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Google Docs as Supportive Technology in High School Career and Technical Education

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Abstract

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MEd, East Carolina University, 1999

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Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

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Abstract

Educators must meet the demand to produce a workforce better educated with using 21st-century technology tools. The purpose of this case study was to explore the usefulness of Google Docs as one of those tools by examining 2 main questions. Those questions were how high school students perceive Google Docs could benefit them and how career and technical (CTE) teachers use it to support collaborative learning as a strong part of the learning process. The conceptual framework used included Vygotsky's sociocultural theory, which focuses on collaborative learning. Participants were 2 teachers and 8 students from 2 urban school districts in the Eastern part of the United States. Data sources were interviews with teachers and student focus group discussions. Data were coded using open coding, and themes and patterns were identified. Results indicated that Google Docs supports student learning by increasing opportunities for collaboration and helping students be more efficient while also preparing them for careers. Students indicated that they saw Google Docs as a learning tool and that they were more engaged while working collaboratively with their peers via the platform. Findings may help CTE teachers and students learn more about how to use web-based technologies to learn via collaboration and may assist students in becoming more successful in their CTE courses and careers.

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Dedication

"*I can do all things through Him who strengthens me.*"

Philippians 4:13

This work is dedicated to my family and friends who supported and encouraged me throughout my PhD journey. I am forever grateful for all the love shown. I love you all.

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Chapter 1: Introduction to the Study

There is a rapid transformation in the way people interact, live, communicate, and conduct business in the 21st century. This rapid change known as the digital revolution is due to the progression of technology moving from analog, electronic, and mechanical tools to digital tools that are readily accessible (Delgado, Wardlow, McKnight, & O'Malley, 2015). The digital revolution has sparked a change in education by affecting how educators incorporate digital instructional strategies to teach, and how students acquire skills and knowledge needed to prepare for college and the workforce (Delgado et al., 2015).

The paradigm shift from the traditional communication and media devices to digital devices in recent decades is making an impact on how people connect with one another (Donaldson, 2014). The fast-changing pace of technological advances has led to significant changes in educational settings. This change in response to meeting the requirements of the 21st century skills initiative has required educators to redesign teaching and learning activities (Delgado et al., 2015). With the demand for new skills from those entering the workforce, many educators have been assigned the responsibility of ensuring that students are prepared for entry into this fast-changing world (Donaldson, 2014). According to the U.S. Department of Education (2015), out of the 13 million unemployed Americans, nearly three million jobs are unfilled due to lack of skills needed for employment in advanced fields such as technology, advanced manufacturing, and engineering.

Teachers who use Google Docs use the application as a management tool to monitor student work in progress and to assist with keeping students on task (Suwantarathip & Wichadee, 2014). Google Docs provides the opportunity for teachers to review comments added to students' collaborative work samples and to see who is working or how much each student has contributed (Suwantarathip & Wichadee, 2014). The knowledge gained from this study added to the literature on Web 2.0 technologies through examination of how Google Docs can be used as a collaborative learning tool in career and technical education (CTE) courses and to meet the demands of equipping a better educated workforce with employable skills needed in today's economy. This chapter include the background of this qualitative case study, a discussion of the problem that was identified as the need to conduct this study, a description of the purpose of this study, and the research questions. The chapter also includes a discussion of the conceptual framework that guided the study and an explanation of the nature of the study. Definitions of key terms used throughout the study are provided as well as the assumptions, scope and limitations, delimitations, and the significance of the study.

Background

The future of the U.S. economy is contingent on a well-educated and skilled workforce with literacy skills being the critical foundation of education and training. Students who lack the necessary literacy skills will be unprepared to accomplish their future career and life goals (Castellano, Sundell, & Richardson, 2017). Most students who take vocational training during high school have a better opportunity to obtain employment after graduation (Castellano et al., 2017). However, many students lack the

literacy skills needed to meet the reading and writing requirements of high school and the disciplines in which they will work (Castellano et al., 2017). Although educators throughout the United States are pursuing ways to address these concerns, CTE programs are being designed to offer students a rigorous and relevant education rich in literacy strategies that will assist students in gaining a better understanding of technical materials and literacy skills necessary for career success (Stone, 2017). With the use of Web 2.0 technologies, CTE teachers motivate unengaged students to read, write, work collaboratively, and apply critical thinking skills in authentic situations (Cummings, 2016).

Castellano et al. (2017) found that many high school transcripts stated that students were college ready; however, more than 55% of college freshman are required to take remedial courses in reading and math that are not considered credit-bearing courses. There have been numerous efforts in the educational system to improve students' reading, writing, critical thinking, and collaborative skills, but efforts have not focused on increasing literacy through CTE (Stone, 2017). Stone (2017) discussed how CTE has the potential to address the challenges vexing the educational system today.

