written feedback took "30 min. per student, while the audio feedback" (p. 6) took 12–15 minutes. Given these results, Knauf suggested that instructors consider their own communication preferences as well as their students' preferences "in order to help break down barriers for all students" (p. 7) when providing feedback. When instructors make these considerations, Knauf concluded, audio feedback could contribute to a more "inclusive, diversity-sensitive" (p. 7) climate in higher education institutions.

Citing the number of positive outcomes of using audio feedback in the literature (Ice et al., 2007; Gibbs & Simpson, 2004; Merry & Orsmond, 2008), Johnson and Cooke (2015) conducted a study to determine the relationship between students' "self-regulated learning and their preference for audio feedback" (p. 1) in an online learning environment. Johnson and Cooke determined students' level of self-regulated learning using a survey that measured the following eight characteristics: "metacognitive reading strategies, time-study management, learning control beliefs, learning self-efficacy, intrinsic motivation, extrinsic motivation, peer learning support, [and] seeking help for learning" (p. 5). Students completed a second survey to determine their perceptions of audio feedback. Using descriptive statistics, Johnson and Cooke found a relationship between students' metacognitive strategies and intrinsic motivation and their tendency to

listen to the audio feedback. Johnson and Cooke suggested that "it may be that students who enjoy a challenge are motivated to embrace new" (p. 9) feedback technologies. Johnson and Cooke concluded that "the length, style, and frequency" (p. 10) of both audio and written feedback are key variables to consider in relationship to students' self-regulatory learning behaviors.

In a recent study, McKeown, Kimball, and Ledford (2015) investigated the impact of audio feedback on the revision behaviors of middle school students with emotional and behavioral disorders. In the study, audio feedback, distributed through an iPad application, was given to six students who were all identified as having emotional/behavioral disorders. The feedback was presented as a writing intervention after students had completed a first draft of a story. Teachers recorded the feedback, and McKeown et al. noted that "where a revision was required, the teacher instructed students to press pause, make the change" (p. 547) and resume the audio. McKeown et al. conducted a post-intervention analysis of the students' stories by comparing the holistic quality, number of student revisions, and length of the pre- and post-intervention texts. Results indicated that after receiving audio feedback, "all students increased the number of substantive revisions" (p. 551) and the word count in subsequent drafts of each story, and the revised texts improved by "an average of 0.79 quality points" (p. 554) after the intervention. Moreover, all students reported enjoying the intervention strategy, and the teacher reported that providing audio feedback through the iPad was easy and enjoyable. In their discussion, McKeown et al. noted that the audio feedback intervention was both individualized and private, which improved students' writing experiences, particularly for

students who "did not previously enjoy writing or believed they" (p. 558) did not have the skills to write. Based on their results, McKeown et al. endorsed the use of audio feedback as "an efficient and effective way to provide rich, detailed feedback" (p. 558) on student writing.

In other research, James-Reynolds and Currie (2015) conducted three case studies to explore undergraduate students' perceptions of "human-voice audio feedback and . . . to understand the implications of the use of virtual audio feedback" by instructors (para. 17). Consistent with other research findings previously cited, James-Reynolds and Currie found that students reacted positively to the audio feedback because it was more detailed and clearer than written feedback. Students also reported that hearing the emotional quality and tone of the instructor's voice made the feedback feel more important and more like a personal writing conference as compared to receiving only written feedback. As a result of their findings, James-Reynolds and Currie suggested that "with audio feedback the role of emotion was critical" and advised instructors to convey positive and supportive tone even when delivering corrective audio feedback to students.

In another study, Morris and Chikwa (2016) compared undergraduate freshman science students' preferences for audio versus written feedback. In contrast to the findings of James-Reynolds and Currie (2016), Morris and Chikwa found that students were "broadly positive" (p. 125) about the audio feedback, but they preferred receiving written feedback because "it was harder to link the comments to the relevant sections of the essay" (p. 134). Morris and Chikwa also found that providing audio feedback took instructors roughly the same amount of time as providing written feedback, but the audio

feedback was higher in quantity and was more detailed than the written feedback because "a lot can be said in a short" (p. 134) audio clip. As such, Morris and Chikwa recommended more research be conducted on various technological applications for providing audio feedback.

In their recent study, Elola and Oskoz (2016) investigated L2 students' perceptions of multimodal feedback. Elola and Oskoz examined how providing feedback via oral screencast software influenced instructors' feedback and L2 students' revisions. Results of the investigation revealed that oral feedback positively "affected the quantity and quality" of the teachers' feedback and that students "tended to prefer the oral feedback for global aspects, such as content, structure, and organization" (p. 58), but they preferred written comments for surface-level issues, such as grammar. Students also reported that audio feedback motivated them to improve more so than written feedback because they believed the feedback was more personalized. Elola and Oskoz's findings are consistent with the findings of Bibro et al. (2013) in that written comments were found to target primarily surface level details, whereas oral feedback provided commentary about global issues in student writing, such as organization, content, and style.

In other recent research, Parkes and Fletcher (2016) conducted a longitudinal investigation of undergraduate students' attitudes about the effectiveness of audio feedback. Parkes and Fletcher used web-based surveys to gather data over a three-year period to determine students' perceptions about receiving audio feedback, via MP3 files, "on all assessment tasks across all nine units" (p. 2) of the study, which included writing

assessments and assessments on the creation of digital artifacts, such as online multimedia. Results of the study indicated that a large majority (95%) of students found the audio feedback clear and easy to follow, more personal than written feedback, and effective in identifying areas of strength and areas that "were wrong" (p. 3) in the assessment tasks. Parkes and Fletcher reported that "the most significant finding . . . was that only 12% of students preferred their audio feedback to be nicely recorded" (p. 7). In other words, students enjoyed the raw, conversational quality of the audio feedback because it projected the instructors' personalities. Citing Hennessy and Forrester's (2014) suggestions for best practices in audio feedback, Parkes and Fletcher concluded by recommending that instructors need not obtain expensive high quality sound recording technology in order to provide students with highly effective, actionable audio feedback.

Summary and Conclusions

In summary, this chapter included a review of the literature. I began by providing a description of the literature search strategy as well as a detailed description of the conceptual framework in terms of Bandura's (1991) social cognitive theory about teacher self-efficacy for providing feedback to students. This chapter also included an analysis of current research on teacher self-efficacy, high school writing instruction, formative teacher feedback, student and teacher perceptions of feedback, and technology-mediated audio feedback.

Several key themes emerged from this review of the research literature about student and teacher perceptions of feedback. The first theme was that feedback is problematic for both teachers and students. Teachers struggle to keep up with the time

demands of generating quality feedback, and they often feel their efforts are fruitless because they believe students neither read nor heed their comments. These perceptions could negatively affect teachers' self-efficacy for writing instruction (Bandura, 1991, 1993). Students struggle with the often vague and illegible comments they receive on their written work and perceive these comments as attacks on their self-esteem as writers.

Another theme that I found was that researchers have developed several frameworks for conceptualizing the effectiveness of teacher feedback. Findings from the literature indicated that feedback can promote learning when it is delivered in a timely fashion; when it is personalized and detailed, yet clear enough for students to understand; when it includes a mixture of both positive and corrective, explanatory comments; when it promotes ongoing dialogue among students, their peers, and the teacher, and when students are provided with opportunities to act upon the feedback. In short, feedback for learning must be conceptualized as a social process not a sterile product (Killion, 2015). This conceptualization of feedback from the literature aligns with Bandura's (1991) social cognitive theory in that learners use feedback comments and interactions to self-reflect, understand, and evaluate their own performances, and they develop their self-efficacy for performing various tasks through this process.

Another theme was that audio feedback has been found to be a promising method for improving the feedback process in teaching and learning. Students reported that audio feedback is clearer, more detailed, and more personal than written feedback. From the instructors' perspective, providing audio feedback allows them to provide more feedback and more high quality, actionable feedback to students. While some studies

have shown that audio feedback saves instructors time, others have found that it takes roughly the same amount of time as providing written feedback. However, instructors believe that providing audio feedback is more valuable because it is more fruitful and productive in terms of its impact on students' attitudes, motivation, and achievement in writing. Despite the benefits that researchers have found in using audio feedback in higher education, no studies have been conducted on high school teachers' use of audio feedback. Therefore, more research is needed to further understand how digital audio feedback is used and how high school students and teachers perceive this technology tool.

In relation to gaps in the research, the majority of the studies investigating formative feedback, teacher and student perceptions of feedback, and audio feedback have been conducted in higher education settings. Few researchers have examined feedback practices at the high school level, and I found no peer-reviewed studies conducted on audio feedback at the high school level. Thus, in this study, I addressed this gap in the literature as one of the first investigations of high school teachers' perceptions and use of audio feedback and the impact that this technology tool has on writing instruction at the high school level. The next section, I will present a description of the research method that I used to conduct this study.

Chapter 3: Research Method

Introduction

The purpose of this qualitative study was to investigate how teachers believed Kaizena, as an online digital audio feedback tool, impacted writing instruction, particularly in relation to teacher self-efficacy. Kaizena (2016) is a software system that facilitates the provision of teacher-generated feedback. To accomplish the purpose of the study, I gathered and analyzed teachers' experiences with Kaizena. Teachers' perceptions of the impact of Kaizena on their confidence as writing instructors were also collected. In addition, artifacts related to writing assignments were also gathered and analyzed to elucidate how teachers use Kaizena in their writing instruction.

In this chapter, I will provide a description of the research method that I used to conduct this study. This chapter will also include a description of the research design and rationale, the research questions, and the role of the researcher. In this chapter, I will also present a description of the participants, instrumentation, participant recruitment and selection, data collection plan, and data analysis strategies. In addition, this chapter will include a description of the steps I took to ensure that the findings of this study were trustworthy and that the rights and privacy of participants were protected.

Research Design and Rationale

I designed the following research questions in relation to the conceptual framework and literature review for this study. The central research question was: How do teachers believe Kaizena as an online digital audio feedback tool impacts writing

instruction, particularly in relation to teacher self-efficacy? The related research questions were:

1. What are teachers' perceptions about their experiences with Kaizena?

2. What are teachers' perceptions about how Kaizena impacts their confidence as writing instructors?

3. What do artifacts reveal about how teachers use Kaizena in their writing instruction?

Based on these research questions, I developed this study to be qualitative in nature. Qualitative researchers must be purposive and thoughtful in their designs in order to increase the validity of qualitative studies, and by association, the scholarly reputation of qualitative designs (Yin, 2014). In some ways, the various recommendations in qualitative research texts (Creswell, 2017; Maxwell, 2013; Merriam, 2009; Miles et al., 2014; Patton, 2002; Yin, 2014) give qualitative researchers a broad range of choices for approaching their study designs. However, each study is unique, and therefore, in selecting a research design, I considered the research questions, my epistemological and ontological perspective, the participants, and time and budget.

A qualitative approach was more appropriate than a quantitative approach for this study because the goal of the study was to focus on meaning and understanding through the use of rich description to investigate teacher beliefs about the impact of an audio feedback technology tool on writing instruction at the high school level. As Merriam (2009) pointed out, qualitative research is an inductive process in which "the researcher is the primary instrument of data collection and analysis" (p. 15). For this study, I analyzed

all data using an inductive approach to uncover themes that emerged from this analysis.

Qualitative approaches have been used extensively in the social sciences and fields of

practice such as education where experimental designs are not always possible (Merriam,

2009). A qualitative approach was particularly suitable because the purpose of this study

was to investigate how teachers believed Kaizena impacted writing instruction in the

natural setting of the English classroom at the high school level.

In this study, I used a multiple case study design. I chose to adhere to Yin's

(2014) definition for this design because it aligned with the research questions for this

study. Yin defined the case study as a form of in-depth inquiry that "investigates a

contemporary phenomenon . . . in a real-world context" (p. 16). Case study research is

guided by a theoretical proposition, and it involves the investigation of multivariate

situations through the collection and analysis of multiple data sources, including

interviews, observations, documents, archival records, and artifacts (Yin, 2014).

According to Yin, using a case study design is particularly appropriate when the

investigator wishes to explore "a school innovation, such as the use of a new…

educational technology" (p. 56), which was the intended purpose of the study.

In this study, the case was defined as a single user group of Kaizena, an online

digital audio feedback tool. I focused on two separate cases. The first case was a user

group of high school English teachers who were employed in high schools or precollege

English programs in the United States and were current users of the audio feature of

Kaizena. The second case was a user group of high school English teachers who were

employed in high schools at various international locations and were current users of the

audio feature of Kaizena. Participants in each case or user group included three high school English teachers who were employed in high schools or pre-college English programs and who had been using the audio feedback function in Kaizena during the 2016–2017 school year. Data were collected from multiple sources, including individual teacher interviews, reflective journals maintained by these teachers, and artifacts.

In relation to selecting the particular qualitative design of case study, Yin (2014) contended that a significant rationale for using a case study design is to "capture the circumstances and conditions of an everyday situation" (p. 52). Furthermore, the case study design depends on multiple data sources in order to present a rich picture of the phenomenon or case, which is the unit of analysis, under investigation (Yin, 2014). The case study design also allows the researcher to richly describe each participant's unique context and explore themes and discrepant data that emerge from the data analysis (Yin, 2014). For these reasons, a multiple case study design was most appropriate for conducting this in-depth investigation of the impact of this audio feedback tool on writing instruction because it relied on multiple, rather than single, data sources to present a rich picture of the phenomenon, which was the impact of the audio feedback teachers provide on writing instruction.

I considered other qualitative research designs for this study, including phenomenology, grounded theory, and ethnography. In a phenomenological design, the focus of the study is to explain "what all participants have in common as they experience a phenomenon" (Creswell, 2013, p. 76) in order to describe the essence of the phenomenon itself. For this study, the goal was not to describe the lived experiences of

participants in relation to Kaizena, but rather to describe how teachers believed it impacted their writing instruction, particularly in relation to teacher self-efficacy, and so a phenomenological design was not suitable. Similarly, a grounded theory design was not appropriate for this study because the intent was not "to move beyond description and to generate or discover a theory" (Creswell, 2013, p. 83). Instead, this case study was guided by an existing theory, which was Bandura's (1991) social cognitive theory, particularly in relation to self-efficacy. In ethnographic research, the focus is "on an entire culture-sharing group" (Creswell, 2013, p. 90), and the aim of this design is to develop an in-depth description of the culture they share. Although all of the participants shared the experience of being high school English teachers who used Kaizena to provide feedback on student writing, the purpose of this study was not to describe the common culture that these participants share. Therefore, an ethnographic research design was not appropriate for this study.

Role of the Researcher

As a qualitative researcher, I assumed many roles over the course of the study. I was the principal collector of data, and I was also solely responsible for the analysis and interpretation of the findings related to audio feedback on writing instruction. During this research process, I selected the research design, created data collection instruments, collected data, and analyzed and interpreted the findings. I also adhered to the Walden University guidelines for qualitative dissertations and to the mandates of the Institutional Review Board (IRB). Given that I was the principal researcher in the study, I also

reflected on my personal and professional experiences and beliefs that could have bias the study.

In order to reflect on my beliefs, I first considered various scholarly viewpoints on qualitative research design, including Creswell's (2013) viewpoint, which is that qualitative researchers position themselves in a study by revealing their values. I also considered Merriam's (2009) viewpoint, which is that qualitative researchers assume an interpretive rather than positivist philosophical approach in their investigations. My philosophical perspective, which guided my decision making for this study, is that reality and learning are socially constructed and that there are multiple interpretations of experiences and of learning, all of which are valid (Merriam, 2009).

My beliefs and biases about writing instruction were also shaped by my varied personal and professional experiences. My experience as a high school student was not positive, and although I was a mediocre student, I graduated in 3 years in order to escape the culture of high school life. I tried and failed to graduate from college as a young student, and for many years felt a sense of shame that I was the only one of my four other siblings to never complete college. At age 32, now a single mother of two young children, I returned to college as a nontraditional student so that I could be a better role model for my children. I developed a newfound passion for the personal freedom and enrichment that education afforded. I graduated with honors and earned two master's degrees, before pursuing a PhD. In a seemingly ironic twist, I became a high school English teacher, in part because I believed my experiences enriched my ability to empathize with students and instill in them a belief in the promise of education.

As a former high school English teacher and a current university instructor, I believe that I have a unique understanding of the experience of providing feedback on student writing. I have experienced the frustration of working long hours to provide written feedback on student papers that result in little or no improvement in students' writing. I am also currently a professional development provider and student teaching supervisor, and in those roles, I have heard many new and veteran teachers express their own personal anxiety in connection with the teaching of writing. Many teachers I have worked with and mentored have said they do not feel confident in their own knowledge about the conventions of Standard English grammar and usage.

These personal and professional experiences led me to seek an understanding of ways to improve the teaching of writing and feedback processes for teachers and their students. In short, my experiences and beliefs motivated my choices for the topic and design of this study. These experiences also created the potential for bias because I could have had a preconceived understanding of how feedback should be provided for student writing. However, I am no longer a high school English teacher and have not worked in that capacity since 2008. I am now a university instructor in a school of education. I am also not a Kaizena user, nor had I ever used audio feedback in my writing instruction, and therefore, I did not have any preconceived understanding of what that experience was like. Therefore, for this research, I believe that I remained impartial because I had not had the same unique experiences of the participants in this study. In a later section of this chapter, I will describe specific strategies I used to counteract the potential bias that my experience could have created.

Participant Selection

Participants for this study included three high school English teachers in relation to each case. One case was a user group of three high school English teachers employed in high schools or precollege programs in the United States. The other case was a user group of three high school English teachers employed at high schools in various international locations. A total of six English teachers participated in this study, which was an adequate sample size for a case study that includes collecting data from multiple sources and providing an in-depth analysis of these sources (Merriam, 2009; Yin, 2014).