The Common Core Standards established in 2009 were designed to generate standards and procedures for schools to use in building skills, such as critical thinking skills, that would assist students in performing well in college or enable them to be competitive in their career. Technological advances make it possible for students to have an option to attend class online instead of the traditional face-to-face classroom setting. Educators are assisting with facilitating these standards by incorporating the use of

technological tools in their lesson plans and extending learning to online collaborative environments (Donaldson, 2014). Technology in the classroom is beneficial in assisting students with skills needed to be successful in 21st-century collaborative learning environments (Delgado et al., 2015).

Online collaboration tools such as Google Docs foster student-centered learning and student engagement that is essential in promoting inquiry and communication skills. Online collaboration is an engaging medium that promotes student classroom interaction (Schneckenberg, 2014). Kosloski and Ritz (2016) discussed how Google Apps for education is used to build relationships between teachers and students with the interaction on class projects. Students can complete assignments while being engaged with their peers to form a consensus on their work assignments. Teachers can provide timely feedback and observe, encourage, and facilitate students' work as they gather the information needed to complete an assignment. Cummings (2016) discussed how Web 2.0 technologies encourage more repetitive approaches in collaborative networks that offer students more enhanced methods of learning. Using Web 2.0 tools in the classroom promotes 21st-century skills and affords an opportunity for educators to explore ways to use these tools to support student learning (Kovalik et al., 2014).

Google Apps for Education is a useful free cloud computing application (Schneckenberg, 2014). By utilizing the cloud approach in learning and teaching, students and teachers are able to work on the same document simultaneously while providing additional information, making corrections, and providing feedback in a collaborative manner. Cloud computing, with the use of Google Apps, offers a variety of

new opportunities and tools designed to enhance learning and teaching by enabling individuals to personalize their learning environments. Cloud computing is a ubiquitous computing tool that can enhance engagement among individuals in collaborative learning communities (Schneckenberg, 2014). Cloud computing is a collaboration medium that allows users to store and share information digitally with other members of the professional community to collaborate, critique, peer-review, build up, and publish information (Schneckenberg, 2014).

Kosloski and Ritz (2016) discussed how CTE courses equip students with the 21st-century skills that are needed to meet the demand for more technical skills that are essential in the workforce. Teachers implementing 21st-century collaborative tools such as Google Docs found that the students had a more positive attitude toward active participation and problem-solving, had higher learning motivation, and agreed that the discussion with peers helped them better understand the learning content (Lin, Chang, Hou, & Wu, 2016). Researchers have discussed the impact of using Google Docs on student engagement in several academic arenas (Hsu, Ching, & Grabowski, 2014). There is an increased interest in how Google Docs could be used as a collaborative learning tool. However, there is limited information available to educators on how these groups function, especially in CTE courses.

Problem Statement

With the high demand of producing a better-educated workforce with the use of technology, there is a need for more research on how CTE teachers could use Google Docs as a teaching tool to develop students' 21st-century skills needed in today's

workforce. These 21st-century skills, which include being able to work collaboratively in diverse teams, think critically, and communicate effectively, are essential because they are transferable skills that can facilitate a person moving from one field or job to another for a lifetime of success in their career (Park, Pearson, & Richardson, 2017). These skills are also essential in life because they empower individuals to understand crucial problems in their communities (Griggs, Kochan, & Reames, 2018).

Cummings (2016) argued that utilizing Web 2.0 technologies such as Google Docs can maximize students' engagement and participation while also helping them develop flexible strategies for writing collaboratively and increasing instructor immediacy. Research findings about Web 2.0 technologies indicated that these technologies offer various educational benefits (Alsubaie & Ashuraidah, 2017). Students who use Web 2.0 applications in collaborative learning environments can provide immediate feedback, share comments, and edit each other's work to improve their writing and social skills (Suwantarathip & Wichadee, 2014). However, many teachers are not using these tools despite the possibilities that exist for using them in teaching and learning situations (Suwantarathip & Wichadee, 2014). Thiele, Mai, and Post (2014) found that Google Docs could be used as a tool to boost learning by making the classroom more student centered and active and by allowing the students to work with different peers and become comfortable working with other classmates. Colak (2015) claimed that students who worked in cooperative learning environments improved in academic performance. Dishaw, Eirman, Iverson, and Phillp (2013) discussed how Google Docs was rated as the most productive tool for working in collaborative

environments. Cummings (2016) argued that there is a need to conduct more research on teachers' attitudes and perceptions of Google Docs as an emerging writing tool, and the effects it may have on learners' interpersonal engagement and writing ability in collaborative learning groups. In the current study, examining how Google Docs is used in CTE classes supplemented the literature on Web 2.0 technologies and provided best practices for teachers to use in their classrooms. Gaining a better understanding of teachers' and students' views and attitudes toward Google Docs and how this tool could be used in CTE courses may enable high school decision-makers to align educational objectives to prepare students for the 21st-century workforce. The lack of research about CTE teachers' views of Google Docs and how they use this Web 2.0 tool, as well as students' attitudes about Google Docs, triggered the need for the current study.

Purpose of the Study

The purpose of this study was to explore teachers' and students' views and attitudes about using Google Docs, and how high school CTE teachers use Google Docs as a teaching tool to support student collaboration, writing skills, and interpersonal engagement in collaborative learning environments. With the fast-changing pace of technological advances and the demand for new skills for those entering the workforce, more research was needed in the field of CTE to identify how Google Docs could be used to help students be effective in the 21st-century workforce. The central phenomenon of this study was the views and attitudes of teachers and students using Google Docs to prepare students for learning and meeting the 21st-century goals of a prepared workforce.

Research Questions

The research questions that guided my study were as follows:

1. How can Google Docs be used by teachers in a high school CTE class to support collaboration, improve writing skills, and enhance interpersonal engagement in a cooperative learning environment?

2. What are the views of high school CTE teachers about using Google Docs as a teaching device to support collaboration and to improve writing skills and interpersonal engagement in their classrooms?

3. What are the opinions of high school CTE students about their teachers using Google Docs as a learning tool to support collaboration and to improve writing skills and interpersonal engagement in their classrooms?

4. How do CTE teachers explain the impact Google Docs has on student learning?

Conceptual Framework for the Study

The conceptual framework that informed this study was Vygotsky's (1978) sociocultural theory with the focus on collaborative learning. Vygotsky's sociocultural theory emphasizes the role of interpersonal engagement of individuals through a variety of tools such as language, cultural objects, and social institutions that facilitate learning and development. Social learning theories are commonly used in research to offer an understanding of how teachers construct active learning communities and how people learn in social contexts. Vygotsky's theory is a complementary piece to Bandura's (1977) work on social learning. Social learning theory focuses on how learning is a cognitive

process that occurs in a social context through direct instruction and observation (Bandura, 1977).

The collaborative theory is an aspect of the social learning theory that defines how social interaction impacts the process of learning, such as in my research study, and how utilizing Google Docs may be favorable in advancing students interpersonal and writing skills. The alignment of my research questions with the conceptual framework of my research study was essential in explaining how the influence of social interaction is important in developing an effective learning environment. Chapter 2 includes in more detailed description of Vygotsky's (1977) work on the zone of proximal development and the more knowledgeable other, which can be effective concepts to use in the classroom as teachers use cooperative learning activities. The substitution, augmentation, modification, and redefinition (SAMR) model was the framework I used to describe how Google Docs is being incorporated into the instructional practice of a CTE class. SAMR is a model designed to assist educators with integrating technology into their teaching practices (Walsh, 2015). SAMR affords educators the ability to move through degrees of technology adoption with the goal of finding uses of technology in their teaching. Each level of the SAMR model provides insight into how computer technology might influence teaching and student learning (Walsh, 2015).

Nature of the Study

This study included a qualitative case study design conducted in two locations. Qualitative inquiry focuses on relatively small samples in depth (Patton, 2015). Qualitative methodology was selected for this study because it aligned with the

framework and the research questions used to address the issue of my study. A case study is used to contribute to the understanding of an individual; group; organization; or political, social, or related phenomenon (Yin, 2012). A case study approach was appropriate for my study because it provided me the opportunity to explore how and why Google Docs is used and perceived as a learning tool in high school CTE courses.

This study included a multisite case study design with the unit of analysis being two CTE classrooms where Google Docs is being used. The study took place in two separate rural school districts with high schools on the East Coast region of the United States that employ Google Docs. Using a multisite case study design enabled me to obtain an in-depth understanding of how Google Docs is being used in CTE classes as a collaborative tool for various learners, and the views of the teachers and students as the tool is being used. An interview was conducted with each teacher to explore their views of Google Docs as a collaborative learning tool and their use in the classroom. I also conducted focus group discussions with the students. Data gathered from the interviews with the teachers and student focus groups facilitated the triangulation process. The data from the interviews with the teachers and student focus groups were collected and analyzed to identify emerging themes. Gaining an understanding of how students are engaged using this tool and the views of teachers and students who used Google Doc added to the literature on Web 2.0 technologies and its influence on student learning and teaching (see Alsubaie & Ashuraidah, 2017).

Definitions

21st century classroom: A classroom in which teachers facilitate student learning and create productive classroom environments that enable students to develop the necessary skills for the workplace (Abdelmalak, 2015).

21st century skills: Creativity, collaboration and teamwork, critical thinking, and problem-solving (Partnership for 21st Century Skills, 2010).

Career and technical education (CTE): Educational courses designed to offer students the academic and technical knowledge and employable skills needed to pursue postsecondary training and enter the workforce with continuous learning (Griggs et al., 2018)

Google docs: A web-based version of Microsoft Word used as a learning tool that offers collaborative features with the ability to create and format text documents in real time (Pappas, 2015).

Web 2.0 technologies: The second generation of web-based applications designed to enhance user creativity, increase collaboration, and allow users to create and share online information in web-based settings (Faizi, Chiheb, & Afia, 2015).