The sampling strategy for the study was a purposeful criterion sampling;, I chose this strategy to obtain the richest data possible. Participants for this study were purposefully selected according to the following inclusion criteria: (a) participants were employed as full-time high school teachers at high schools in the United States or in international locations, (b) participants were teaching English courses in which they provided writing instruction for students, and (c) participants were current users of the audio feature of Kaizena and self-reported frequent use of the Kaizena audio feature. From this group of potential participants, I selected the first three high school English teachers from each user group who returned a signed consent form to me.

Instrumentation

For this study, I designed three instruments that I used for data collection. These instruments were an interview protocol, a reflective journal, and an artifact data collection form for analyzing the content of the artifacts. The instruments are described in the following subsections.

Interview Protocol

I designed the interview protocol found in Appendix F. As Merriam (2009) suggested, interviews in qualitative research can be structured, semistructure, or unstructured. I created a semistructured interview protocol that allowed me to "respond to the situation at hand, to the emerging worldview of the participant, and to new ideas on the topic" (Merriam, 2009, p. 90) as I conducted each interview. The interview questions were designed according to recommendations that they should be open-ended and aligned with the research questions (Maxwell, 2013; Merriam, 2009; Miles, Huberman, & Saldana, 2014; Patton, 2002; Seidman, 2013). The interview protocol also included several types of questions, including background and experience questions, opinion and feeling questions, and knowledge questions, as Merriam recommended. Table 1 indicates the alignment of the interview questions to the research questions for this study.

Table 1

Alignment of Interview Questions to Research Questions

Research Questions	Interview Questions
CRQ: How do teachers believe Kaizena as an online digital audio feedback tool impacts writing instruction, particularly in relation to teacher self-efficacy?	1. Describe how you use Kaizena in relation to your writing instruction, particularly your use of the audio feature. 2. What is your opinion about Kaizena as a tool for providing audio feedback on student writing? 3. How has using Kaizena influenced your writing instruction? 4. How has using Kaizena influenced the amount of time you spend providing feedback on student writing? 5. How has using Kaizena influenced the feedback that you give students on their writing? 6. Describe a specific example of your use of audio feedback and its impact on one (or more) of your students. 7. Describe how you provided feedback on student writing before you used the audio feature in Kaizena. How is using Kaizena similar or different to that feedback?
RRQ1: What are teachers' perceptions about their experiences with Kaizena?	2. What is your opinion about Kaizena as a tool for providing audio feedback on student writing? 3. How has using Kaizena influenced your writing instruction? 4. How has using Kaizena influenced the amount of time you spend providing feedback on student writing? 5. How has using Kaizena influenced the feedback that you give students on their writing? 6. Describe a specific example of your use of audio feedback and its impact on one (or more) of your students. 7. Describe how you provided feedback on student writing before you used the audio feature in Kaizena. How is using Kaizena similar or different to that feedback?
RRQ2: What are teachers' perceptions about how Kaizena impacts their confidence as writing instructors?	2. What is your opinion about Kaizena as a tool for providing audio feedback on student writing? 3. How has using Kaizena influenced your writing instruction? 8. How have students reacted to Kaizena?

Note. CRQ = central research question; *RRQ* = related research question.

Reflective Journal

I designed reflective journal questions (see Appendix G) to elicit participants'

reflections about the impact of Kaizena on their writing instruction and specific examples

of how they use Kaizena. The rationale for this design was that written reflections

afforded participants more time than they had in the interview to provide rich detail and

reflect on their own practice. Moreover, obtaining information about specific examples

of the participants' use of Kaizena yielded specific details that did not emerge from the

interviews. Table 2 describes the alignment of the reflective journal questions to the

research questions.

Table 2
Alignment of Reflective Journal Questions to Research Questions

Research Questions	*Reflective Journal Questions*
CRQ: How do teachers believe Kaizena as an online digital audio feedback tool impacts writing instruction, particularly in relation to teacher self-efficacy?	1. How do you feel about yourself as a writing teacher when you use Kaizena? 2. What specific experiences with Kaizena have made you feel more confident as a writing instructor? 3. What improvements in Kaizena would make you feel more confident as a writing instructor?
RRQ1: What are teachers' perceptions about their experiences with Kaizena?	1. How do you feel about yourself as a writing teacher when you use Kaizena?
RRQ2: What are teachers' perceptions about how Kaizena impacts their confidence as writing instructors?	2. What specific experiences with Kaizena have made you feel more confident as a writing instructor? 3. What improvements in Kaizena would make you feel more confident as a writing instructor?

Note. CRQ = central research question; *RRQ* = related research question.

Artifact Data Collection Form

I also designed an artifact data collection form that I used to examine the artifacts

that I collected from the high school English teachers (see Appendix I). These artifacts

included teacher-created writing assignments and rubrics. I designed this instrument in

relation to research on content analysis for qualitative research (Gall, Gall, & Borg, 2007;

Merriam, 2009).   Table 3 describes the alignment of the artifact question to the research

questions.

Table 3
Alignment of Artifact Data Collection Form to Research Question

Research Question	Criteria
RRQ3: What do artifacts reveal about how teachers use Kaizena in their writing instruction?	Purpose of artifact Structure of artifact Content of artifact Use of artifact

Note. RRQ = related research question.

To ensure this alignment, I asked an expert panel of three colleagues who are

employed as professors in the school of education at the university where I am employed

to determine if these instruments were aligned with the research questions for this study.

The three panel members were experienced qualitative researchers and were familiar with

qualitative research methodologies. All three members of the panel agreed that the data

collection instruments were aligned to the research questions.

Procedures for Recruitment, Participation, and Data Collection

In relation to recruitment, I first contacted the chief executive officer of Kaizena

to explain the purpose of the study and to obtain a signed letter of cooperation, indicating

the willingness of Kaizena to be my research partner (see Appendix A). I created an

informational flyer that the chief executive officer of Kaizena sent to Kaizena users

inviting them to contact me about this study if they were interested in participating (see

Appendix B). The content of the flyer included a description of the purpose of the study, an invitation to contact me, and my contact information.

In relation to participation, I sent a brief demographic survey (Appendix C) to Kaizena users who responded to the informational flyer, using Google Forms to obtain demographic information about the participants and the school in which they were employed in order to screen users according to the following inclusion criteria: (a) participants were employed as full-time high school teachers at high schools in the United States or in international locations, (b) participants were teaching English courses in which they provided writing instruction for students, and (c) participants were current users of the audio feature of Kaizena and self-reported frequent use of the Kaizena audio feature. I sent the link to this Google Form to all Kaizena users who contacted me directly to express their interest in participating in this study.

In relation to participation, I sent an invitational letter and consent letter to all teachers who matched the inclusion criteria. The invitational letter and consent form specifically described the parameters of the study and the expectations and rights of participants. I asked participants to return signed letters of consent to me in a self-addressed, stamped envelope. I selected the first three high school English teachers for each case or user group who returned a signed consent form to me. I then contacted these participants by e-mail to schedule telephone interviews.

In relation to data collection, I conducted an individual telephone interview with each of the selected participants. I also recorded the telephone interviews with each participant. Each interview took approximately 30 to 40 minutes to conduct. I captured

the content of these interviews verbatim by transcribing the recorded interviews into

written scripts. After the completion of each interview, I obtained the reflective journal

data by asking participants to respond in writing to three reflective questions and to send

me their reflections by e-mail. I also obtained artifacts, such as teacher-created writing

assignments and rubrics by having participants send me representative samples by e-mail.

I requested three representative sample writing assignments and one sample writing

rubric from each of the participants. Table 4 describes the alignment of data sources with

each of the research questions.

Table 4
Alignment of Data Sources to Research Questions

Research Question	*Sources of Data*
CRQ: How do teachers believe Kaizena as an online digital audio feedback tool impacts writing instruction, particularly in relation to teacher self-efficacy?	Individual interviews Reflective journals Artifacts such as writing assignments and rubrics
RRQ1: What are teachers' perceptions about their experiences with Kaizena?	Individual interviews
RRQ2: What are teachers' perceptions about how Kaizena impacts their confidence as writing instructors?	Reflective journals
RRQ3: What do artifacts reveal about teachers use Kaizena in their writing instruction?	Artifacts such as writing assignments and rubrics

Note. CRQ = central research question; *RRQ* = related research question.

Data Analysis Plan

I conducted data analysis at several levels. At the first level, each individual data

source was examined. I compiled verbatim interview transcripts of the interview data

and the reflective journal data. The interview and reflective journal data for each user

were placed into a Word document for coding. No qualitative analysis software was used

in the data analysis. At the first level, which was the single case analysis, interview data

and reflective journal data for each case were coded using line-by-line coding that

Charmaz (2006) recommended in order to remain as close to the data as possible. Codes

emerged from the data sources through the data analysis process. No preselected codes

or themes were used in this process. A constant comparative method, which "involves

comparing one segment of data with another to determine similarities and differences"

(Merriam, 2009, p. 30), was used to construct categories from the coded data. The

content of the artifacts was analyzed, using a content analysis (Merriam, 2009) that

included a description of the content, purpose, structure, and use of the teacher-created

writing assignments and rubrics. At the second level, which was the cross case analysis,

all categories from all data sources across both cases were analyzed for emerging themes

and discrepant data (Creswell, 2007; Maxwell, 2013; Miles et. al., 2014; Patton, 2002).

Themes that emerged from this analysis formed the key findings for this study.

Discrepant data were also analyzed to determine if it challenged the key findings and

needed further exploration. Findings were analyzed in relation to the central and related

research questions and interpreted in relation to the conceptual framework and the

literature review.

Issues of Trustworthiness

The trustworthiness of qualitative research results is particularly critical for

professionals in applied fields such as education because teachers "intervene in people's

lives" (Merriam, 2009, p. 209). Ensuring the trustworthiness of qualitative research

involves "following a rigorous methodological path" (Yin, 2014, p. 3). In order to

improve the trustworthiness of this qualitative research, I used specific strategies to

increase the credibility, transferability dependability, and confirmability of the findings. These strategies will be described in the following subsections.

Credibility

Credibility of the research findings involves the extent to which the findings capture the reality of participants' experiences and perceptions (Lincoln & Guba, 1985). In qualitative research, capturing an exact, objective truth is not possible given that data collection and analysis is conducted by human beings whose "interpretations and reality are accessed directly through their observations and interviews," (Merriam, 2009, p. 214). However, credibility of the findings can be increased through the process of triangulation, which involves using multiple data sources and comparing. For this study, I used the strategy of triangulation by comparing and contrasting the three sources of data, including interviews reflective journals and artifacts, which included sample teacher-created writing assignments and writing rubrics. I also used the strategy of member checks by asking participants to review the tentative findings of the study for their credibility.

Transferability

Transferability of findings is established when the findings can be applied to other contexts (Lincoln & Guba, 1985). Establishing transferability of research findings can be accomplished by using thick description to depict the findings in sufficient detail so that other researchers can apply the findings to other contexts. According to Miles, Huberman, and Saldana (2014), thick description "helps the reader see what you saw and

hear what you heard" (p. 162). For this study, I used the strategy of rich, thick description by describing the setting, data analysis procedures, and results of this study in detail.

Dependability

Research findings are said to be dependable when they are consistent and replicable (Lincoln & Guba, 1985). One strategy for ensuring dependability that I employed in this study was using an expert panel to confirm that the data collection instruments were aligned to the research questions. This expert panel included three colleagues who were employed as professors in the school of education at the university where I am employed. The three panel members all held PhDs in Education and were experienced qualitative researchers familiar with qualitative research methodologies. Another strategy that I used was an audit trail (Lincoln & Guba, 1985; Merriam, 2009), which involved maintaining a researcher's journal to document my decisions and reflections throughout the data collection and analysis process.

Confirmability

The concept of confirmability or objectivity in qualitative research is applied to research findings that are shaped by the participants' responses and not by research bias (Lincoln & Guba, 1985). In order to avoid researcher bias in this study, I used the strategy of reflexivity that is "sometimes labeled *researcher's position*" (Merriam, 2009, p. 219, emphasis in original). I used the strategy of reflexivity by critically reflecting on my role as the sole researcher, and I described my biases, dispositions, and assumptions related to providing feedback for student writing. In a researcher's journal, I provided a detailed description of my personal and professional experiences and beliefs in order to

reflect on my possible "biases, dispositions, and assumptions" (p. 219) regarding this study. In addition, I used triangulation as a strategy by comparing and contrasting findings across multiple sources of data.

Ethical Procedures

In order to protect the rights and welfare of participants, I sought and received the approval of the Walden University IRB. The IRB reviewed the proposal and ensured that this study met all requirements for protecting the rights and welfare of human participants. The IRB approval number is 08-26-16-0302157. I obtained a signed letter of cooperation from the chief executive officer of Kaizena. I also obtained signed letters of informed consent from all participants. The consent letter described, in detail, the participants' role in the study and also informed the participants of their right to withdraw from the study at any time. In addition, I protected participants' privacy by using pseudonyms for the districts, schools, and participants. Moreover, any identifying information was removed from all teacher-created documents to ensure participants' privacy.

Summary

In this qualitative case study, I used a multiple case study design to investigate how teachers believed Kaizena impacted writing instruction at the high school level. Participants were drawn from the existing Kaizena user base and purposefully selected based on specific inclusion criteria. I created the data collection instruments, including the interview protocol, the reflective journal questions, and the artifact data collection form. I was the principal instrument of data collection and analysis in this study. Data

sources were analyzed using a constant comparative method to discover themes that

emerged across all data sources for the two cases or user groups, including interviews,

reflective journals, and artifacts such as teacher-created writing assignments and rubrics.

Several strategies were employed to ensure the trustworthiness of these qualitative

research findings. These strategies included triangulation, rich description, use of an

expert panel, and reflexivity. In order to protect participant's rights and privacy, I

ensured the study met IRB standards by receiving approval from IRB to conduct this

study. In addition, I have not revealed the identity of participants. Although the sample

size for this study was small and the transferability of its findings may be limited to

similar populations, this study was one of the first to investigate the impact of audio

feedback technology on writing instruction at the high school level and sheds light on this

under-researched area. In the next section, I will provide a description of the results of

the study, including the setting, participants, and data collection and analysis processes.

Chapter 4: Results

Introduction

The purpose of this study was to investigate how teachers believed Kaizena impacted their writing instruction, particularly in relation to teacher self-efficacy. Kaizena (2016) is a software system that facilitates the provision of teacher-generated feedback. To accomplish that purpose, high school teachers' perceptions about their experiences with Kaizena were described. Teachers' perceptions about the impact of Kaizena on their beliefs about their capabilities as writing instructors were also described. In addition, artifacts related to writing assignments were also described to elucidate how teachers used Kaizena in their writing instruction. Based on the purpose of this study, I created and investigated the following research questions. The central research question was: How do teachers believe Kaizena as an online digital audio feedback tool impacts writing instruction, particularly in relation to teacher self-efficacy? The related research questions were:

1. What are teachers' perceptions about their experiences with Kaizena?

2. What are teachers' perceptions about how Kaizena impacts their confidence as writing instructors?

3. What do artifacts reveal about how teachers use Kaizena in their writing instruction?

Chapter 4 will include a description of the settings for each of the two cases presented. In Chapter 4, I will also provide a description of the participants and an overview of the data collection process for the study. In addition, Chapter 4 will include

a description of the data analysis procedures for each of the two cases as well as a cross-case analysis and a description of evidence of trustworthiness. Also included in the chapter will be the study results in relation to the central and related research questions. I will conclude Chapter 4 with a summary of the results.

<div align="center">**Setting**</div>

The setting for this study was divided into the locations of the two user groups that comprised the two cases. In both cases, participants were current users of the audio feature in Kaizena. The first case was a user group of high school and precollege program teachers who taught in public and private schools in the United States. The second case was a user group of high school teachers who taught in various public and private schools in international locations.

Case 1: Schools in the United States

The setting for the first case included two high schools and one precollege program school that were all located in the United States. School A was a public suburban high school located in the northeastern region. School A served 865 students in Grades 9 through 12. Seventy-seven percent of the student population was Caucasian, non-Hispanic, and 23% of the student body was identified as either African American, Hispanic, Asian, or multiracial. Approximately 24% of the student population was identified as economically disadvantaged, 10% received special education services, and just over 1% were identified as English language learners. School A was identified as a high performing school with 94% of students who scored proficient or above in English,

89% who scored proficient or above in mathematics, and 93% who received passing scores on AP tests (U.S. News & World Report, 2016).

School B was a Catholic coed college-preparatory high school located in a suburb in the western region of the United States, serving 720 students in Grades 9 through 12. The student population of School B was 79% Caucasian, non-Hispanic, and about 20% of the student body was identified as either African American, Hispanic, Asian, or multiracial (Great Schools, 2016). Based on average SAT scores and the percentage of graduates who attend college, School B was identified as a high performing school (Great Schools, 2016; Niche, 2016). The average 2015 SAT score for students was 1190, out of a possible 1600 (Niche, 2016), and 93% of 2015 graduates entered 4-year colleges and 7% entered 2-year colleges (Great Schools, 2016).

School C was a precollege English language institute located within a small private university in a suburban neighborhood in the northwestern region of the United States. School C provided an intensive English language program that served 108 international students whose average age was between 16 and 21years. About 75% of students were from the Middle East and northern Africa, and 25% were from Asia. Students at this school were not enrolled in the university, but they earned conditional admission if they finished all six levels of the language intensive program. The school program focused on English language learning for college preparation and business. Students spent 20 hours a week in intensive English language class and 5 hours a week in elective classes.

Case 2: Schools in International Locations

The setting for the second case included three high schools in various international locations. School X was a small private high school located in an urban neighborhood in Thailand. The school, which had been in existence for 6 years, served approximately 224 students in Grades 9 through 12. The curriculum at School X was an intensive English language program with an emphasis on mathematics and science content and included extracurricular activities. The majority of the instructors at School X were experienced high school English teachers from England and the United States.