Assumptions

This study was based on three assumptions. The first assumption was that all teachers in this study would tell the truth about utilizing Google Docs as a collaborative tool as part of their instruction. This assumption was essential in obtaining information about how teachers use Google Docs in their classrooms and their views of the tool. The second assumption was that the students were being truthful about their attitudes about

Google Docs in a collaborative learning environment, and they were available to participate in the focus groups. This assumption was essential in gaining information about the student opinions of Google Docs. I anticipated that the teachers and students would be honest and open in answering the research questions. Assumptions were important in providing trustworthy data to support my research study.

Scope and Delimitations

The scope of this study involved teachers' and students' use and views of Google Docs as a collaborative learning tool. There is a demand for a better-educated workforce with jobs requiring more complex knowledge and skills than the jobs of the past (Griggs et al., 2018). The learning options offered through the CTE cluster of courses afford students the opportunity to obtain the competencies that are mandatory in today's workplace such as critical thinking, collaboration, writing, problem-solving, innovation, communication, and teamwork (Griggs et al., 2018). Hsu et al. (2014) discussed the influence of using Google Docs on student collaborative engagement in various academic areas. There is a significant interest in how Google Docs could be used as a collaborative learning tool (Marlatt, 2019). However, educators have limited knowledge on how these groups function, especially in CTE classes.

The participants in this study included two high school CTE teachers who had taught in CTE for at least 3 years and had used Google Docs in their instruction. The two focus groups included students who were in the teachers' classes. CTE teachers were selected for this study instead of core curricular teachers due to the limited research in the field of CTE.

In qualitative research, transferability refers to the degree to which the findings of a study can be applied or transferred to another phenomenon (Merriam, 1998). Transferability of the findings in this study may inform future research regarding how Google Docs could be used in other CTE courses. I provided a clear description of the data collected, analysis process, and results of each phase of the study to allow for greater transferability of the findings.

Limitations

A common limitation with qualitative research is the relatively small sample size, which limits generalization (Patton, 2015). Smaller sample sizes are common in qualitative research because they enable the researcher to have better control over the data. This limitation was addressed by utilizing purposeful sampling for the selection of the participants, which minimized bias and produced more meaningful data (see Patton, 2015). The limitation issues regarding sample size and bias were addressed through triangulation. Patton (2015) described how collecting data from multiple sources such as interviews and documentations is necessary to provide a comprehensive perspective on the issue being investigated for the triangulation of the findings. Chapter 3 addresses specific strategies used during the data collection and analysis process.

Significance

The goal of educational technology research is to offer new information in the field that will aid educators in becoming better informed about learning, teaching practices, engagement and motivation techniques, and classroom management strategies that can be beneficial to them in effectively educating their students (Castellano et al.,

2017). Tamim, Bernard, Borokhovski, Abrami, and Schmid (2011) stressed how educational technology includes an extensive variety of tools, strategies, and modalities for learning that supports students' efforts to succeed. This study was important in advancing the cutting edge in practice because it provided information on the advantages of collaborative learning using tools such as Google Docs and how it promotes student learning. Studies have shown that online collaborative writing develops accuracy, fluency, and opportunities to share feedback with others (Suwantarathip & Wichadee, 2014). This study addressed the gap in understanding how a collaborative tool such as Google Docs supports collaboration and interpersonal engagement. This study was significant because it addressed how collaborative learning is a crucial aspect in students' learning because it encourages active learning and students' self-reliance. In collaborative learning settings, students take more ownership of their learning and think more critically about related issues when they work collaboratively (Suwantarathip & Wichadee, 2014). With the increase in emerging technologies in education, there are more opportunities for collaborative learning applications, such as Google Docs, that are used as pedagogical tools to motivate and enhance student learning (Friedman & Friedman, 2013). The results of this study provided an understanding of how collaborative learning using Google Docs may impact students' learning and improve their social decision-making and communication skills, while potentially improving their attitudes toward collaborative writing (see Suwantarathip & Wichadee, 2014).

Summary

This chapter provided an introduction to my study on teachers' and students' use and views of Google Docs as a collaborative learning tool. I discussed the background literature that was essential to identifying what has been researched about my topic and provided a detailed account of the purpose and problem addressed in my study. The research questions that guided my research were presented, as well as the conceptual framework for my study. Other sections included the nature of the study, key definitions, assumptions, scope and delimitations, limitations, and the significance of my study.

Chapter 2 provides a detailed review of literature on my topic. The framework that informed my study is also discussed in detail. Chapter 2 also provides a review of the major themes from the literature, which include career and technical education, preparing students for future goals, the importance of collaborative learning communities, 21st century classroom, integrating Web 2.0 technologies, teachers' and students' views of Web 2.0 technologies, collaborative learning and writing using Google Docs, impact of Google Docs on student engagement and motivation, and cloud computing as a tool for collaboration.

Chapter 2: Literature Review

Research showed that integrating core academic knowledge and skills in CTE courses affords students better preparation for the 21st-century workplace (Park et al., 2017). CTE academic integration is a mandate under the Carl D Perkins legislation (Jay, 2017), Career Pathway systems (U.S. Department of Education, 2015), and College and Career Readiness initiative (Achieve, Inc. & National Association of State Directors of Career Technical Education Consortium, 2015). The Carl D. Perkins Act was signed by the United States in 1984 as a means to increase the quality of technical education with the goal of improving the nation's economy (Jay, 2017). Embedding core curricular instruction such as English, literacy, math, and science into CTE programs of study promotes unique opportunities for students to develop the skills and knowledge necessary to achieve at high levels, engage with CTE content, and transition into achievable, progressive careers (Park et al., 2017). In many CTE courses, students do not associate the relevance of English as an essential component of their coursework, and it is a challenge to engage them in what seems to be esoteric subjects. CTE educators must link student schema and interest to student learning outcomes (Waldman & Igarashi, 2016). Researchers have not explored how high school CTE teachers used Google Docs to support collaboration, writing skills, and interpersonal engagement in collaborative learning environments. The current study provided information about Google Docs and how this tool could be used in collaborative learning environments to offer best practices for teachers to use in the classroom. Collaborative tools such as Google Docs assist

students in recognizing the effectiveness of good writing skills, which will be transferable to the workforce.

Researchers discussed the influence of using Google Docs on student collaborative engagement in various academic contents (Hsu et al., 2014). There is an increased interest in how Google Docs could be used as a collaborative learning tool (Marlatt, 2019). However, there is limited information for educators on how these groups function, especially in CTE classes. Research findings about Web 2.0 technologies indicated that these technologies offer educational benefits (Konstantinidis, Theodostadou, Pappos, 2013). Students who work in collaborative learning environments using Web 2.0 applications can provide immediate feedback, share comments, and edit each other's work to improve their social and writing skills (Suwantarathip & Wichadee, 2014). However, many teachers are not using these tools despite the benefits of using them in teaching and learning situations (Suwantarathip & Wichadee, 2014). In addition, teachers have not explored many of the tools to discover the benefits of collaborative learning (Konstantinidis et al., 2013).

The purpose of this study was to explore how high school CTE teachers use Google Docs to enhance student collaboration, writing skills, and interpersonal engagement in collaborative learning environments. Computer-supported learning is the process of utilizing technology as an influential tool to develop collaborative learning (Goodyear, Jones, & Thompson, 2014). Goodyear et al. (2014) also saw a new trend emerging about studies related to the development of new collaborative technologies and their impact on computer-supported learning platforms.

In this chapter, I review literature on the views and beliefs related to Google Docs as a collaborative learning tool and how the tool can be applied in CTE classes. Several articles were analyzed regarding teacher views of integrating core academic knowledge and skills in CTE courses with the use of Web 2.0 tools and how the tool prepare students for the 21st-century workplace. The chapter review consists of several major areas of literature related to my study. The first area of review is the foundation and conceptual framework, which served as the lens to explore teachers' and students' views of how Google Docs can be used as a collaborative learning tool and how it can be used in CTE courses. The topics addressed in the rest of the literature review include career and technical education, preparing students for future goals, the importance of collaborative learning communities, 21st century classroom, integrating Web 2.0 technologies, teachers' and students' views of Web 2.0 technologies, collaborative learning and writing using Google Docs, impact of Google Docs on student engagement and motivation, and cloud computing as a tool for collaboration.

Literature Search Strategy

To locate the most recent and relevant sources for my literature review, I used multiple information sources such as Internet sources, dissertations, professional journals, periodicals, and books. The digital searches and databases that I used were ERIC, Proquest, ProQuest dissertation and theses Global, dissertation and theses at Walden, Google Scholar, and electronic peer-reviewed journals. I focused particular attention on literature published within the past 5 years. Peer-reviewed articles from journals such as *Journal of Information Technology Education*, *British Journal of Educational*

Technology, *Journal of Technology Integration in the Classroom*, *Turkish Online Journal of Educational Technology*, *International Journal of Emerging Technologies in Learning*, and *The Journal of Technology, Learning, and Assessment* constituted 90% of the literature review. The key words that I used to locate literature on my research topic included *Google apps*, *Google Docs*, *Google Apps for Education*, *collaboration*, *collaborative learning*, *collaborative technology*, *21st century learner*, *21st century skills*, *constructivist learning theory*, *cooperative learning*, *globalization*, *cloud computing*, *social learning theory*, *Vygotsky*, *connectivism*, *Web 2.0*, and *technology integration*. The key words selected were essential to understanding the key concepts of my study and the knowledge that would be beneficial in any pedagogical setting.