School Y was a public suburban high school located in southeastern Australia. School Y served a population of approximately 2,000 students in Grades 7 through 12, who ranged in age from 12 to 18 years. This school was identified as a high performing school because student scores on the state examination in mathematics and literacy were consistently above the state average. High School Y offered a comprehensive core curriculum to all students, along with an enhanced curriculum in science and mathematics for selected students. The school was also well known for its music program in which over half of the students participated.

School Z was a private suburban Christian international school located in the northwest region of Malaysia. School Z served approximately 600 students in Grades pre-kindergarten through 12. The high school curriculum included 24 units of study, including AP courses, and students who graduated from the school earned an American high school diploma. Based on average SAT scores, School Z was identified as a high preforming school. In 2015, the school's composite SAT scores were 1815, as compared

to the 2015 national average in the United States, which was 1490 out of a possible 2400 points.

Participant Demographics

Three participants were included in each of the two cases for a total of six participants. Five of the participants were female, and one participant was male. The three participants in the first case all taught in high schools or precollege programs in the United States. The three participants in the second case were all teachers at high schools in various international locations. One participant in each user group taught English to nonnative speakers. All other participants taught English to native speakers. The six participants reported between 5 and 15 years of teaching experience.

Case 1: Participants in the United States User Group

Michelle (a pseudonym) taught two sections of 11th grade English at School A, which included a total of 40 students. Michelle had earned a bachelor's degree in English and a master's degree in education and was certified to teach English to students in Grades 7 through 12. Michelle was also certified to teach business education, computer technology, and information technology to students from kindergarten through Grade 12. Michelle started using Kaizena in 2014, and she regularly used the audio feature to provide feedback to students on their writing. In addition to teaching English, Michelle had also served as a technology integrator for her district since 2007. In that role, she traveled to all seven schools in the district and provided support to teachers in integrating technology into their classrooms. Michelle had been teaching for 18 years.

Joanne (a pseudonym) taught four sections of 10th grade English at School B, which included a total of 120 students. Joanne had earned a bachelor's degree in elementary education and a master's degree in English and was pursuing her doctoral degree in English. Joanne had also earned certifications in elementary education and secondary English education. Joanne taught elementary school for 4 years, freshman college English for 4 years, and was in her second year of teaching high school English at the time of the study. Joanne had been using Kaizena for approximately 3 months.

Eva (a pseudonym) was a second language English teacher at School C. Eva taught one combined class of students in Levels 1 and 2 and one class of students in Level 6 of their English language attainment. Eva provided instruction for a total of 20 students. Eva had earned a bachelor's degree in English and a master's degree and certification in teaching English to speakers of other languages. She had 10 years of teaching experience. Eva had used Kaizena for 2 years and was a frequent user of the audio function.

Case 2: Participants in the International User Group

Originally from England, Michael (a pseudonym) was an English teacher at High School X in Thailand. Michael taught courses in English language and literature and academic writing to a total of 55 students in Grades 10, 11, and 12. Michael had earned a bachelor's degree in English language and literature and a master's degree in education. Michael also held a post graduate certificate in education. Michael had been using Kaizena for 4 months and had been a regular user of the audio feature to provide feedback on student writing. He had 5 years of high school teaching experience.

Anne (a pseudonym) taught a total of 100 students in Grades 9, 11, and 12 at High School Y in Australia. Anne had earned a bachelor's degree in anthropology and politics and a master's degree in education. Anne had been teaching for 9 years and held a certification to teach high school English in Grades 7 through 12. Anne had been a Kaizena user for 3 years and was a frequent user of the audio feature for providing feedback to students on their writing.

Kara (a pseudonym) taught English at High School Z in Malaysia. Kara taught one section of Grade 9 English, one section of Grade 9 honors English, one section of AP English language and composition, and one section of a Grade 12 capstone course. Kara provided instruction for a total of 62 students. Kara had earned a bachelor's degree in English literature, a master's degree in special education, and a master's degree in biblical studies. She held certifications in English and in English for second language learners. Kara was originally from England, and she had taught in public and private schools in China, Hungary, and the United States before she taught in Malaysia. Kara had 15 years of teaching experience. She had used Kaizena for 6 months and regularly used the audio feature to provide voice comments to students on their writing.

Data Collection

In this study, I collected data from multiple sources, including telephone interviews with individual teachers; reflective journals maintained by these teachers; and artifacts, such as teacher-created writing assignments and rubrics. I created an electronic folder on my personal computer, entitled Doctoral Research Data, to house all of the electronic study data. For a period of 1 month between September and October of 2016, I

conducted interviews and gathered demographic information, reflective journal responses, and artifacts from the six participants. The demographic information was collected via a Google Form, which participants completed between September 7 and October 24, 2016. The reflective journals and artifacts were collected as digital document attachments sent to participants via e-mail.

Interviews

I conducted participant interviews over a 2-week period between September 25 and October 1, 2016. Five of the six interviews were conducted over the phone and recorded using an iPhone app. One interview was conducted via Skype and audio-recorded using the QuickTime Player on a Macintosh computer. Once recorded, I placed all of the interview audio files into the Doctoral Research Data folder on my personal computer. Anne's interview took place over the telephone on September 25, 2016 at 7:08 p.m. and lasted 39.21 minutes. Michelle's interview took place over the telephone on September 26, 2016 at 5:29 p.m. and lasted 28.17 minutes. Michael's interview took place over the telephone on September 27, 2016 at 7:08 a.m. and lasted 22.57 minutes. Kara's interview took place over Skype on September 28, 2016 at 8:30 a.m. and lasted 28.06 minutes. Eva's interview took place over the telephone on October 1, 2016 at 12:01 p.m. and lasted 28.04 minutes. Joanne's interview took place over the telephone on October 1, 2016 at 4:30 p.m. and lasted 21.06 minutes. Thus, interview times ranged from 39 to 21 minutes.

Reflective Journals

Once all six participants were identified, I sent them, via e-mail, the reflective journal questions and asked them to return the completed questions to me via e-mail within 2 weeks. On September 11, 2016, I e-mailed the reflective journal questions to all six participants. On September 14, 2016, Anne shared her responses with me via Google Docs, and I downloaded the responses from the shared document. Michelle and Debbie both returned their reflective journal responses via shared Google Docs on September 19, 2016, and I downloaded the responses on the same day. Michael also returned his responses on September 19, 2016 as Word documents attached to an e-mail. Eva sent her reflective journal responses as Word document attachments on September 25, 2016. Joanne returned her responses as a Word document attachment on September 28, 2016. I placed all of the reflective journal responses in the Doctoral Research Data folder on my personal computer.

Artifacts

On September 11, 2016, in the same e-mail that contained the reflective journal responses form, I requested that each participant send me, via e-mail, several artifacts, including three representative teacher-created writing assignments and one writing rubric. Michael and Michelle attached three writing assignments and one rubric as Word documents to e-mails that they sent me on September 19, 2016. Anne sent her artifacts on September 20, 2016. Kara shared six writing assignment and rubric artifacts with me via Google Docs on September 21, 2016. I downloaded them the same day. Joanne shared her artifacts with me via Google Docs on October 6, 2016. Although Joanne sent

just two writing assignments and a rubric, she also included links to screencast videos she had made for her students. Eva e-mailed me her artifacts, attached as Word documents, on October 11, 2016. Eva sent three writing assignments and one writing rubric. Once I downloaded all of the artifacts, I placed them into the Doctoral Research Data file on my personal computer.

In relation to variations in the data collection plan or unusual circumstances encountered in collecting data, one participant, Joanne, did not provide three writing assignment artifacts because she provided video writing lessons in place of the third writing assignment. Instead, Joanne provided two writing assignments and shared links to three video lessons she had created and uploaded to YouTube. Joanne shared the video lessons because she often used flipped classroom lessons, wherein students viewed the videos as homework and applied the writing strategies in the classroom. There were no variations to the data collection plan, and I encountered no other unusual circumstances while collecting data.

Data Analysis: Level 1

For each case, I used a line-by-line coding technique for the interview and reflective journal data that Charmaz (2006) recommended for qualitative research. Then I analyzed this coded data in relation to each individual interview and reflective journal question, using the constant comparative method that Merriam (2009) recommended for constructing categories. I used a content analysis for the artifacts, which involved describing the purpose, structure, content, and use of each artifact (Merriam, 2009). I also presented a summary table of categories for each data source.

Analysis of Interview Data

Interview question 1. The first interview question was: Describe how you use Kaizena in relation to your writing instruction, particularly your use of the audio feature. For Case 1, all three teachers in the United States reported that they assigned writing to students in various forms, such as single paragraphs, five-paragraph essays, and personal narratives. All of the teachers also believed that because they assigned considerable writing, their grading loads were difficult to manage. Eva, who taught in the language intensive program in School C, noted that she required students to write every day. She added:

> They've got to write every day, so it's a lot. Because I require the volume of writing that I do, I can't possibly do that and look at their writing every day in class.

Michelle described how she and her colleagues in the English department at School A had developed a coding system for identifying common errors on student papers as a means of managing the grading load. Although she believed the coding system had been a "vast improvement" Michelle added:

> The weakness in the system was that students aren't motivated to go back and look at those numbers and figure out what it stands for. I got burned out on [the coding system] because I did not feel like students were understanding what was going on.

Joanne reported that she used the flipped classroom model to manage the workload. Joanne had created short tutorial screencast videos to explain common writing errors, and

she was hopeful that having students watch the videos would minimize the amount of time she spent marking the same errors on student papers over and over again.   In relation to the workload of grading papers, all of the teachers also noted that they often graded papers and created audio feedback at home because finding a quiet space at school to work was challenging. All of the participants asked students to submit their assignments through Google Docs in order to use Kaizena. Joanne and Michelle both noted that they required students to create electronic folders in Google Docs to organize their writing. All three teachers noted that they used the audio feature of Kaizena for providing global feedback on student writing, as opposed to providing comments about grammar, punctuation, or spelling. Eva, Joanne, and Michelle all noted that they provided both audio and written feedback on student papers and that in addition to using Kaizena, they provided feedback via rubrics in both electronic and hard copy. Michelle described a hybrid approach to grading papers, meaning that she used a mixture of audio and written comments. On the whole, the three teachers in Case 1 expressed enthusiasm about their use of audio feedback.

For Case 2, all three teachers at various international locations noted that they required students to submit their papers on Google Docs in order to use the Kaizena mobile app. Anne, Kara, and Michael described feeling pressure to keep up with their grading loads. In relation to workload, Anne and Michael also expressed frustration with seeing the same errors appear repeatedly on student papers. With audio feedback, Anne believed that she was able to project warmth and sometimes frustration in her comments, adding:

You know, like the dreaded apostrophe. Being able to say, "Come on, darling, apostrophe! You learned this!" And to have that be recorded means that, you know, I don't think I could reasonably be expected to physically write all of that down.

Michael expressed similar frustration because he believed many students did not read the written feedback he had provided, noting that he "just saw those glaring errors of which I point out on their draft copy, but they failed to correct that." Kara believed audio feedback helped students not to view her as "a source of all knowledge." All three teachers in Case 2 noted that they provided both written and audio feedback, and they also described some differences between this feedback. Kara reported that she gave students both short and long narrative comments, but she believed that long audio comments were difficult for students to decipher. Anne believed that using audio feedback was more intimate than written feedback and that it enabled her to convey emotions and provide students with encouragement as well as critical feedback. Anne added:

The language is always couched in encouraging terms: "So, this is what you've done here. Why have you done this? Maybe it could be like this" you know, that kind of stuff. So, it's mostly about the warmth, but it's also about the kind of authentic conversation between you and the student, being able to pull them up when necessary.

Kara and Anne both believed they needed to find a balance between providing global comments on organization and ideas and providing surface-level comments about

grammar and punctuation. Michael noted that he recorded audio feedback most often at home:

> In my office, there are other teachers, and it just wasn't convenient to give the oral feedback because of all the background noise. For the audio, I tend to use it a lot more where there's a quiet environment, when I'm at home.

Despite this inconvenience, Michael liked the voice feature. Kara and Anne also liked Kaizena as well. Thus, overall, the three international teachers expressed positive feelings about using audio feedback.

In comparing the responses of the two user groups, teachers in both groups expressed frustration about the workload of grading papers. Teachers in both user groups also believed that students did not attend to their written comments so they had all sought out more efficient and effective ways of grading papers, which is how they had discovered Kaizena. All six teachers used Kaizena to supplement written feedback but not to supplant it. Teachers in Case 1 reported using audio feedback to provide more global comments on student papers, whereas teachers in Case 2 reported trying to find a balance between giving global and surface-level comments when providing feedback. In their responses to this first interview question, teachers in the first user group gave some indication of the types of writing they asked students to produce, but teachers in the second user group did not discuss the types of writing they usually assigned. In both user groups, one challenge of using audio feedback was mentioned by at least one teacher, which was finding a quiet space to record, often at home after school hours. Despite this

challenge, all of the teachers in both user groups were positive in their responses about using audio feedback in their writing instruction.

Interview question 2. The second interview question was: What is your opinion about Kaizena as a tool for providing audio feedback on student writing? In Case 1, all three teachers in the United States reported that they loved using Kaizena because they believed it was a useful and effective innovation for providing feedback on student writing. Michelle, Joanne, and Eva believed that audio feedback made their comments more personal for students. Michelle and Joanne both noted that being able to say students' names in the audio feedback added to the personalization of their feedback and improved their relationship with students. Joanne added:

> Being able to say their name, too, means a lot to me. Like, "Ok, [Student], good
> job with this, but bad job with that." It just makes it more personal for them and
> for me.

Eva and Michelle believed that using audio feedback made them seem more human to students. Eva believed she was a better teacher when she used audio feedback because she was able to build relationships, even in large classes. She noted:

> I told them to just imagine me, I'm at the dining room table, and I'm talking to
> them. Or I'm at my desk at home, and I want them to realize that I'm doing this
> at home. I have a life. I don't live at school.

Michelle described using Kaizena at home and noted that sometimes interruptions occurred as she was recording. However, she believed this was positive because:

> If anything, it humanizes you more because when the students hear your dog bark in the background, or your kid bursts into the room, they sort of see you as, like, "Oh, you're human; you live in the real world, too."

Michelle, who was a technology integrator as well as an English teacher, had used Kaizena for the longest time in comparison to the teachers. Michelle described her efforts to get her colleagues to use Kaizena because she believed it was "as rock solid product" and that its integration with Google Classroom made it easy to use for both teachers and students. She noted with disappointment that her colleagues in the English department were resistant to using new technologies because they had encountered challenges in the past with technology, and they viewed technology integration as "one more hassle" that they could not handle because their workloads were already overwhelming. Michelle empathized with her colleagues' views but believed that Kaizena was a useful innovation that would help colleagues manage their workloads:

> For high school teachers, who are overwhelmed in many ways and driven by Common Core and high expectations of state tests and all the other pressure, it's a risk to them. And their [grading] system works. They can't even conceive that there would be a better way. But if we can [provide feedback] through our phone, it's like any hurdle that we've met along the way; slowly and steadily, those hurdles are going away.

Taken together, responses from Joanne, Michelle, and Eva indicated that despite some technological challenges, they loved using Kaizena because it personalized their feedback and enhanced their relationships with students.

In Case 2, Anne, Michael, and Kara noted that they liked using Kaizena because they found it to be efficient, valuable, and easy to use. Michael noted that he had been introduced to Kaizena by a colleague and "[I] just thought, yeah, this is great. I saw a place for it immediately." Kara and Anne believed that using Kaizena saved them time and was a better digital tool than any other they had used in the past. Kara noted that because her school had one-to-one device integration, grading with pen and paper made her feel unprofessional, and her goal was to stop grading on paper altogether. She added:

> All the digital resources I was trying were so cumbersome that I wasn't willing to use them. So here I am with this antiquated system, still doing things on paper, and it just doesn't feel professional because kids aren't doing anything on paper anymore. I think that's one of the beauties of Kaizena is that they've really managed to make grading simpler and faster. It's one click and it's done. It's just really fast.

In addition, Kara believed that audio feedback was more personal. Michael noted that audio feedback was new and novel to him and that he was enthusiastic and positive about using it. Anne believed it was "tremendously helpful" for speeding up the grading process. As a whole, teachers in Case 2 expressed positive opinions about using Kaizena.

In comparing the responses of the two user groups, both groups of teachers believed that Kaizena was a useful and efficient tool for providing feedback on student writing. All teachers believed that audio feedback was more personalized and efficient than written feedback and that using Kaizena enhanced their relationships with students. In the first user group, Michelle and Eva noted that audio feedback humanized them,

while in the second user group, Kara and Anne believed that Kaizena saved them time grading. All teachers noted that they liked or loved using Kaizena.

Interview question 3. The third interview question was: How has using Kaizena influenced your writing instruction? In Case 1, Michelle and Joanne noted that providing audio feedback felt like having a conversation with students. Therefore, Michelle and Joanne believed that providing audio feedback through Kaizena made them feel more connected to their students' writing because they assessed it at home, which made them feel more personally connected to students in class as well. Joanne added:

> To be able to spend that time that I spend grading as a way to interact with them more as a person, or to think of them as an individual, it helps me to get to know them even better in class. Now I have a better understanding of who Joe is or who Susie is because I feel a bit more connected to their writing.

Eva and Michelle noted that they could track their students' writing progress because Kaizena marked how many times a student made a particular error. Michelle believed this feature not only saved her time but also made feedback understandable for students. She added:

> It frees me up because the kids get that error key and can refer to it. So if they go to the skill summary, and they go, "Wow, I really have a problem with sentence fragments," it's right there. They can see the data very clearly.

Eva noted that the colored highlighting feature in Kaizena aligned to her use of colored highlights on student papers. She believed that using different colored highlights enabled her to point out negative and positive aspects of students' papers. Eva also believed that

using audio feedback helped her to differentiate her instruction because she was able to personalize her comments more with audio feedback than with written feedback. All three teachers in Case 1 believed that Kaizena positively influenced their writing instruction because it made them feel more connected to their students and helped them track student data efficiently.