Conceptual Framework

The conceptual framework associated with my study was informed by the concept of how social interactions are essential in the learning process. Social learning theories are used in research to offer an understanding of how teachers construct active learning communities and how people learn in social contexts. Vygotsky's (1978) social learning theory describes how social interaction impacts the learning process, such as how Google Docs may be used in collaborative learning environments to assist with increasing student writing and interpersonal skills. The key concept of Vygotsky's theoretical framework centers on the notion that social interaction is essential to the development of cognitions. Vygotsky's theory is a complementary piece to Bandura's (1977) work on social learning. Bandura's social learning theory focuses on how learning is a cognitive process that occurs in a social context through direct instruction and observation.

Vygotsky's (1978) sociocultural theory emphasizes the role of interpersonal engagement of individuals with the use of various tools including language, cultural objects, and social institutions that facilitate development and learning. Vygotsky claimed that "learning is a necessary and universal aspect of the process of developing culturally organized, specifically human psychological function" (p. 90). Vygotsky emphasized the importance of social factors and how they contribute to cognitive development. Vygotsky believed in the nature of how culture played an essential role in affecting and shaping cognitive development, which contradicted Piaget's (1959) view of content development and universal stages. Vygotsky argued that cognitive development is a product of social interactions from guided learning within the zone of proximal development as individual's co-construct knowledge.

Vygotsky's (1978) work on the zone of proximal development is a prominent concept that refers to the difference between what a child can achieve independently and what a child can achieve with the encouragement and guidance from others who are more skilled in a particular area. The concept of the zone of proximal development allows a child to develop skills that can be used independently while developing higher mental functions. Vygotsky's zone of proximal development can be relevant in the classroom as teachers use cooperative learning activities in which children with less competent skills can be paired with more skillful peers to develop their skills and strategies to be successful in the classroom. Vygotsky's theories are relevant today in collaborative learning environments. When creating learning groups based on the zone of proximal development, it is essential that the groups be diverse regarding learning abilities. The

diversity of the groups enables more advanced peers to be paired with less advanced peers so they can gain a better understanding and perform well on assignments.

Vygotsky's (1978) concept of the more knowledgeable other is similar to his work on the zone of proximal development. The more knowledgeable other concept refers to someone who has a better understanding or higher-level knowledge than others (Vygotsky, 1978). The cognitive development of people will increase when working with others rather than alone. For instance, a child who works in a group with someone who has a higher learning ability will perform better with their assistance.

The following sections include themes that provide a foundation to guide my study. The literature review contains pertinent information that provides insight on career and technical education and the views of utilizing Google Docs as a collaborative learning tool in 21st century classrooms. The topics to be discussed include career and technical education, preparing students for future goals, the importance of collaborative learning communities, 21st century classroom, integrating Web 2.0 technologies, teachers' and students' views of Web 2.0 technologies, collaborative learning and writing using Google Docs, impact of Google Docs on student engagement and motivation, and cloud computing as a tool for collaboration.

Career and Technical Education: Preparing Students for Future Goals

In recent years, high school reform efforts have stressed the need for a more career-focused educational system to address ways to increase student readiness for today's workplace demands and improve students' career preparation experience (Park et al., 2017). CTE provides opportunities for individuals to be prepared for the workforce

and become successful citizens in the global workplace. To accomplish this task, individuals must be equipped with the knowledge and skills necessary to develop their leadership skills, fulfill their goals, and become competent and qualified members of the workforce (Rojewski & Hill, 2014). Rojewski and Hill (2014) found that research is a critical component in the CTE community in understanding pressing issues, making informed decisions, and evaluating instructional programs to meet the demand of the rapidly changing workplace. Rojewski and Hill concluded that for CTE to remain significant, a framework is necessary that will guide research and curriculum development to address an increasingly volatile and unclear future with new technologies.

CTE is known for developing robust partnerships between high schools and postsecondary institutions and ensuring that curriculum and instruction are closely aligned with postsecondary-level work (Rojewski & Hill, 2017). CTE programs also equip students with employability and technical skills that will prepare them for careers in the global and competitive economy (Castellano et al., 2017). Castellano et al. (2017) compared the achievement outcomes among high school graduates who were CTE program of study completers (students who completed the program of study sequence) and CTE concentrator students (students who completed a certain number of credits) in a specific occupational area. Castellano et al. found that CTE program of student completers had a substantively higher overall GPA than the CTE concentrators and earned more STEM credits. Castellano et al. emphasized that integrating core academics with CTE course sequences enhanced student outcomes by assisting students in learning

context, grasping the relevance of academic subjects, and synthesizing their in-school and out-of-school experience. Likewise, DeFeo (2015) analyzed data comparing students' career objectives to their current course to identify the level of alignment between the objectives and course-taking behaviors. DeFeo found that 62% of the students indicated that they were taking CTE courses because they thought they would learn something useful to help them with their career goals. Sixty-seven percent indicated that their career interest was aligned with the courses. Eighty percent indicated that they were interested in the subject. Although this was a large study with 1,134 participants, the sample represented only one school district, which limited the generalizability of the findings.

Career-focused education has been emphasized as a means to address the need of improving students' career preparation experience and the educational relevance of a prepared workforce (Mobley, Sharp, Hammond, Withington, & Stipanovic's, 2017). Park et al. (2017) emphasized that there is a gap between implementing new technologies to meet the needs of the workforce and CTE, and the need to adequately prepare students with the 21st-century skills that are in high demand in the workforce. Mobley et al. investigated whether career and technical students and non-CTE students differed in their participation in career development and planning. Mobley et al. found that a larger proportion of CTE students had selected both a career cluster and a major and developed a career plan. Mobley et al.'s results also showed that most CTE students strongly agreed that obtaining a high school major and career cluster was instrumental in getting better grades and assisted them with making a connection between what they studied and the type of career they wanted. Similar results between CTE and non-CTE students indicated

that both groups reported that they planned to enroll in a 2- or 4-year college or university after graduation Mobley et al. However, CTE students indicated specific job names after graduation (Park et al., 2017).

Studies have shown that determining research needs related to high school CTE and the preparation needed for teaching CTE in secondary schools is essential to preparing students for career goals (Kosloski & Ritz, 2016). Kosloski and Ritz (2016) conducted a Delphi study with a panel of 11 purposefully selected researchers to determine research needs related to high school CTE and the preparation needed for teaching CTE in secondary schools. Kosloski and Ritz used a Delphi methodology to generate a consensus among expert panelists. Delphi methods involve a panel of experts who answer questionnaires in two or more rounds with a facilitator providing a summary of each round enabling the experts to make revisions to their previous replies to eventually make a final decision on an issue (Kosloski and Ritz, 2016). The study consisted of four stages and 11 panelists of researchers to identify and rate research needs in CTE. Kosloski and Ritz found that the top three research needs in CTE identified were (a) student success based on a variety of outcomes; (b) development of cognitive abilities through CTE learning; and (c) methods for connecting CTE curricula to rapidly evolving workplaces. The top three research needs identified related to preparation for teaching CTE included (a) factors impacting CTE teacher preparation quality; (b) factors impacting CTE teacher quality at lateral-entry; and (c) effective content and delivery methods for training effective CTE teachers. Kosloski and Ritz noted similar results to Mobley et al. (2017) indicating how CTE courses prepare students with the 21st century

skills that are needed to meet the high demand of more technical skills that are essential in the workforce. Teachers implementing 21st century collaborative tools such as Google Docs reported that the students had a positive attitude towards problem-solving and activity participation, higher learning motivation, and the students agreed that the discussion with peers helped them understand the learning content (Lin et al., 2016). DeFeo (2015) found similar results indicating the importance of CTE courses in preparing students with the skills needed to meet workforce demands, and having an impact on their career goals**.**

Importance of Collaborative Learning Communities

Today's classrooms are no longer attached to a specific learning style of educational theory but offer the best practices to access information and incorporate interactive learning (Thiele, Mai, & Post, 2014). Web 2.0 technologies, such as Google Docs, has been reported as a tool to support collaborative learning in many academic platforms (Tejaswani & Madhuri, 2015). Thiele et al. examined the perceptions of 71 students in a physical therapy course about educational technology utilizing a survey developed by the research and evaluation team at the University of Minnesota. By identifying the advantages of using technology in the course, Thiele et al. reported how participants indicated Google Docs was a tool to support collaborative learning environments. Thiele et al. contended that Google Docs may be used as a tool to transform learning by making the classroom more active and student centered while providing the students with opportunities to work with different partners and increase their comfort level when working with other classmates. In a similar case study that

examined the impact of students' working in collaborative groups, Tejaswani and Madhuri (2015) found that when 66 students in an electronics course worked in collaborative groups, they gained new knowledge and skills that are essential to their overall well-being. The transferable skills obtained while working collaboratively in group discussions are beneficial to collaborating and networking, essential CTE course skills. Tejaswani and Madhuri also indicated that students appreciated the role of the instructor being a facilitator versus a typical teacher who is in direct control of the class.

Studies have shown that students who worked in cooperative learning environments improved in academic performance as compared to students working independently (Tejaswani & Madhuri, 2015). Colak (2015) reported on the importance of social interaction and knowing students' learning styles when assigning collaborative learning groups, which is essential in collaborative learning environments. Gan, Menkhoff, and Smith (2015) emphasized that collaborative technology such as Google Docs can have an impact on student learning by providing opportunities for collaboration and assist teachers to be effective while also embracing new ways to prepare students for their future careers. The findings from these studies apply to my study as it demonstrates how Google Docs could be used in CTE courses to lead to students to developing the knowledge and skills that are required to be successful in college, careers, and their civic life.