In Case 2, Michael, Kara, and Anne all believed that using Kaizena had positively influenced their writing instruction. Michael believed it enabled him to provide more detailed, personalized feedback to students, as opposed to writing comments in the margins on a paper. Michael noted:

My instruction is certainly more differentiated because the way I'm giving them personalized feedback at such a rapid rate of returned work, I can immediately address their concerns quicker. Traditionally when looking at a paper, I would have them on my desk for a long period of time; then when giving it back, students have been inundated with other types of work. So it's made me certainly much keener in my approach to looking at work and marking.

Michael added that he felt more efficacious as a writing teacher and that he was enthusiastic about using Kaizena. He believed that his enthusiasm rubbed off on his students and made them more enthusiastic about their writing. Anne believed that using Kaizena saved her grading time, which made writing instruction "less onerous" and made her feel "less resentful" about grading papers. Anne noted that because it saved her time, audio feedback assuaged her feelings of guilt about not giving students enough timely,

helpful feedback. Anne added that using Kaizena had reinvigorated her writing

instruction:

> I get a little bored, frankly. The repetitiveness of the exercise, like, you put [an
>
> example] up on the board and it disappears. The ephemeral nature of that kind of
>
> educational moment is almost dangerous, really, because you've put in all this
>
> effort, but then you can't refer back to it in any meaningful way. With Kaizena,
>
> my work isn't going to disappear into the basket or the bottom of the school bag,
>
> never to be seen again. The permanency of it, I think, is emotionally satisfying.

Kara believed that she improved her teaching every year, but that "Last year, when I

introduced Kaizena, it was a major improvement" in her writing instruction. She noted

that getting used to using Kaizena took some time, but she believed the effort was

worthwhile because it "influences the professionalism of the class, and that influences the

attitude of the students" as they approach writing tasks. In sum, all three teachers in Case

2 believed Kaizena had positively influenced their writing instruction because it saved

them time and made them feel more efficacious as writing instructors.

In comparing the responses of the two user groups, all six teachers noted that

Kaizena had a positive influence on their writing instruction because they believed the

personal nature of audio feedback made them feel more personally connected to their

students in class. Teachers in both cases noted a time savings when using Kaizena,

which in turn reduced their frustration, stress, and boredom with their workloads. Eva

and Michelle believed that Kaizena was an efficient tool for tracking student data and

differentiating instruction, and Michael and Eva believed Kaizena helped them

differentiate their instruction. All teachers believed that using Kaizena had influenced their instruction by making them feel more efficacious as writing instructors.

Interview question 4. The fourth interview question was: How has using Kaizena influenced the amount of time you spend providing feedback on student writing? In Case 1, all three teachers believed that time spent giving audio feedback was qualitatively different than spending time giving written feedback because it felt less onerous and because they were providing more feedback to students when they spoke than when they wrote or typed their comments. Eva and Michelle believed that audio feedback was faster to produce than written feedback. Eva added:

> It's a kind of different time, and I would say the time spent is less taxing and less
>
> exhausting. I feel like I have more choices in my feedback. It's not just sitting
>
> there and writing, and at the end of the day, my writing hand is maybe tired, and I
>
> don't feel like writing.

Joanne believed she spent the same amount of time producing audio feedback as she did producing written feedback. She added:

> Using audio is quicker in some ways, but then I get so excited about talking at
>
> them that I'm wanting to say all these things. But I have to remember, ok, like, I
>
> end up doing a lot more, I think, than I would with a pen. Again, keeping myself
>
> in check. Because my feedback is different, I don't need to spend 20 minutes
>
> doing one paper.

Michelle believed her audio feedback was better because it was more focused and actionable than extensive written comments, which she believed discouraged students

because commenting in red ink was akin to bleeding on student papers. Thus, teachers in Case 1, overall, believed that providing detailed audio feedback took less time than providing the same level of detail in written feedback.

In Case 2, Anne and Michael believed that audio feedback took less time to produce than written feedback. Michael believed that this time savings meant he could be more personalized in his feedback and that students were more interested in audio feedback than they were in written feedback. Anne noted that the time saved with audio feedback helped her manage her workload. She also believed that large classes made the grading workload worse and that the work she did outside the school day was not recognized by educational leaders and policymakers. She added:

> So sure, I can imagine in another universe that if I did have class sizes of 20 or 15, then maybe I would change it up, but that's a hypothetical. And the reality is I'm working, and I can claim I'm working too hard. And, I don't know, my solution to this problem is that I'm going to go and have some babies. We've got great maternity leave here, and that is how I will manage my correction load. And what a pall state of affairs for a first world country.

Kara believed that Kaizena did not save her time grading overall, but she could do more with her feedback in the same time. She noted that she wanted to say more when she recorded audio feedback but believed she had to find a balance to avoid overwhelming students with feedback.

In comparing the responses of the two user groups, two teachers in each user group believed that Kaizena saved them time. One teacher in each user group believed

they spent the same amount of time grading with Kaizena, but they were able to provide more detailed feedback as a result. All teachers in both user groups believed the time they spent recording audio feedback was different and better than the time they spent producing written comments because it felt less taxing to speak and record personalized, detailed audio feedback. Anne and Michelle further noted that they spent considerable time grading student papers at home.

Interview question 5. The fifth interview question was: How has using Kaizena influenced the feedback that you give students on their writing? In Case 1, Eva, Joanne, and Michelle all noted that they gave more feedback when they used audio than when they wrote or typed it. All three teachers also believed that audio feedback was faster to produce and more personal than written feedback. Michelle noted that before she used Kaizena, she had created screencast feedback, which was "super, super time intensive, and I was drowning in paper grading," but she believed her students loved hearing her voice. When she discovered Kaizena, Michelle believed it was "really great" because she could give students the audio feedback they loved in less time than it took to create screencast feedback. All teachers in the United States user group believed that their audio feedback was more global than their written feedback, and it was easier to give global feedback when speaking than writing. Eva believed she could give students more individualized attention and that recording feedback felt like having a personal conversation with a student. She added:

> I say that I am in conversation with you, and I like how Kaizena uses the word
> conversation. This is my conversation with you, and it happens one-on-one. I am

kind of looking over your shoulder, and we can have a conversation, but we don't

have to physically be in the room together.

Joanne and Michelle noted that they were able to have real-time exchanges with students

when they were grading at home and received text notifications from students via

Kaizena. All teachers believed they were able to give students more suggestions for

improving their papers when using audio feedback. Overall, teachers in Case 1 believed

Kaizena had positively influenced the feedback they provided to student because they

were able to give more detailed, personal comments.

In Case 2, all teachers in the international user group believed they could give

more detailed feedback when they used audio. Michael noted that he gave more positive

comments when he used Kaizena and that he tended to give more comments about

grammar and punctuation when he used written feedback. Kara noted that she

encouraged colleagues to use Kaizena, but she found that they were hesitant. She

believed she could be more responsive with audio feedback and added:

> I think that a lot of our generation, we're not used to hearing ourselves and being
>
> willing to be videotaped and recorded, and things like this. I think we just need to
>
> make a decision that we're going to not mind the sound of our voice and just kind
>
> of get on with it. Just have a conversation with our kids.

Anne noted that she struggled with giving feedback because finding "the time, space, and

emotional energy to write something warm at the end of a piece leaves me feeling tired,

and frustrated, and resentful" about the workload of grading papers. She believed that

before she used Kaizena, she found the marking process to be a "burdensomely

emotional" experience because it was repetitive, and her students did not attend to the feedback she had provided. Anne also believed that giving audio feedback allowed her to connect emotionally with her students' writing. Most teachers in the international user group believed audio feedback positively influenced the experience of grading papers.

In comparing the responses of the two user groups, teachers in both user groups believed audio feedback had positively influenced their feedback because it was more detailed and personalized than written feedback. Teachers in both user groups noted that audio feedback was like having a personal conversation with a student. Teachers in the United States user group believed it took them less time to produce audio feedback. One teacher in the international user group, Anne, noted that she felt frustrated by the workload of grading papers and that audio alleviated some of that frustration. Teachers in both user groups further noted that they gave more global than surface level feedback when using Kaizena.

Interview question 6. The sixth interview question was: Describe a specific example of your use of audio feedback and its impact on one (or more) of your students. In Case 1, teachers in the United States user group all related a specific example of providing audio feedback to a student. Eva, who taught English to international students, noted that she was able to give one of her upper-level students the extra attention she believed he needed. She added:

> I'm willing to give him the extra time that I can't in the classroom, and he's really
> excited about it. Every time I see him, he's got the biggest smile on his face. It's
> like we have a secret relationship, you know?

Joanne noted that one of her students reacted to a positive audio comment by playing it over and over again in class. She added, "He just kept saying over and over, 'I'm a promising writer, everyone.'" Michelle described the experience of grading a paper that was "a disaster" because the student had not followed directions. Michelle believed that she could address the student's paper more effectively with audio rather than written feedback. She noted:

> If you think about the way we grade papers with a pen, if I tried to write
>
> everything that I just spoke in the margins, I can't. It would take forever.
>
> Whereas, when I hit record, I can.

Thus, teachers in the United States user group described specific examples of using audio feedback, which indicated that students enjoyed it and that they could say more when using audio as compared to written feedback.

In Case 2, all three teachers in the international user group described instances of their use of audio feedback. Michael described an experience of walking into the classroom after he had used Kaizena for the first time. He saw all of the students listening to his feedback on their headphones, "and they were into it." Michael believed that the voice feature of Kaizena enabled students to interact more actively with his feedback. Anne, who had been using Kaizena for 3 years, asked a small group of students about their reactions for audio feedback. Anne believed that audio feedback "made students feel like making mistakes was part of the journey and not some terrible indictment of their writing abilities." Anne also believed that students "really, really, really liked" seeing models of writing made available through Kaizena's resource

function that enabled her to send resources to all students with one click. Kara also asked students about their reactions to Kaizena. Kara noted that in their responses, students indicated they liked audio feedback because it felt more tangible, referred to the text more directly, and was more personal than written feedback. Kara also noted that students enjoyed hearing the warmth and sound of her voice as they listened to the audio feedback. In all, teachers in the international group noted that students reacted positively to audio feedback.

In comparing the responses of the two user groups, teachers in both user groups believed students' experiences with audio feedback were positive. All teachers believed their own experiences with audio feedback were positive, as they described in their specific examples of using audio feedback. Anne and Kara, teachers in the international user group, found that students liked audio feedback. Teachers in the United States user group believed they could say more with audio feedback because it was like having a personal conversation with students.

Interview question 7. The seventh interview question was: Describe how you provided feedback on student writing before you used the audio feature in Kaizena. How is using Kaizena similar or different to that feedback? In Case 1, Eva, Joanne, and Michelle all believed that their audio feedback was more global than their written feedback, which tended to focus more on errors in punctuation and grammar. Joanne believed that it was easier to convey emotions with audio feedback, which meant "keeping my emotions in check" because she did not want to overwhelm students by

conveying everything she was thinking about their papers. Eva described her process of grading papers by noting that on first drafts:

> I just hold back and I don't do any editing. I don't do grammar. I don't do punctuation. I don't do spelling. I just do global feedback about ideas because I find that, especially for English language learners, they catch their own grammar errors when they rewrite it the second time.

Michelle believed that teachers generally do not write everything they want to say about students' papers. She believed her audio feedback was more global than her written feedback and that it was easier to communicate support and availability through voice comments. Michelle noted that at her school, students were required to maintain writing folders and reflect on their writing at the end of the school year. Michelle believed that the writing folders were "dust collectors" and ineffective tools for reflections "because their writings were in five different places." She added:

> Now with Kaizena, I could go back and instantly listen to my teacher talk to me again about it. With paper, I didn't have a skills survey that said, "Hey, your teacher marked you 14 times for this, or 3 times for this." I mean it makes it very easy to have a conversation. It becomes a reflective tool over time.

Thus, all of the teachers in the United States user group believed that their audio feedback was more personal, detailed, global, and more like a conversation than their written feedback.

In Case 2, Kara, Michael, and Anne all believed that audio feedback was easier for students to understand because written comments were less detailed and more easily

misunderstood. All teachers believed that vocal tone and intonation enhanced the clarity

of audio feedback and that students enjoyed hearing their voices. Kara added:

> I think it's faster and easier to absorb. Sometimes after being cooped up in a dark
> room for hours doing homework, it's refreshing to hear another human voice
> again rather than just reading the same old letters. Audio feedback feels more
> personal and actually feels like I've just had a conversation.

Kara also believed that recording audio feedback was less tedious than producing written

feedback. Michael noted that he could go into more detail with audio feedback and that it

was often difficult to convey tone in written feedback. Anne noted that she "loved the

freedom of talking to students," and she believed students did not read her written

comments, whereas they enjoyed listening to voice comments. Anne noted that although

she still used rubrics for generating a grade, she was more likely to provide specific

suggestions for improvement when using audio comments.

In comparing the responses of the two user groups, they both believed that their

audio feedback differed from their written feedback in that it was more personal, global,

and detailed. Teachers in both groups believed they were more likely to provide written

comments about grammar, punctuation, and spelling, and audio comments about ideas,

organization, and style. Teachers in both groups noted that audio commenting felt like

having a conversation with students. Teachers in both groups all believed audio feedback

was faster to produce and easier for students to understand than written feedback. Thus,

teachers in both groups expressed similar views about the differences between their audio

and written feedback.

Interview question 8. The eighth interview question was: How have students reacted to Kaizena? In Case 1, all teachers believed that students understood their audio feedback more than their written feedback and that they liked audio feedback. Joanne noted that her students liked audio feedback because it was new to them. Michelle noted that students felt they were getting better feedback when she used audio feedback. She believed students accepted audio feedback more readily, particularly in relation to critical feedback. Michelle added:

> The kids are saying, "It was easier for me to hear your criticism. It was like having a writer's conference, except I didn't have to sit with you," which is a hard thing for a 16- or 17-year-old kid to sit with an adult and have them rip your paper apart. So it kind of saves them on the affective domain.

Eva expressed a similar belief. She noted that she saw students happy and smiling when they received audio feedback, but added that "I don't think that I would get that if I handed them a paper with a bunch of red marks on that paper." Eva also noted that parents believed it was "the coolest thing" to be able to listen to her audio feedback. In all, teachers in the United States user group noted that students liked audio feedback and understood it better than written feedback.

In Case 2, all teachers in the international user group believed students liked and understood their audio feedback better than their written feedback. Anne believed students felt supported rather than accused of failure when they received audio comments, and therefore, Anne believed they felt more comfortable making mistakes. Kara believed students found audio feedback funny because when they were at home

with their headphones on, "they click play, and there's the teacher booming out." She noted that audio feedback takes a bit of adaptation, but students "hear it well" when they get used to it. Michael believed students were interested and enthusiastic about audio feedback. He commented that he used student reactions to convince colleagues to use Kaizena:

> When I was talking to other teachers about it, I was using students as they walked into my office as an example. I would say, "Student A, what do you think about Kaizena?" "Oh I love it. It's great. It's superb. I love the quickness of the responses coming back." So, I was using him as my evidence to say, "Hey, you should really pay attention to this because it's awesome," yeah.

All three teachers in the international group noted that students reacted positively to audio feedback.

In comparing the responses of the two user groups, all teachers believed students liked receiving audio feedback. They believed students found audio feedback personal, supportive, and easy to understand. In both user groups, teachers believed students reacted more positively to receiving critical feedback via audio than via writing. Taken together, teachers in both groups noted positive student reactions to Kaizena.

Interview question 9. The ninth interview question was: What else would you like to tell me about using Kaizena? In Case 1, all three teachers provided additional comments about their use of Kaizena. Michelle and Eva both noted that they have recommended Kaizena to colleagues and that they were frustrated with their colleagues' reactions. Michelle, who was also a technology integrator for her district, believed that

as technologies such as Kaizena become more widely available, her efforts to get teachers on board would become easier. She added:

> How do you say to somebody, "Look, doing this one little thing is going to make everything else easier"? But getting people to switch mid-year is a difficult thing. So I have found, in my 10 years of doing the tech side of things, what I'm definitely finding is that you have to pitch it to the crowd again, and again, and again.

Eva noted that when a colleague declined her recommendation for using Kaizena, she wondered why teachers are "so reticent and stubborn" about using new technologies. Joanne noted that she used the four level skill set feature in Kaizena and wished it was easier to see the levels before she clicked on them. Eva noted that she wished she could add another teacher to her Kaizena account. Thus, teachers in the United States user group noted that they had recommended Kaizena to colleagues and described improvements they would like to see in Kaizena's functionality.

In Case 2, Michael, Anne, noted that they had recommended Kaizena to colleagues. Michael believed that using Kaizena could save his colleagues time, but he also believed that using it should be a choice and not a mandate. He added:

> But then I see them certainly, and they've got a pile of essays or they've got marking to do, and I think, hey, I could save you a lot of time by recommending Kaizena, and you wouldn't have to go through all of that.

Anne believed that Kaizena was "great" and recommended it to colleagues, but she believed it would take time for more teachers in her school to use Kaizena. She added:

> There's a particular kind of culture of, like, competitive masochism that exists at my school, which means that I can't really trumpet [Kaizena] as an efficiency kind of dividend. If not as a way to increase the efficiency because that will be seen as a lack of care or lack of professionalism, which is obviously wrong. But it's a cultural shift. It will take a while.

Anne believed that teacher confidence and authentic feedback were related, and she believed that feedback was fundamental to the job of teaching. Kara noted that she struggled to integrate the use of a rubric with her audio feedback. She believed that using rubrics was not necessarily better for feedback, but their use made grading more black and white, in term of justifying a grade. She also believed that "sometimes you're forcing a score into another random concept" by attributing point values to various parts of an essay. In all, Anne, Michael, and Kara noted that they had either recommended Kaizena to colleagues or that they struggled with integrating written and audio feedback.

In comparing the responses of the two user groups, two of the three teachers in each user group noted that they had recommended Kaizena to colleagues and had met resistance when doing so. One teacher in each user group described a struggle with some aspects of integrating written and audio feedback into the actual scoring of student papers. Table 5 describes the categories that I constructed from my analysis of the interview data.

Table 5

Summary of Categories Constructed from Interview Data Analysis

Interview Question	*Categories*
IQ1: Use of Kaizena	Managing workload was challenging
	Providing more global than surface level feedback
	Saving time with Kaizena
	Grading papers at home
IQ2: Opinion about Kaizena	Liking Kaizena
	Believing audio feedback humanizes teachers
	Finding Kaizena valuable and efficient
	Saving time with Kaizena
	Feeling more personally connected to students
IQ3: Influence on instruction	Allowing teachers to differentiate feedback
	Feeling more efficacious about my writing instruction
	Feeling less resentful about grading papers
	Saving time with Kaizena
IQ4: Influence on time	Giving more detailed feedback in less time
	Grading papers at home
	Believing audio feedback is less exhausting
IQ5: Influence on feedback	Giving more detailed feedback
	Managing workload was challenging
	Conveying emotions with audio feedback
	Giving more specific suggestions
	Giving more global feedback
IQ6: Specific example	Enjoying conversation with students
	Believing students like audio feedback
	Having a special relationship with students
	Boosting students' confidence as writers
IQ7: Audio vs. written feedback	Giving more detailed feedback
	Giving more global feedback
	Conveying emotions more easily
	Conveying a supportive tone
	Giving less surface level feedback
IQ8: Student reaction	Hearing criticism is easier
	Believing audio feedback is clearer
	Enjoying hearing the teacher's voice
	Believing audio is more personal
	Feeling supported in their writing
IQ9: Anything else	Recommending Kaizena to colleagues
	Feeling frustration at colleagues' resistance
	Saving time with audio feedback
	Believing audio feedback will require a cultural shift
	Integrating audio and written comments

Note. *IQ* = interview question.

Analysis of Reflective Journal Data

The first reflective journal question was: How do you feel about yourself as a writing teacher when you use Kaizena? In Case 1, all teachers believed they could say more when using audio feedback. Joanne believed she gave better, more personalized feedback when using Kaizena because she was able to express emotions through tone and laughter. Michelle noted that she felt more effective as a writing instructor because she believed students understood her audio feedback better than her written feedback. Michelle also believe that students could hear her warm and friendly tone, which she believed bolstered their confidence as writers. Eva felt professional, organized, and happy because she believed her audio feedback gave her more time to think and provide better feedback.

In Case 2, Anne, Kara, and Michael all described positive feelings about using audio feedback. Kara believed using this feedback made her feel professional because she was able to give high quality feedback to students. She felt excited about recommending Kaizena to colleagues. Anne noted that she felt professional and generous using audio feedback because she believed she had more time to provide encouragement and global comments to students. She also noted that she felt less frustrated and resentful about her grading load because she believed Kaizena saved her time. Michael noted that he felt more connected to his students and more efficient because audio enabled him to provide more personal comments in less time that written feedback.

In comparing the responses of the two user groups, all six teachers noted positive feelings about their use of audio feedback. Eva, Kara, and Anne believed they felt more professional as writing teachers. Michael and Joanne believed audio feedback was more personal than written feedback, and Anne noted that she felt less resentful about her grading load when she used audio feedback. Overall, teachers in both user groups indicated they felt confident about audio feedback because they believed they could provide better feedback to students through audio.

The second reflective journal question was: What specific experiences with Kaizena have made you feel more confident as a writing instructor? In Case 1, all three teachers noted student reactions to audio feedback. Joanne indicated that she had received Kaizena text notifications from students while grading papers at home and was able to provide immediate feedback. Joanne believed that audio feedback was more compelling for students than written feedback. Michelle believed "in the power of verbal feedback" and noted that students loved the personal nature of her audio comments. Eva reported that she saw results in student work when she gave them audio feedback and believed that students were excited about receiving it.

In Case 2, Anne, and Michael noted that they felt more confident as writing teachers because Kaizena enabled them to give personalized, detailed feedback and foster students' independence. Anne also noted that she used Kaizena to provide models of writing for students. Michael noted that students liked the quick turn-around that he was able to provide with audio feedback. Kara noted that Kaizena required "fewer clicks and less cursor movement" than other digital feedback tools. Kara believed that audio

feedback enabled her to provide more detailed, personal feedback in less time than written feedback.

In comparing the responses of the two user groups, all teachers believed students enjoyed audio feedback because it was quick, personal, and compelling. Anne and Michael believed Kaizena made them feel more confident as writing teachers. Kara noted that Kaizena was easy to use, and Eva saw results when using audio feedback. In their overall responses to the second reflective journal question, all teachers noted positive experiences with audio feedback

The third reflective journal question was: What improvements in Kaizena would make you feel more confident as a writing instructor? In Case 1, Michelle believed that Kaizena had responded to her quickly when she contacted them with questions or suggestions for improvement. Michelle wished more of her colleagues would use Kaizena. Eva wished students could make corrections directly in Kaizena, and she believed using video feedback with students would also be interesting. Joanne stated that "it would be nice if there were a little menu of more English-teacher-y options" in Kaizena, but then wondered if that was appropriate for an audio feedback tool.

In Case 2, Kara noted challenges with using two different systems for grading, Moodle and Kaizena. She believed using Kaizena for audio commenting was effective, but using a rubric in Moodle was easier for generating grades on papers. Michael believed that the highlighting and lessons feature in Kaizena "could be refined." Michael also believed that allowing students to share voice comments with each other "could revolutionize" how they collaborate together. Anne believed that facilitating student

collaboration was an area that needed improvement. She also believed that the lessons

feature of Kaizena could reduce "the mind-numbing effect" of correcting common errors

in student writing.

In comparing the responses of the two user groups, all teachers noted that some

aspects of grading were still a challenge when using audio feedback. Eva, Joanne,

Michael, and Kara all noted improvements that they had envisioned for Kaizena,

including adding a rubric and a drop down menu of comments. Despite the challenges,

all six teachers believed Kaizena's features were useful, and Michelle wished more of her

colleagues would use it. In sum, the reflections of all teachers in both user groups noted

similar observations about using Kaizena. Table 6 is a summary of the categories that I

constructed from my analysis of the reflective journal data.

Table 6

Summary of Categories Constructed from Reflective Journal Data Analysis

Interview Question	Categories
RJQ1: Feelings as writing teachers	Feeling more confident
	Giving better feedback
	Feeling more professional
	Giving more personal, detailed feedback
RJQ2: Confidence as writing teachers	Seeing results
	Believing students love personal feedback
	Believing students love getting quick detailed feedback
	Feeling more professional as writing teachers
RJQ3: Improvements to Kaizena	Wanting to facilitate more student collaboration
	Noting challenges with feedback and grading
	Wishing colleagues would use it

Note. *RJQ* = reflective journal question.

Analysis of Artifacts

A content analysis was conducted for the artifacts (Merriam, 2009). Artifacts included a description of the purpose, structure, content, and use of the writing assignments and rubrics. The content analysis for these documents is organized according to each individual teacher in each of the two user groups because each teacher provided different artifacts.

For Case 1, all three teachers in the United States user group provided sample writing assignments and rubrics that they used in their writing instruction. In all cases, the assignments and rubrics were structured as Word or Google documents, which teachers distributed to students. The content of all three of the writing assignments included a description of the writing task and the criteria for completing each of the assignments. The first intended use for all of the assignments and rubrics was assessment

of students' writing skills, and a second intended use was to provide written feedback to students in order to generate a grade for each assignment.

In Case 1, the United States user group, Eva, who taught in a six-level language intensive program for English language learners, shared three writing assignments and three rubrics that corresponded to each assignment. The first assignment was intended for students at Level 2 in their language attainment, and its purpose was for students to write a 100-word paragraph on one of two personal narrative topics, using simple and compound sentences. The rubric for this assignment included a matrix of six assessment criteria: content, organization, verbs, language use, mechanics, and vocabulary. Each assessment criterion was described at one of four performance levels, and each level included a corresponding point score, as follows: exceptional (2), meets expectations (1.5), progressing (1), and needs work (.5). Eva's second and third assignments were intended for students at Level 6 in their language attainment. The purpose of both essay assignments was for students to write an essay on two different topics in which they synthesized information from a variety of sources and used textual evidence to support their ideas. No length requirement was identified in the two essay assignments. The corresponding rubric for both essays included a matrix of five assessment criteria: content, organization, verbs, language use, and mechanics. These criteria were assessed on the following scale: consistent (4), sometimes (3), rarely (2), and never (1).

Michelle provided three writing assignments and their corresponding rubrics, all of which were intended for her sophomore English students. All three assignments required that students use textual evidence in their writing. Michelle's first assignment

was a literary analysis paragraph response to F. Scott Fitzgerald's *The Great Gatsby*. The assessment rubric for this assignment was a 0 to 3 point scale that measured the extent to which the paragraph was a clear, complete, and accurate answer to the task. Michelle's second assignment was a two to three page argumentative essay written in the form of a letter and also presented as a speech. Michelle's third assignment was a two to three page expository essay. The rubric for Michelle's two essay assignments was the same, and it included the following criteria: focus, content, organization, style, and conventions. Each criterion on the rubric was assessed at one of four performance levels: below basic, basic, proficient, and advanced.

Joanne provided two writing assignments, a corresponding rubric, and links to three YouTube screencast writing lessons. The screencast lessons ranged in length from 5 to 10 minutes, and they included Joanne's voice explaining how to structure a body paragraph, how to construct a five paragraph essay, and how to format a paper using Modern Language Association (MLA) style. Both of Joanne's assignments were literary analysis responses to Homer's *The Odyssey*, and both assignments included a requirement that students used textual evidence to support their analysis. The first assignment was a paragraph response, and the second was a five paragraph essay. The rubric for the five paragraph essay included the following assessment criteria: structure, use of text, application of [screencast] lessons, MLA format, and evidence of reading. These criteria were described on a 6 point, numerical performance level scale that ranged from a low of 0, to a high of 6.

For Case 2, the international user group, all three teachers provided sample writing assignments and rubrics that they used in their writing instruction. In all cases, the assignments and rubrics were structured as Word or Google documents, which teachers distributed to students. The content of all three of the writing assignments included a description of the writing task and the criteria for completing each of the assignments. The first intended use of all of the assignments and rubrics was assessment of students' writing skills, and the second intended use of all of the rubrics was to provide written feedback to students in order to generate a grade for the assignment.

Kara submitted five writing assignments and four corresponding rubrics. Two of Kara's assignments were two to three page narrative essays. One of the narrative essays was a response to a text, and the other was a personal narrative. Both essays required that students use textual evidence and that they model their narrative structure on other narrative texts they had studied. The rubrics for both narrative essays included descriptions of two criteria, which were content and language, and how much each criterion counted toward a grade on the paper, which was 75% and 25% respectively. Kara's third assignment was a fictional short story that included irony, conflict, and foreshadowing. The rubric for the short story included the following criteria: purpose of the story, plot, setting, characterization, point of view, and language. Each criterion was graded on a 5 point scale that ranged from a low score of 2 to a high score of 10. Kara's fourth assignment was a 250-word journal response written from the perspective of one of the characters in George Orwell's novel *Animal Farm*. The rubrics for this assignment included three criteria: content, connection [to the character], and style, which was

defined as either "lively" of "limited." Each criterion on the rubric was graded on a 4

point scale that ranged from a low of 0 to a high of 8 points. Kara's fifth assignment was

a response to text, written in the form of two one page letters, from the perspectives of

two different characters in a text. The assignment description indicated that it was worth

50 points and that the inclusion of details from the text was a requirement of the

assignment, but no rubric for this assignment was included in Kara's artifacts.

Michael submitted three assignments, all of which were 4,000-word argument

essays about a social problem. Michael indicated that these assignments were adapted

from the International Baccalaureate curriculum and rubric and that students could

choose their own topics for the essays. All three of the assignments required that students

conduct research and include textual evidence from a variety of sources to support their

arguments and assertions in the paper. The rubric for these assignments included the

following criteria: focus, main idea (thesis statement), organization, content, research,

style, and grammar and mechanics. Each criterion on the rubric was graded on a 4 point

scale that ranged from a high of A (36 points), to a low of D/F (12 points).

Anne submitted two packets of assignments for units of study in the sophomore

curriculum at School X. The packets included two text response and analysis essay

assignments, a persuasive essay assignment, an expository essay assignment, and

corresponding rubrics for each of the assignments. Word count or page number

requirements were not indicated on any of the assignments or rubrics. All of the

assignments included a requirement for students to use textual evidence to support the

claims and ideas in presented in each paper. The rubrics for the text response and

persuasive essay assignments included the following criteria: knowledge and understanding of characters and narrative; explanation, discussion, and analysis, use of topic; structure and coherence; and mechanics. The criteria for these rubrics were graded on a five level, 40-point scale that ranged from a low of 1–2 points per criterion, to of high of 9–10 points per criterion. The rubric for the expository essay assignment included the following criteria: content; language choices for task; audience and purpose; structure and coherence; and mechanics. The criteria for this rubric were graded on a five level, 40-point scale that ranged from a low of 1 point per criterion, to of high of 5 points per criterion.

In comparison, teachers in both user groups required a variety of writing assignments from students, including paragraphs, persuasive and expository essays, and analytical responses to text. In the United States user group, all teachers assigned short papers of between one paragraph and three pages in length. One teacher in the United States user group assigned five paragraph essays. In the international user group, one teacher, Michael, assigned extended essays of 4,000 words. Kara assigned short papers, and Anne did not indicate a length requirement on her assignments. All teachers in both user groups required that students used text evidence in their writing. All teachers in both user groups used descriptive, point-scaled rubrics to generate a grade and provide written feedback on student writing assignments. The criteria in all the rubrics from both user groups was similar, in that most teachers included criteria such as content, organization, style, text evidence, and language conventions in their rubrics. Thus, with the exception that Michael assigned longer papers, the assignments and rubrics from teachers in both

user groups were similar in terms of types of writing, grading criteria, and length

requirements for papers. Table 7 is a summary of the categories that I have constructed

from my content analysis of the artifacts.

Table 7
Summary of Categories Constructed from Artifact Analysis

User Group	Categories
United States user group artifacts	Assigning paragraphs
	Assigning short papers
	Assigning five paragraph essays
	Assigning narrative, persuasive, and expository essays
	Assigning responses to text
	Requiring textual evidence
	Requiring synthesis of information from sources
	Using rubrics to generate a grade
International user group artifacts	Assigning paragraphs
	Assigning short and long papers
	Assigning narrative, persuasive, and expository essays
	Assigning responses to text
	Requiring textual evidence
	Using rubrics to generate a grade

Data Analysis: Level 2 Emergent Themes

At the second level of data analysis, I examined the categories that I constructed

for all of the data sources for both cases or user groups, including the interview data, the

reflective journal data, and the writing artifacts. Using the constant comparative method

(Merriam, 2009), I determined the major themes and discrepant data that emerged from

this analysis to inform the results of this study. I analyzed the categorized data from each

data source to determine emergent themes. These emergent themes were saving time with

Kaizena; providing detailed global feedback with Kaizena; personalizing feedback with

Kaizena; believing students liked audio feedback; recommending Kaizena to colleagues; feeling more efficacious as writing teachers; and assigning short essays and responses to text.

Saving time with Kaizena. In their interview and reflective journal responses, teachers in both user groups noted that providing audio feedback with Kaizena saved them time when compared to providing written feedback. In the United States user group, Eva and Michelle noted in their interview and reflective journal responses that when they wrote or typed detailed feedback, it took more time than when they spoke and recorded comments. Joanne believed that when she focused the audio feedback on the specific objectives of each assignment, Kaizena saved time. In the international user group, Michael, Anne, and Kara all believed that Kaizena saved them time in the feedback process. In their interviews, Kara noted that using Kaizena took the pressure off her grading load, and Anne noted that using Kaizena made her feel less resentful about her grading workload. In her reflective journal, Kara noted that Kaizena saved her more time and required fewer mouse clicks than other digital feedback tools she had tried. In his reflective journal responses, Michael stated that he believed he returned papers more quickly when he used Kaizena than when he graded with a pen. Michael reiterated this belief in his interview when he noted that before he used Kaizena, student papers remained on his desk longer because it took him more time to grade them.

Providing detailed global feedback with Kaizena. All six teachers in both user groups believed that when they used Kaizena, they gave more detailed feedback and that they focused their feedback on global issues, such as ideas and organization, rather than

on surface issues, such as grammar and punctuation. In the United States user group, Michelle and Eva both noted in their interviews that they were more prone to comment on content and style than mechanical errors when they used audio feedback. In her reflective journal, Joanne noted that she provided surface level comments in writing and global comments when she used audio feedback. In the international user group, Anne, in her reflective journal, and Michael, in his interview, both noted that they gave more detailed feedback, more specific suggestions for improvement and more positive and encouraging comments when they used Kaizena. In her interview, Kara noted that she gave more in-depth comments when she used Kaizena than when she typed feedback.

Personalizing feedback with Kaizena. All teachers in both user groups believed that audio feedback was more personal than written feedback. In the United States user group, Joanne and Michelle both noted in their interviews that being able to say students' names as they gave audio feedback personalized their feedback. Michelle and Eva further noted that audio feedback made them feel more personally connected to their students and like they had a special relationship. In her reflective journal, Joanne noted that she could show more of her personality through audio feedback because she could convey frustration or express positive feelings through laughter. In the international user group, Kara noted in her reflective journal response that she believed Kaizena was a great tool for providing personalized feedback through her vocal tone. In their interviews, Anne and Kara both noted that conveying tone and emotions through audio feedback was easier than through written feedback. Anne noted in her interview that because she often recorded audio feedback at home, students could hear snippets of her home life, such as

her dog barking in the background, which she believed humanized her to students. In his interview, Michael noted that audio feedback was more personal than written feedback because Kaizena enabled him to differentiate and customize feedback for individual students.

Believing students liked audio feedback. Teachers in both user groups believed that students liked audio feedback because it was easier to understand, more detailed, and more like having a conversation with the teacher than written feedback. In her reflective journal, Joanne noted that Kaizena enabled her to have real time instant messaging conversations with students because she graded their papers at home. In her interview, Michelle noted that students believed it was easier to hear criticism through audio feedback because her tone of voice made them feel that she cared about them. Eva noted, in both her interview and reflective journal, that students were smiling and happy when they received audio feedback. In the international user group, Michael indicated in his interview that he believed his enthusiasm for Kaizena transferred to students through the tone of his voice. In her interview, Anne stated that audio feedback boosted students' confidence, making them feel more at ease with making mistakes. In her interview, Kara noted students reported that audio feedback was easier to understand and felt more like a one-on-one conversation than written feedback.

Recommending Kaizena to colleagues. Five of the six teachers in both user groups noted that they have recommended Kaizena to colleagues. Joanne was the only teacher in either user group who did not mention recommending Kaizena to colleagues. In the United States user group, Michelle, who was also a technology integrator for her

district, noted in her interview and reflective journal that she wished more teachers would use Kaizena, but she had met resistance when she recommended Kaizena to her colleagues. Michelle believed other English teachers in the district were reluctant to try new technologies because they were overwhelmed by their grading workload. In her interview, Eva noted that she recommended Kaizena to a colleague and was frustrated that the colleague refused to try Kaizena. In the international user group, Michael noted in his interview that he recommended Kaizena to colleagues because he believed it could save them grading time. In her reflective journal, Kara noted that she met resistance about using Kaizena from a colleague because school administrators encouraged the use of Moodle for grading. Kara believed Kaizena was better than Moodle for grading and expressed frustration at having to use both Moodle and Kaizena. Anne indicated in her interview that although she had recommended Kaizena to colleagues, she met resistance. Anne believed that widespread use of Kaizena required a cultural shift in a school's culture.

Feeling more efficacious as writing teachers. All teachers in both user groups indicated that using audio feedback made them feel more efficacious as writing teachers. In her interview and reflective journal, Joanne noted that because she was giving more high quality feedback and felt more connected to her students through audio feedback, she felt better about her writing instruction. Eva commented in her interview that she believed she was a better teacher because she built better relationships with students when using audio feedback. Michelle noted in her reflective journal responses that she felt more effective because students understood her elaborate and detailed audio

comments and felt supported in their writing. In the international user group, Michael noted in his interview and reflective journal that he felt more confident as a writing instructor. Anne and Kara both indicated in their reflective journals that they felt more professional as teachers when they used Kaizena because they were using a new and efficient technology and because their students understood audio feedback better than written feedback. Anne noted in her interview that using Kaizena made her feel less resentful and exhausted about her grading load and that Kaizena had reinvigorated her teaching.

Assigning short essays and responses to text. Teachers in both user groups noted that they assigned a variety of writing types, including narrative, persuasive, and expository essays. Artifacts from teachers in the United States user group included assignments and rubrics for paragraphs, short essays, and responses to text. Joanne noted in her interview that she assigned five paragraph essays. Eva noted in her interview that students wrote every day. In her interview, Michelle commented that she was inundated with student papers. Michelle's writing assignments and rubrics included two to three page response to text assignments. In the international user group, Anne and Kara both noted that they assigned essays. Anne and Kara's artifacts included personal narrative, journal, and response to literature assignments and rubrics. Five teachers assigned short papers of no more than three pages. Michael, a teacher in the international user group, was the only teacher who assigned longer papers of 4,000 words or more. Thus, based on an analysis of the artifact data for this study, using Kaizena did not inspire teachers to assign longer papers.

Discrepant Data

Discrepant data is data that challenges the theoretical proposition in case study research (Yin, 2014). For this study, the theoretical proposition was that teachers believed that Kaizena positively impacted their writing instruction, particularly in relation to their confidence as writing instructors. Interview and reflective journal data supported this theoretical proposition because teachers in both user groups reported that Kaizena positively impacted their writing instruction because it saved them grading time and made them feel more confident as writing instructors.

Evidence of Trustworthiness

Trustworthiness in qualitative research is particularly critical for professionals in applied fields such as education because teachers "intervene in people's lives" (Merriam, 2009, p. 209). Ensuring the trustworthiness of qualitative research involves "following a rigorous methodological path" (Yin, 2014, p. 3). In this study, I applied rigorous methodology to improve the trustworthiness of this qualitative research by using the strategies described in the following sections to ensure the credibility, transferability, dependability, and confirmability of the data.

Credibility

Credibility of the research findings is defined as the extent to which the findings capture the reality of participants' experiences and perceptions (Lincoln & Guba, 1985). For this study, I used the strategy of triangulation by comparing and contrasting the three sources of data, including interviews, reflective journals, and artifacts, which included sample teacher-created writing assignments and writing rubrics. I also used the strategy

of member checks by asking participants to review the tentative findings of the study for their credibility. I e-mailed all six participants a copy of the tentative findings of the study for their review. All of the participants indicated that the findings captured the reality of their experiences and perceptions.

Transferability

Transferability of findings is established when the findings can be applied to other contexts (Lincoln & Guba, 1985). Establishing transferability of research findings can be accomplished by using thick description to depict the findings in sufficient detail so that other researchers can apply the findings to other contexts. According to Miles, Huberman, and Saldana (2014), thick description "helps the reader see what you saw and hear what you heard" (p. 162). For this study, I used the strategy of rich, thick description by describing the setting, participant demographics, data analysis procedures, and results of this study in detail.

Dependability

Research findings are said to be dependable when they are consistent and replicable (Lincoln & Guba, 1985). One strategy for ensuring dependability that I employed in this study was using an expert panel to confirm that the data collection instruments were aligned to the research questions. This expert panel included three colleagues who were employed as professors in the school of education at the university where I am employed. The three panel members all held PhDs in Education and were experienced qualitative researchers familiar with qualitative research methodologies. Another strategy that I used was the audit trail (Lincoln & Guba, 1985; Merriam, 2009),

which involved maintaining a researcher's journal to document my decisions and reflections throughout the data collection and analysis process.

Confirmability

The concept of confirmability or objectivity in qualitative research is applied to research findings that are shaped by the participants' responses and not by research bias (Lincoln & Guba, 1985). In order to avoid researcher bias in this study, I used the strategy of reflexivity that is "sometimes labeled *researcher's position*" (Merriam, 2009, p. 219, emphasis in original). I used the strategy of reflexivity by critically reflecting on my role as the sole researcher, and I described my biases, dispositions, and assumptions related to providing feedback for student writing. In a researcher's journal, I provided a detailed description of my personal and professional experiences and beliefs in order to reflect on my possible "biases, dispositions, and assumptions" (p. 219) regarding this study. In addition, I used triangulation as a strategy by comparing and contrasting findings across multiple sources of data.

Results

I analyzed the results of this study in relation to the central and related research questions for this study. An analysis of the related research questions will be presented first because the central research question is a synthesis of the analysis. A summary table of the results will also be presented at the end of this section in relation to the related and central research questions

Related Research Question 1

The first related research question was: What are teachers' perceptions about their experiences with Kaizena? The major finding in relation to this question was that teachers' perceptions about their experiences with Kaizena were positive because they believed Kaizena enabled them to give students detailed and personalized feedback in less time than it took to provide written feedback. Results of the data analysis supported this finding.

Interview data for both user groups indicated teachers believed Kaizena saved time and enabled them to give more high quality, detailed, and personalized comments to their students through audio feedback than through written feedback. Responses from Joanne, in the United States user group, and Michael, in the international user group support this finding. Joanne noted the personal nature of audio comments and believed that being able to say students' names "makes it more personal for them and for me." In the international user group, Michael noted that he was "giving [students] personalized feedback at such a rapid rate of returned work, I can immediately address their concerns." Interview and reflective journal data for both user groups also indicated that, compared with their written comments, teachers gave more global feedback on issues, such as organization, ideas, and style, as opposed to surface issues, such as punctuation and grammar, when they used audio feedback. In the United States user group, Valerie stated that she "wouldn't use audio for saying, 'You need a period here,' I use it more for global feedback." In the international user group, Anne noted that "on Kaizena, I give less specific correction of punctuation, grammar, and spelling mistakes." In addition,

interview and reflective journal data for both user groups also indicated that teachers recommended Kaizena to colleagues and experienced frustration at their colleagues' resistance to this new technology.

Reflective journal data for both user groups indicated that teachers believed using audio feedback helped them build closer relationships with their students because they believed that audio feedback felt more like a conversation in which they were able to express emotions such as pleasure, frustration, and empathy. They also believed that the sound of their voices and the background noises indicative of their lives at home outside of school humanized them to students. A response from Michelle, in the United States user group supported this finding. Michelle commented, "Students hear my warm and friendly tone, so instead of reacting emotionally to a scribbled comments, they can focus on their writing, knowing that I sincerely want them to see them develop as writers." Anne, in the international group, noted that students "feel supported; they do actually feel the collaboration happening a bit more, and they don't feel like there's the tyranny of the red pen on the page accusing them of failure." Thus, teachers in both user groups believed Kaizena helped them provide more supportive, personalized feedback to their students.

Related Research Question 2

The second related research question was: What are teachers' perceptions about how Kaizena impacts their confidence as writing instructors? The key finding was that using Kaizena increased their confidence and efficacy as writing teachers because using

Kaizena made them feel more effective in improving student writing and less frustrated with their grading workload. Results of the data analysis supported this finding.

Interview data for both user groups indicated that teachers believed that using Kaizena made them feel more professional and less frustrated and overwhelmed by their grading workload. Teachers in both user groups believed Kaizena was an efficient tool, which they believed made them more efficient at providing feedback. Interview data for both user groups also indicated that teachers believed students were excited and enthusiastic about receiving audio feedback because it was easier to understand and more personal than written feedback. Reflective journal data indicated that teachers in both user groups believed using Kaizena gave them confidence because they believed their feedback was more understandable to students. Responses from Eva, in the United States user group, and Anne, from in the international user group, supported this finding. Eva stated in her reflective journal that "my students enjoyed the varied feedback—happy students, happy teacher!" Anne felt "less burdened and resentful of the marking load when using Kaizena because it is faster and less physically laborious than offering correction on a physical page." Thus, teachers in both user groups believed that using Kaizena saved them time and made them feel less burdened by their workloads.

Related Research Question 3

The third related research question was: What do artifacts reveal about how teachers used Kaizena in their writing? The key findings were that teachers used Kaizena in assigning a variety of writing tasks and that the length of the papers they assigned did not change as they continued to assign short papers, providing both audio and written

feedback and grades via rubrics. The artifacts themselves did not reveal why teachers continued to assign short papers.

Results of the data analysis supported this finding. Artifacts for both user groups indicated that teachers assigned paragraphs, narrative, persuasive, and expository essays, responses to text, and journal entries. Artifacts for all teachers also indicated that in addition to audio comments, all teachers continued to provide written comments and scores via rubrics on final drafts of papers they assigned. Artifacts for both user groups indicated that five of the six teachers assigned short papers, such as paragraphs, and two to three page responses to text, and used rubrics to generate a grade and provide written comments on student papers. Thus, five of the six teachers did not assign long papers because they still felt overwhelmed by their grading workload. Only one of the teachers in the international user group, Michael, assigned papers of more than three pages in length because he used the International Baccalaureate curriculum, which required that students write long papers of at least 4,000 words.

Central Research Question

The central research question was: How do teachers believe Kaizena as an online digital audio feedback tool impacts writing instruction, particularly in relation to self-efficacy? The key findings were that teachers in both user groups believed Kaizena positively impacted their confidence and efficacy as writing instructors because they were able to give more high quality, personalized feedback to students in less time than written feedback, and that students liked audio feedback because it was more understandable than written feedback. Another key finding was that teachers in both user

groups recommended Kaizena to colleagues but met some resistance to try new technologies. Results of the data analysis supported this finding.

Interview data for both user groups indicated that all of the teachers believed their student writing workloads were difficult to manage, and they expressed frustration about grading papers. However, all teachers in both user groups noted that they liked or loved using Kaizena because they believed it saved them time, which in turn reduced their frustration, stress, and boredom with providing feedback on student papers. In the United States user group, In the international user group, Anne commented, "It takes me, I reckon, 30% less time to give feedback on a little piece of written work that it would if it were written." All teachers in both user groups believed that providing personalized and detailed audio feedback was less taxing than providing written feedback. All teachers in both user groups believed that using Kaizena positively influenced their writing instruction by making them feel more efficacious as writing instructors because they believed their audio feedback was more personalized, efficient, and understandable than written feedback. In the United States user group, Michelle and Eva believed that audio feedback humanized them because students could hear their tone of voice and even their laughter. Michelle noted that Kaizena "humanizes you more because when the students hear your dog bark in the background, or your kid bursts into the room, they see you as, "Oh, you're human."" Eva reported, "I feel I'm able to be a better teacher. Even with classes that are larger that I've had before, I'm able to have a relationship with students." In the international user group, Michael noted he felt more efficacious as a writing teacher and "more personally connected to my students and their work" because he was

able to return graded papers with feedback faster than he had when he graded them with a pen. In addition, Kara believed that "Kaizena made me feel more professional because I was finally able to move my grading up into the digital age." Kara also noted that using Kaizena was "a major improvement" in her writing instruction because she believed her students heeded her audio comments more than her written comments.

Teachers in both user groups also noted that using audio feedback was like having a personal conversation with students, which they believed enhanced their relationships with them. All six teachers in both user groups also believed students' experiences with audio feedback were positive. All teachers in both user groups believed that their audio feedback differed from their written feedback in that it was more personal, global, and detailed. Finally, two of the three teachers in each user group noted that they had recommended Kaizena to colleagues and had experienced frustration when they met some resistance. Eva and Michelle, in the United States user group, and Michael and Anne, in the international user group, all indicated that they had met resistance from colleagues because colleagues perceived that experimenting with new technologies was just one more demand to add to their workload. Despite this resistance, Michelle, Michael, and Anne all indicated that they would continue to recommend Kaizena because they believed it could save their colleagues grading time. Responses from Michelle, in the United States user group, and Michael, in the international user groups supported this finding. Michelle noted her frustration with a colleague who resisted using Kaizena, adding, "How do you say to somebody, 'Look doing this one little thing is going to make everything else easier?" Michael noted, "I'd like to get everyone on board using it. You

want to pass that on, to say, 'Hey, you should really pay attention to this because it's pretty awesome.'" Thus, teachers in both user groups expressed enthusiasm about using Kaizena because they believed it had improved their writing instruction.

Reflective journal data for both user groups indicated that all teachers in both user groups felt confident about using audio feedback because they believed that students received better feedback. Eva, Kara, and Anne reported that they felt more professional as writing teachers when they used Kaizena because they were using an up-to-date technology and because they believed their audio comments were more effective in helping students revise their papers than their written comments. Responses from Eva, in the United States user group, and Kara, in the international user group, supported this finding. Eva commented, ""I see results, I feel confident that I' doing my job. With Kaizena, I see results." Kara reported, "Kaizena made me feel more professional because I was finally able to move my grading up into the digital age." Anne and Michael believed Kaizena made them feel more confident as writing teachers because they observed improvement in student writing and because students told them they enjoyed audio feedback more than written feedback. Michael and Joanne believed audio feedback personalized and humanized their comments, and Anne noted that she felt less resentful about her grading load when she used audio feedback because it saved time. In addition, all teachers believed students enjoyed audio feedback because it was quick, personal, and compelling.

Artifacts indicated that teachers in both user groups required a variety of writing assignments from students, including paragraphs, persuasive and expository essays, and

analytical responses to text. Artifacts indicated no evidence that the length or type of writing assignments changed as a result of using Kaizena. In the United States user group, all teachers assigned short papers of between one paragraph and three pages in length. In the international user group, one teacher, Michael, assigned extended essays of 4,000 words because he taught an IB course that required students to produce longer papers. Table 8 provides a summary of the results of this study.

Table 8
Summary of Results

Research Questions	Results
RRQ1: Perceptions about Kaizena experiences	Feeling positive about Kaizena
	Saving time with Kaizena
	Providing detailed, global feedback with Kaizena
	Personalizing feedback with Kaizena
	Believing students liked audio feedback
	Feeling more efficacious about writing instruction
	Recommending Kaizena to colleagues
RRQ2: Perceptions about how Kaizena impacts confidence as writing instructors	Feeling more efficacious about writing instruction
	Feeling more confident as writing instructors
	Feeling more professional as writing instructors
	Saving time with Kaizena
	Personalizing feedback with Kaizena
RRQ3: What artifacts reveal about writing instruction	Assigning a variety of writing tasks
	Assigning short essays and responses to text
CRQ: Perceptions about how Kaizena impacts writing instruction, particularly in relation to self-efficacy as writing instructors	Feeling more confident as a writing instructor
	Feeling more efficacious about writing instruction
	Saving time with Kaizena
	Providing detailed, global feedback with Kaizena
	Recommending Kaizena to colleagues
	Personalizing feedback with Kaizena
	Believing students like audio feedback
	Assigning short essays and responses to text

Note. *RRQ* = related research question; *CRQ* – central research question.

Summary

Chapter 4 included a discussion of the results of the data analysis in connection to the central and related research questions for this study. The setting for this study was divided into two user groups that comprised the two cases. The first case was a user group of high school and pre-college program teachers who taught in public and private schools in the United States. The second case was a user group of high school teachers who taught in various public and private schools in international locations. Chapter 4 also included a description of the participants, and the data collection methods and timeline for the participant interviews, reflective journal responses, and artifacts, which comprised the data set for this study. Through a single case and cross-case analysis, the following seven themes emerged: (a) saving time with Kaizena, (b) providing detailed global feedback with Kaizena, (c) personalizing feedback with Kaizena, (d) believing students like audio feedback, (e) recommending Kaizena to colleagues, (f) feeling more efficacious as a writing teacher, and (g) assigning short essays and responses to text. Key findings from the data analysis in relation to the central research question indicated that all teachers in both user groups believed Kaizena positively impacted their confidence and efficacy as writing instructors because it enabled them to give more high quality, personalized feedback to students in less time than written feedback and that students liked audio feedback because it was more understandable than written feedback. Also included in Chapter 4 was a discussion of the strategies that were used to improve the trustworthiness of this qualitative research.

Chapter 5 will include an interpretation of the results in relation to the research questions and the literature review as well as the conceptual framework for this study, which was based on Bandura's (1991) social cognitive theory that underscores the critical role that self-efficacy plays in forming beliefs about one's own abilities. Chapter 5 will also include a discussion of the limitations of the study and recommendations for future research. In this chapter, I will also note implications for social change, and a provide a conclusion.

Chapter 5: Discussion, Recommendations, and Conclusion

Introduction

The purpose of this study was to investigate how teachers believed Kaizena (2016), a digital audio feedback tool, impacted their writing instruction, particularly in relation to teacher self-efficacy. I used a multiple case study design to conduct this qualitative investigation. A case study design was appropriate because data were collected from multiple data sources in order to present a rich picture of the case or phenomenon of teaching writing in the natural setting of high school English classrooms in the United States and in various international locations. This study was conducted in relation to a gap in the research, which indicated that few researchers had examined feedback practices in relation to writing instruction at the high school level, and no peer-reviewed studies had been conducted on audio feedback at the high school level. Furthermore, a lack of empirical knowledge existed about teachers' perceptions of the influence, if any, that such tools have on writing instruction, particularly in relation to their self-confidence as writing instructors. Therefore, in this study, I addressed this gap in the literature as one of the first investigations of the impact of high school teachers' audio feedback on writing instruction, particularly in relation to teacher efficacy.

Several key findings emerged from the data analysis in relation to the research questions for this study. Concerning the first related research question about teachers' perceptions of their Kaizena experiences, teachers in both user groups believed Kaizena positively impacted their confidence and efficacy as writing instructors because they were able to give more high quality, personalized feedback to students in less time than

written feedback. An additional finding was that a majority of teachers in both user groups recommended Kaizena to colleagues and had experienced frustration because their colleagues were resistant to use new technologies.

In relation to the second related research question, all teachers in both user groups believed that using Kaizena increased their confidence as writing instructors because using Kaizena made them feel more effective and professional and less frustrated with their grading workload. Data indicated that teachers in both user groups believed students liked audio feedback because it was more understandable than written feedback. In addition, all teachers in both user groups felt confident about using audio feedback because they believed that students liked audio feedback and that their feedback improved when using this type of feedback.

Concerning the third related research question about what artifacts revealed about how teachers used Kaizena in their writing instruction, findings indicated that teachers in both user groups required a variety of writing assignments from students, including paragraphs, persuasive and expository essays, and analytical responses to text. Findings also indicated that in addition to audio comments, all teachers continued to provide written comments and scores via rubrics on final drafts of papers they assigned, which added time to their grading workloads. In addition, no evidence was found that the length or type of writing assignments changed as a result of using Kaizena because the majority of teachers in both user groups continued to assign short papers.

In relation to the central research question concerning how teachers believed Kaizena impacted their writing instruction, particularly in relation to self-efficacy,

findings indicated that all teachers in both user groups believed that using Kaizena

positively influenced their writing instruction by making them feel more efficacious as

writing instructors because they believed their audio feedback was more personalized,

efficient, and understandable than written feedback. All teachers in both user groups

believed their workloads were difficult to manage, and they expressed frustration about

grading papers. However, all teachers reported that they liked using Kaizena because

they believed it saved them time, which in turn, reduced their frustration, stress, and

boredom with providing feedback on student papers.

Interpretation of Findings

My interpretation of the findings for this study was based on the relationship of

the findings to Bandura's (1991) social cognitive theory, which served as the conceptual

lens for this interpretation, and the major themes that emerged in the literature review. A

key tenet of social cognitive theory is self-efficacy, which affects an individual's choice

of activity, motivation, and expectancy outcome for a given task and is mediated by

feedback messages and emotional reactions to stress (Bandura, 1991). In relation to self-

efficacy, a major theme found in the literature review was that teachers struggle to keep

up with the time demands of generating quality feedback, which could negatively affect

teachers' self-efficacy for writing instruction (Brackett et al., 2013; Chambers et al.,

2009; Corkett et al., 2011; Gibson & Dembo, 1984; Kihuara et al., 2009; Tschannen-

Moran & Woolfolk Hoy, 2001). However, audio feedback has been found to be a

promising method for improving the feedback process in teaching and learning

(Cavanaugh & Song, 2015; Elola & Oskoz, 2016; Ice et al., 2007; Killoran, 2013; Moore

& Wallace, 2012). In this section, I will first present the findings for each related research question, followed by the central research question, which is a synthesis of those findings.

Teacher Perceptions of Experiences with Kaizena

Related Research Question 1 was: What are teachers' perceptions about their experiences with Kaizena? The major finding in relation to this question was that teachers' perceptions were positive about their experiences with Kaizena in both user groups because they believed Kaizena enabled them to produce detailed and personalized feedback in less time than it took to provide written feedback. Research on teacher and student perceptions of audio feedback supports this finding.

Rotherham (2009) conducted a study to investigate whether or not higher education students and teachers believed their experiences with audio feedback were more positive than their experiences with written feedback. Rotherham found that digital audio could be used to provide better feedback in less time that written feedback under certain conditions. Rotherham concluded by suggesting that audio feedback was most effective when a quick and easy tool for creating audio feedback was used. Dixon (2009) explored instructors' perceptions about audio feedback in relation to the quality of their feedback and the impact of audio feedback on their grading workload. Dixon found that teachers perceived audio feedback as more detailed and personal than written feedback and saved them time in the commenting process. Dixon concluded that audio feedback "has the potential to facilitate discourse" (p. 3) that leads to enhanced student learning. Macgregor, Spiers, and Taylor (2011) explored the quality of feedback messages

delivered through voice e-mails to higher education students. Macgregor et al. defined

quality feedback through existing models of quality feedback (Black & William, 1998;

Nicol & MacFarlane-Dick, 2006; Sadler, 1998; Shute, 2008). Their findings were

consistent with the literature in that audio feedback was "almost twice as fast as written

feedback" (p. 53) for instructors to produce. Given their results, Macgregor et al.

concluded that audio feedback "provides improved opportunities for adhering to good

pedagogical practice" (p. 55) and met the definition of quality feedback in the research

literature to a greater extent than written feedback. McFarlane and Wakeman (2011)

explored the use of audio feedback with higher education faculty members and found that

faculty perceived audio feedback as individualized, personal, detailed, and actionable.

McFarlane and Wakeman recommended that instructors consider offering students a

choice in how they receive their feedback by employing both audio and written feedback.

McKittrick, Mitchum, and Spangler (2014) explored teacher perceptions of audio

feedback produced on SoundCloud and provided as a supplement to instructors' written

feedback. McKittrick et al.'s results indicated that instructors reacted positively to audio

feedback. McKittrick et al. concluded that audio feedback "greatly enhances written

feedback, providing clarity and personal connection that can be lost" (p, 46) in written

feedback alone. Hennessy and Forrester (2014) highlighted best practices for audio

feedback drawn from the research literature in their mixed methods study that explored

student engagement with audio feedback. Their study data indicated that while some

technical difficulties existed, students believed audio feedback was clear, effective, less

technical, and more nuanced in comparison to written feedback. Hennessy and Forrester

concluded by supporting Cavanaugh and Song's (2014) call for more investigation into students' and instructors' use of audio feedback because they believed that audio feedback has "become more popular, yet evaluating its role in feedback delivery" (p. 777) is a nascent area of research.

Impact of Kaizena on Confidence as Writing Teachers

Related Research Question 2 was: What are teachers' perceptions about how Kaizena impacts their confidence as writing instructors? The key finding was that in both user groups using Kaizena increased their confidence and efficacy as writing teachers because using Kaizena made them feel more effective in improving student writing and less frustrated with their grading workload. Research on the relationship between teacher self-efficacy and pedagogical practice supports this finding as well.

Sommers (1989) investigated tape-recorded feedback in a case study of personal experience with providing this type of feedback and reported that the tape-recorded feedback provided more detailed, clear, and individualized feedback and that the audio feedback served as a model for students to emulate when editing their own work or the work of their peers. Sommers noted that technological glitches were a disadvantage, yet concluded that the benefits of using audio feedback offset the disadvantages because the belief that audio feedback could improve teachers' self-efficacy by improving the impact of their feedback to students. Tschannen-Moran, Woolfolk Hoy, and Hoy (1998) reviewed the literature on various ways researchers measure teacher efficacy and its impact on student achievement and found that teachers' beliefs about their teaching ability impacts student learning. Tschannen-Moran and Woolfolk Hoy (2001) conducted

a study to test the reliability and validity of the Ohio State Teacher Efficacy Scale and found it to be a reliable and valid measurement tool for teacher efficacy. Tschannen-Moran and Woolfolk Hoy also found that teacher self-efficacy "affects the effort they invest in teaching, the goals they set, and their level of aspiration" (p. 783) for professional growth and student achievement. They concluded by suggesting that more studies of the Ohio State Teacher Efficacy Scale be conducted to confirm their initial findings. Skaalvik and Skaalvik (2010) also explored the relationship of teacher-self-efficacy to teacher burnout and found that teachers with higher self-efficacy also had higher job satisfaction. Skaalvik and Skaalvik concluded by recommending that more research be conducted to explore factors affecting teacher self-efficacy and burn out. Lavelle (2006) conducted a study to investigate the correlation between teachers' writing self-efficacy and their own writing ability. Findings supported the hypothesis that teachers with higher writing self-efficacy beliefs performed better on writing tasks than teachers with low writing self-efficacy beliefs. Lavelle concluded that teachers' personal writing practices and their beliefs about their own writing ability affect their approach to writing instruction. Oomen-Early, Bold, Wiginton, Gallien, and Anderson (2008) examined teacher perceptions of audio feedback in relation to its use in an online learning environment and found that instructors preferred audio feedback because they perceived that it improved their social presence and effectiveness as teachers. Based on their findings, Oomen-Early et al. suggested that instructors make audio feedback a routine component of their pedagogy. Baker (2014) explored the perceptions of composition teachers about their writing instruction and found they perceived the grading workload as

"tedious, repetitive, time-consuming, and emotionally-draining" (pp. 36–37). Baker concluded by recommending that teachers use strategies, such as employing technology tools to facilitate grading, in order to cope with the onerous workload of grading papers.

Artifact Revelations about Writing Instruction

Related Research Question 3 was: What do artifacts reveal about how teachers use Kaizena in their writing instruction? The key findings were that teachers in both user groups used Kaizena in assigning a variety of writing tasks and that the length of writing assignments did not change as the majority of teachers in both groups continued to assign short papers, providing audio and written feedback and grades via rubrics. Research on high school writing instruction supports this finding. Research recommendations indicate that students should be given more frequent, varied, and longer writing assignments (Applebee & Langer, 2009, 2011; Graham, Harris, & Hebert, 2011; Graham & Perin, 2007a, 2007b; National Commission on Writing, 2003; National Governors Association Center for Best Practices & Council of Chief State School Officers, 2010). Empirical studies indicate, however, that teachers rarely ask students to produce multipage academic papers (Gillespie et al., 2014; Graham, Harris, & Hebert, 2011; Graham & Perin, 2007a, 2007b; Kiuhara et al., 2009; National Commission on Writing, 2003; Scherff & Piazza, 2005; Stagg Peterson & McClay, 2010, 2014). The workload of providing written comments on student papers has been found to be a substantial obstacle to writing instruction, particularly in assigning more and longer pieces of writing (Dunn, 2011; Kellogg & Whiteford, 2009; National Commission on Writing, 2003; Stagg Peterson & McClay, 2014; Worthman et al., 2011). Citing student achievement data

from nationally administered standardized assessments, Kellogg and Whiteford (2009) argued that the time involved in providing high quality feedback on student writing is a significant barrier to writing instruction. In their study of secondary writing instruction, Applebee and Langer (2011) found that only 20.9% of student writing at the middle and high school levels "involved extended writing" (p. 15) and that the overall amount of time dedicated to writing in high schools was characterized as "distressingly inadequate" (p. 16). In Dunn's (2011) study of teachers' perceptions of effective writing instruction, teachers reported that they assigned a variety of writing tasks but also expressed the need for more resources to support their feedback to students. Stagg Peterson and McClay (2014) found that, while "the importance of feedback on students' writing development has been well documented," (p. 36) teachers reported that lack of time for providing feedback posed a significant challenge to writing instruction. Graham et al. (2014) conducted a large scale survey of language arts, social studies, and science teachers in Grades 6–8 and found that a majority of teachers seldom used writing assessment to drive their instruction. Junqueira and Payant (2015) examined teachers' beliefs about effective writing assessment and found inconsistencies between teachers' beliefs and their actual assessment practices. Whereas, teachers believed that providing detailed, timely feedback was optimal for student achievement in writing, the time-consuming and complex nature of providing feedback on student writing posed a significant barrier to teachers' writing assessment practices.

Impact of Kaizena on Writing Instruction

The central research question was: How do teachers believe Kaizena as an online digital audio feedback tool impacts writing instruction, particularly in relation to teacher self-efficacy? The key findings were that teachers in both user groups believed Kaizena positively impacted their confidence and efficacy as writing instructors because they were able to give more high quality, personalized feedback to students in less time than written feedback and that students liked audio feedback because it was more understandable than written feedback. Another key finding was that teachers in both user groups recommended Kaizena to colleagues but met some resistance because their colleagues felt too overwhelmed to try new technologies.

Research on effective feedback, teacher self-efficacy, audio feedback, and student perceptions of audio feedback supports this finding. In their review of the literature on effective feedback, Nicol and MacFarlane-Dick (2006) found that feedback is most effective when it is clear, aligned to the task, dialogic, and acted upon. Nicol and MacFarlane-Dick also found that teachers believed providing formative feedback was a time consuming endeavor that did not consistently yield the desired results on student performance, which in turn negatively affected their self-efficacy.

In social cognitive theory, emotions are thought to have a critical effect on self-efficacy beliefs (Bandura, 1997). Brackett et al. (2013) contended that teachers' everyday experiences "are laden with emotion" (p. 641). As such, Brackett et al. explored the influence of high school teachers' emotions on their grading practices relative to student writing. Brackett et al. found that teacher emotions "may bias the

grades that teachers assign to their students" (p. 634) and that positive teacher emotions were correlated with higher student grades and vice versa. Given that high school students' grades have high stakes consequences for their college and career paths, Beckett et al suggested that more research is needed to understand how teachers' emotions affect their evaluations of student writing and how pre-service and professional development programs may mitigate the effects of teachers' emotions on student writing.

In a study of audio feedback, Ice et al. (2007) found high student satisfaction with audio feedback in comparison to text only feedback. Instructors reported a 75% reduction in the time it took them to provide feedback. Ice et al. concluded that it is "hard to argue *against* using audio commenting" given the results of their study (p. 19, emphasis in original). McCullagh (2010) conducted a study of higher education students and writing instructors who had no previous experience with audio feedback. The results showed that both students and teachers reacted positively to audio feedback. Students reported that audio feedback was "especially friendly, detailed, helpful, and motivating" (p. 3) and that it made them think teachers cared about them and devoted more time to providing the feedback because it was more personalized. Teachers found that audio feedback did not save them time, however, they were able to give more high quality feedback in the same time as providing written comments. Cavanaugh and Song (2015) investigated students' and instructors' perceptions of audio and written feedback and found that students preferred audio feedback because they found it to be more comprehensible and personalized than written comments. Cavanaugh and Song found that instructors also preferred audio feedback because it took less time than providing

written feedback. McCullagh (2010) and Cavanaugh and Song (2015) both recommended that more research be conducted on students and teachers' perceptions of audio feedback.

In relation to the finding that teachers recommended Kaizena to colleagues but met resistance, research supports these findings. Graham et al. (2014) conducted a national survey of English language arts, social studies, and science teachers in Grades 6-8 and found that middle school teachers rarely used technology other than word processing software in their writing instruction and rarely required students to use internet technologies, such as blogs, to produce or publish writing. Given these findings, Graham et al. concluded that in order to meet the writing demands articulated in the Common Core State Standards, schools and teachers will need to dedicate a substantially greater number of resources and pay considerably more attention to digital applications for writing. Wood et al. (2011) explored student and instructor perceptions of audio feedback and found that most instructors believed the process was "efficient and pleasurable," (p. 542), although some instructors found the learning curve for providing audio feedback difficult. In Ekinsmyth's (2010) study of instructor perceptions of digital audio feedback, results indicated that some instructors were reluctant to use audio feedback because they conveyed "a general feeling . . . that there was little need to change the way feedback was provided because the written method worked for them in the past" (p. 76). Overcoming such resistance and tapping the potential of audio feedback will, according to Ekinsmyth, require "a culture shift [and] a re-evaluation . . . of the goals, types, possibilities, and importance of feedback" (p. 76) among faculty. In

their study of teacher perceptions of audio feedback, Gould and Day (2013) found that

instructors had mixed reactions to the audio feedback process. Some instructors thought

the audio feedback process was "brilliant" (p. 563) while others felt less efficacious about

it and reported feeling discomfort with "hearing [their] own voice" (p. 563) and with the

technical aspects of the process. Despite the misgivings of some faculty, Gould and Day

concluded that audio feedback "could contribute greatly to a student's learning" (p. 564)

and recommended using audio as a complement to traditional written feedback. Killoran

(2013) reviewed the literature on audio feedback and found that one reason audio

feedback has not been more widely adopted is the complexity of "the technology itself

seems off-putting" (p. 41) to some instructors. Killoran concluded that despite this

perception, audio feedback "deserves to be adopted more widely than it already has been"

(p. 47) as a tool for providing feedback on student writing.

Conceptual Framework

Bandura's (1991) social cognitive theory was used as the conceptual lens to

interpret the findings of this study. The overarching concept of social cognitive theory is

that human behavior and learning occur through the observation of cognitive and

behavioral models in particular environments and that replication of a cognitive or

behavior model is mediated by an individual's self-efficacy, outcome expectancy, and

identification with the model (Bandura, 1977, 1991). In social cognitive theory, behavior

and learning are the result of three interactive, reciprocal factors (Bandura, 1977, 1991).

The first factor is the extent to which an individual has a positive self-efficacy for

acquiring a behavior. Bandura (1991) defined perceived self-efficacy as an individual's

"beliefs in one's capabilities to organize and execute the courses of action required to produce given attainments" (Bandura, 1997, p. 3). According to Bandura, self-efficacy is influenced by four factors, including "mastery experiences, vicarious experiences, social persuasion, and psychological and emotional states" (Gredler, 2001, p. 327). Therefore, social cognitive theory is aligned to the findings in this study because teachers present cognitive and behavioral models and experiences to students that effect change in their cognition and behavior through the social and psychological dynamics inherent in the student-teacher relationship. The second factor is the internal and external responses an individual receives after exhibiting a behavior. In other words, a key factor in cognitive or behavioral change is the feedback an individual receives and the self-reflection he or she engages in after exhibiting a behavior. The third factor is environmental aspects that may influence an individual's ability to effectively replicate a particular behavior. These three interactive factors determine self-regulatory systems that "not only mediate the effects of most internal influences, but provide the very basis of purposeful action" (Bandura, 1991, p. 248).

Bandura's (1991) social cognitive theory supports the findings in this study in relation to the central research question because it underscores the critical role that self-efficacy plays in forming beliefs about one's own abilities. In relation to the first factor of social cognitive theory, which is mastery and vicarious experiences, findings in this study indicated that all teachers in both user groups believed that using Kaizena positively influenced their writing instruction by making them feel more efficacious as writing instructors because they believed their audio feedback was more personalized,

efficient, and understandable than written feedback and they believe students enjoyed it more than written feedback. In relation to the second factor of social cognitive theory, which is social persuasion, findings in this study indicated that teachers in both user groups felt confident about using audio feedback because they believed that students received better feedback and that students liked audio feedback more because it was more detailed, understandable, and personal than written feedback. In relation to the third factor of social cognitive theory, which is psychological and emotional states, findings indicated that environmental aspects of school, such as class size, relationships with colleagues, school administrators' attitudes about technology, and school culture, impacted the ability of teachers to manage their evaluations of student writing. Findings indicated that five out of six teachers continued to assign short papers because, despite the time savings they noted when they used Kaizena, because they reported feeling overwhelmed with their workload of grading papers for large numbers of students. Findings also indicated that teachers who had recommended Kaizena to colleagues met some resistance because their colleagues also felt too overwhelmed with their grading workloads to try new technologies.

Limitations of the Study

The limitations of this study are related to the qualitative research design. The first limitation was related to the number of cases. Yin (2014) argued that literal replication is achieved with one or two cases, but four to six cases are needed for theoretical replication. Therefore, because this study included only two cases, theoretical replication would be limited and only literal replication was possible.

The second limitation was related to the participant sample. The sample size of three teachers for each of the two user groups was small. The small sample size limited the transferability of the study findings because the beliefs of the two user groups may not represent the beliefs of all English teachers at the high school level who provide audio feedback for student writing.

The third limitation was related to the data collection procedures. All of the data that were collected and analyzed for this study were self-reported data, which can be flawed. Only one interview was conducted with each participant, and responses to the three reflective journal questions were collected only once. Multiple interviews and a reflective journal maintained over a longer period of time may have provided richer data. In addition, all the data for this study were collected from teachers; no high school student writing examples were collected or analyzed. Therefore, although teachers believed Kaizena improved their writing instruction, no conclusions could be drawn from this study about the impact of Kaizena on student writing achievement.

Recommendations for Future Research

My recommendations for research are related to the results of the study and the gaps found in the review of the literature. The first recommendation is that more research is needed to understand how the large number of students assigned to high school English teachers impacts their writing instruction. A key finding in the literature review was that the workload of grading papers is onerous and emotionally draining, particularly for writing teachers (Baker, 2014; Dunn, 2011; Kellogg & Whiteford, 2009; Kiuhara et al., 2009; National Commission on Writing, 2003; Stagg Peterson & McClay, 2014;

Worthman et al., 2011). However, very little is known about the impact of high school English teachers' workloads on writing instruction, particularly when they provide instruction to large classes. No studies have been conducted to investigate how many hours, on average, high school English teachers spend grading papers, both during and beyond the contracted work day, and few studies have been conducted to determine the impact of the grading workload on the confidence of high school English teachers about their writing instruction. Results of this study indicate that all of the teachers in both user groups believed their workloads were difficult to manage, and they expressed frustration about grading papers. One teacher in the international group, Anne, noted that before she found Kaizena, she had considered leaving teaching because she was burned out by the emotional burden of her grading workload. All teachers in both user groups noted that they liked or loved using Kaizena because they believed it saved them time, but interview and reflective journal data indicated that all teachers still felt overwhelmed by their grading loads because, in addition to their audio comments, all teachers continued to provide written feedback and generate grades via rubrics. Therefore, additional research is needed to understand the scope and impact of high school English teachers' workloads on their writing instruction.

A second recommendation is that further research is needed on the use audio feedback at the high school level. A key theme in the literature review for this study was that audio feedback has been found to be a promising method because instructors perceive that audio feedback allows them to provide more detailed, personalized, and, actionable feedback to students (Cavanaugh & Song, 2015; Elola & Oskoz, 2016; Ice et

al. 2007; Killoran, 2013; Moore & Wallace, 2012). However, all previous studies of audio feedback had been conducted in higher education, and no studies had been conducted about high school teachers' use of audio feedback. Results from this study indicate that teachers believed Kaizena positively impacted their confidence and efficacy as writing instructors because they were able to give more high quality, personalized feedback to students in less time than written feedback and that students liked audio feedback because it was more understandable than written feedback. These results are consistent with findings in the literature review. However, the sample size of this qualitative multiple case study was small, and results are not generalizable to all high school English teachers who use this type of feedback. Therefore, more research is needed to understand how high school English teachers perceive the impact of audio feedback on their writing instruction.

The third recommendation is that more empirical studies are needed to investigate factors that influence the length of writing assignments that high school English teachers assign and the amount and type of feedback they provide to students. Findings in the literature review indicated that feedback for learning is effective when it is executed as a social, dialogical process, but feedback is also problematic for both teachers and students because teachers struggle with the time demands of providing feedback, and students often misunderstand written feedback (Dunn, 2011; Hattie & Timperley, 2007; Kellogg & Whiteford, 2009; National Commission on Writing, 2003; Nicol & MacFarlane-Dick, 2006; Sadler, 1989; Stagg Peterson & McClay, 2014; Worthman et al., 2011). Results of this study indicate that all teachers provided surface level comments on punctuation and

grammar in writing and global level comments on organization and ideas in their audio

feedback because they believed it was easier to give more specific suggestions when

using audio feedback. Although teachers in this study were able to provide more detailed

feedback using audio feedback than written feedback, analysis of the artifact data

indicated that the length or type of writing task did not change as a result of using

Kaizena. One reason for this lack of change may be that teachers in this study also

provided written feedback via rubrics, which added to their grading workloads.

However, given the small sample size in this study, more research is needed to

understand the factors that impact the length of writing assignments that high school

English teachers assign and the amount and type of feedback they provide to students.

Implications for Social Change

I will discuss the implications of this study for positive social change in relation to

the individual, the educational organization, and society. In relation to the individual,

findings from this study contribute to positive social change by providing insights into

the challenges that high school English teachers faced in the teaching of writing.

Teaching is "inextricably emotional" (Hargreaves, 2001, p. 1057), and emotions most

certainly influence teachers' perceptions about their own agency and their self-efficacy

beliefs. Results from this study provide insights into the frustration, weariness, and guilt

that teachers reported as they endeavored to provide meaningful, effective feedback on

student writing, while managing the daunting workload of grading papers. Results

indicated that Kaizena, a digital audio feedback tool, shows promise in relieving some of

the workload because it saved teachers time and improved their confidence and self-

efficacy as writing instructors and teachers observed improvements in student writing. These results indicate that other high school English teachers could benefit from using audio feedback and that further studies of audio feedback at the high school level are warranted.

Concerning schools and school districts, findings from this study contribute to positive social change by shedding light on an audio feedback tool that improves teachers' perceptions about their self-efficacy as writing teachers, which could benefit schools and districts by reducing teacher burn out and employee turnover. Results of this study also indicated that teachers believed they gave more high quality feedback to students and that students enjoyed and heeded audio feedback more than written feedback, which improved their relationships with students. These findings could positively impact schools and districts by providing insight into a tool that could improve student-teacher relationships and overall school climate, a factor that has been shown to improve student and teacher satisfaction, as well as retention and graduation rates (Achieve, Inc., 2014; Carnegie Council on Advancing Adolescent Literacy, 2010; Thapa, Cohen, Guffey, & Higgins-D'Alessandro, 2013).

In relation to society, this study contributes to positive social change because the ability to communicate thoughts and ideas in writing is critical for life and work in the 21st century, yet too many students fail to acquire the proficient writing skills they need to succeed in work and in life (Achieve, Inc., 2005, 2014; Carnegie Council on Advancing Adolescent Literacy, 2010; Graham, & Perin, 2007b; Graham, Harris, & Hebert, 2011; Graham, Hebert, & Harris, 2015; National Commission on Writing for

America's Families, Schools, and Colleges, 2003, 2004, 2005; National Institute of Child Health and Human Development, 2000; National Governors Association Center for Best Practices & Council of Chief State School Officers, 2010). The results of this study provide empirical evidence that audio feedback shows potential to improve how teachers perceive their instruction and their self-efficacy as writing instructors, which could, in turn, improve the chances that more students learn proficient writing skills. Increasing the number of students who are prepared for the challenges of post-secondary education and careers will help to ensure that they are prepared to compete and thrive in a global economy.

Conclusion

The ability to communicate thoughts and ideas in writing is critical for life and work in the 21st century, and the rapid pace of change in the global knowledge economy means that acquiring proficient writing skills is more critical than ever before (National Governors Association & Council of Chief State School Officers, 2010). However, student achievement scores on nationally administered standardized assessments indicate that many students fail to acquire proficient writing skills, and evidence from the research literature indicates that teachers struggle to keep up with the workload of providing feedback on student papers (Achieve, Inc., 2014; Graham, & Perin, 2007b; Graham, Harris, & Hebert, 2011; Graham, Hebert, & Harris, 2015; National Commission on Writing for America's Families, Schools, and Colleges, 2003, 2004, 2005; National Institute of Child Health and Human Development, 2000). Therefore, exploring ways to improve the teaching of proficient writing skills is a vital area for research. One tool that

has shown promise in the research literature for improving writing instruction is audio feedback. Before this study was conducted, the majority of studies of audio feedback had been conducted in higher education, and no studies had explored audio feedback in high schools. This study contributes research evidence on how high school English teachers perceive the impact of audio feedback on their instruction. Results indicate that audio feedback positively influences teachers' self-efficacy for writing instruction and the feedback they provide to students. Results also indicate that the use of audio feedback in high school writing instruction is nascent, and although teachers in both user groups recommended Kaizena to their colleagues, they met resistant because the complexity of the technology was off-putting to some instructors. However, the growing body of research on audio feedback and the results of this study indicate that audio feedback should be more widely adopted because it is an effective tool for providing detailed, personal, dialogic feedback to students, and it has the potential to reduce teachers' grading workloads and improve their self-efficacy as writing instructors, which in turn could improve student writing.

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Appendix A: Letter of Cooperation

Kaizena Cofounder
(xxx)-xxx-xxxx

March 20, 2015

Dear Martha M. Bless,

Based on my review of your research proposal, I give permission for you to conduct the study entitled, *Feedback Technology for Improving Student Writing and Its Impact on Writing Instruction*, on our technology product called, Kaizena. As part of this study, I authorize you to collect and analyze data, including participant interviews, reflective journals, and teacher-created documents. Individuals' participation will be voluntary and at their own discretion.

We understand that our organization's responsibilities include: distributing, to Kaizena users who are teachers, a written announcement of the study and request for volunteers to participate. The announcement will include the researcher's personal contact information, and volunteers will be instructed to contact her directly if they wish to participate. We reserve the right to withdraw from the study at any time if our circumstances change.

I confirm that I am authorized to approve research on our product and that this plan complies with the organization's policies.

I understand that the data collected will remain entirely confidential and may not be provided to anyone outside of the student's supervising faculty/staff without permission from the Walden University IRB.

Sincerely,

Kaizena Cofounder
(xxx)-xxx-xxxx

Appendix B: Invitational Flyer

Dear Kaizena Users:

You are cordially invited to take part in a research study about the impact of audio feedback technology on writing instruction, particularly in relation to teacher self-efficacy. Maxwell Brodie, Cofounder of Kaizena, has given his permission for me to conduct this study.

My name is Martha M. Bless, and I am currently a doctoral student at Walden University, an accredited institution of higher education. I am a former high school English teacher and am currently employed as an instructor in the school of education at a state university in the northeastern region of the United States.

As an educator, I have experienced the time consuming and sometimes frustrating process of providing written feedback on student papers. This experience has led me to investigate ways to improve the feedback process for teachers and students.

Researchers have found that audio feedback is a promising method for improving the feedback process, but no studies have been conducted with high school teachers. Therefore, the purpose of this study is to investigate how high school English teachers believe Kaizena, as an online digital audio feedback tool, impacts writing instruction, particularly in relation to teacher self-efficacy. The title of this study is *Impact of Audio Feedback Technology on Writing Instruction*.

By participating in this study, you would be contributing to one of the first studies that explores the use of audio feedback technology at the high school level. In addition, you may help to develop a deeper understanding of the impact of audio feedback on high school teachers' self-efficacy for writing instruction.

If you are a high school English teacher and are interested in participating in this study, please contact me directly at the email address or phone number below.

Martha M. Bless
XXXXXXXXXXXXXXXXXXXXXXXX

Appendix C: Demographic Survey

Kaizena Study Demographic Survey

Are you currently employed as a full time public high school teacher?

Please choose your title.

Please enter your full name.

Please indicate the name of the school district where you teach.

Please indicate the name of the school where you teach.

What subject(s) do you currently teach?

What grades do you currently teach?

Approximately how many students do you currently teach?

What courses do you currently teach?

265

How many years have you been teaching?

What degrees and certifications do you hold?

Do you use the audio feature of Kaizena to give feedback to students on their writing?

How long have you been using the audio feature of Kaizena?

Submit

Never submit passwords through Google Forms.

Appendix D: Invitational Letter

Dear Kaizena Users,

You are cordially invited to take part in a research study about audio feedback technology for improving writing instruction.

My name is Martha M. Bless, and I am currently a doctoral student at Walden University, an accredited institution of higher education. I am a former high school English teacher and am currently employed as an instructor in the school of education at a state university in the northeastern region of the United States.

As an educator, I have experienced the time consuming and sometimes frustrating process of providing written feedback on student papers. This experience has led me to investigate ways to improve the feedback process for students.

Researchers have found that audio feedback is a promising method for improving the feedback process, but no studies have been conducted with high school teachers. Therefore, the purpose of this study is to investigate how teachers believe Kaizena impacts writing instruction at the high school level. The title of this study is *Impact of Audio Feedback Technology on Writing Instruction.*

By participating in this study, you would be contributing to one of the first studies that explores the use of audio feedback technology at the high school level. In addition, you may help to develop a deeper understanding about how teachers believe audio feedback impacts writing instruction.

Please review the enclosed letter of consent, which describes your role in the data collection process. If you are interested in participating in this study, please sign the consent form and return it to me in the self-addressed, stamped envelope as soon as possible. I will select the first eight to twelve teachers who send me a signed consent form.

If you have any questions about this study, please contact me directly at the email address or phone number below.

Thank you!

Martha M. Bless
XXXXXXXXXXXXXXXXXXXXXXXXX

Appendix F: Teacher Interview Protocol

Opening Script: Hello and thank you for agreeing to do this interview. Did you have a chance to read the interview questions I sent to you ahead of time? As you recall, I will be recording this virtual face-to-face interview using Google Hangouts. I will be asking you the questions I sent you, and I may also add some probing questions based on your responses. Do you have any questions for me before we begin?

1. Describe how you use Kaizena in relation to your writing instruction, particularly your use of the audio feature.

2. What is your opinion about Kaizena as a tool for providing audio feedback on student writing?

3. How has using Kaizena influenced your writing instruction?

4. How has using Kaizena influenced the amount of time you spend providing feedback on student writing?

5. How has using Kaizena influenced the feedback that you give students on their writing?

6. Describe a specific example of your use of audio feedback and its impact on one (or more) of your students.

7. Describe how you provided feedback on student writing before you used the audio feature in Kaizena. How is using Kaizena similar or different to that feedback?

8. How have students reacted to Kaizena?

9. What else would you like to tell me about using Kaizena?

Closing Script: Thanks once again for your time and for talking with me today. Once I complete the data collection and analysis for this this study, I will ask you to review the tentative findings for their credibility, which should not take more than 15–20 minutes. Take care and enjoy the rest of the school year.

Appendix G: Reflective Journal Questions

1. How do you feel about yourself as a writing teacher when you use Kaizena?

2. What specific experiences with Kaizena have made you feel more confident as a writing instructor?

3. What improvements in Kaizena would make you feel more confident as a writing instructor?

Appendix H: Artifact Data Collection Form

Type of Artifact_____

Collected from _____Date_____

Purpose of the artifact

Structure of the artifact

Content of the artifact

Use of the artifact