Many organizations are struggling to embrace the full function of Web 2.0 applications on a daily basis (Seo & Lee, 2016). Seo and Lee investigated the types of initiatives that are best used for Web 2.0 applications and how they affect an

organization's use of these tools from a long-term perspective. The findings indicated that the use of a Technology Acceptance Model as a framework assisted with the development of a Web 2.0 performance quadrant model to assess an organization's long-term performance of various tools. The findings further indicated that for an organization to fully embrace Web 2.0 applications, a combination of both technological and organizational aspects are needed and should be reassessed five years after implementation. The Technology Acceptance model could assist with the implementation of new applications and the identification of critical factors that may affect the long-term performances of tools such as Google Docs in CTE courses (Seo & Lee, 2016). Likewise, Altanopoulou and Tselios (2017) used the Technology Acceptance Model to compare four different technologies (Google Docs, MS Word, Twiki, and Office Live) used for collaborative writing. Variables used for the comparison included perceived ease of use, task-technology fit, perceived usefulness, and perceived effort of comfort. Altanopoulou and Tselios selected Google Docs as one of the tools to examine to determine if it was the most efficient tool for a writing and editing task requiring collaboration among several students. Using the Task-Technology Fit theory for the study, Altanopoulou and Tselios examined various technologies to determine the effectiveness of the tools with collaborative writing and editing capabilities which were identified as challenges with university students to write a research paper collaboratively. The findings revealed that Google Docs was rated as the most useful for working in collaborative environments.

Seo and Lee (2016) agreed with Altanopoulou and Tselios (2017) that the use of the Technology Acceptance Model and the Task-Technology Fit model are frameworks

that provide guidance in comparing various technologies. Seo and Lee found that many institutions and organizations struggle daily to embrace the full functioning features of tools such as Google Docs because they lack the appropriate research needed to compare tools from a long-term perspective. Although Altanopoulou and Tselios and Thiele et al.'s qualitative studies involved high school freshmen students, the findings provided essential information about how Google Docs may be used in high school CTE collaborative learning environments. Students perceived Google Docs as an essential tool to use to work with their classmates. Altanopoulou and Tselios and Thiele et al.'s studies reinforced the importance of further investigating how Google Docs could be used in high school CTE courses.

21st Century Classrooms: Integrating Web 2.0 Technologies

In recent years, there have been many educational changes in teaching methods that have changed the culture in classrooms worldwide (Alsubaie & Ashuraidah, 2017). To accommodate this change, teachers have to adapt new policies, theories, and teaching methods that are more learner-centered (Alsubaie & Ashuraidah, 2017). With the changes in teaching approaches and methods, comes the implementation and use of technology such as Google Docs to facilitate student learning (Alsubaie & Ashuraidah, 2017). In a mixed methods study examining the differences between students who work individually and those who worked using Google Docs, Alsubaie and Ashuraidah found that the students who used Google Docs to complete the writing task improved in their writing scores as compared to the students who worked individually. The results indicated that the students perceived Google Docs as a useful tool. Likewise, Olson, Wang, Olson, and

Zhang's (2017) mixed methods study examined 136 undergraduate students collaborative writing behavior while using Google Docs to discover how they worked together. Olson et al. found that when the student teams wrote, both asynchronously and synchronously, the students took on avid roles in the editing and writing of the documents, and demonstrated a variety of collaborative writing styles. Olson et al. also found that the students that worked collaboratively produced higher quality writing assignments and performed better across a variety of writing task. Peacock and Grande (2016) examined the effectiveness of using Google Docs with 47 students in a beginner pathology course. Peacock and Grande found that 93% of the students found that the app platform was helpful in establishing a collaborative online classroom environment.

Educators today seek new ways to get a better understanding of the new millennium learners and the best technology tools to use that support collaborative learning (Xiaoqing, Yuankun, & Xiaofeng, 2013). Abdelmalak (2015) reported on the connection between technology, social interaction, and learning content as essential components of collaborative learning. Action research was used for this study which included 25 graduate students in an educational technology master's program. The results of this study indicated that the students perceived their use of Google Docs as a great way to collaborate and gave them a sense of a learning community. The conclusions of this study revealed that utilizing a variety of Web 2.0 technologies, such as Google Docs, was essential to building learning communities in collaborative learning environments which provide further information related to my study.

Karahan and Roehrig (2016) examined how online learning environments using Web 2.0 technologies assisted in promoting student learning and engagement. Karahan and Roehrig study included 22, 10^{th}-12^{th} grade students in an environmental science class. The findings indicated that students using Web 2.0 technologies in collaborative learning environments were able to learn from each other and reflect on what they learned, work on task at their own pace, keep up with instruction when absent, and had a fun learning experience (Karahan & Roehrig, 2016). The findings also illuminated how the use of collaborative learning tools were beneficial in showing a relationship between Web 2.0 tools and student motivation and engagement that often result in increased academic performance.

Yu and Lee (2016) addressed the issue of how technology has become an increasingly vital role in classrooms today, and how there is a need to provide a detailed explanation of the usefulness of various tools such as Google Docs. According to Chen (2016), studies have investigated tools such as Google Docs and wikis, but teachers should be aware of the different features of each when implementing them in peer-feedback activities. Donaldson (2014) evaluated students' views, skills, and attitudes about a technology toolkit that involved technology training for multiple applications such as Google Docs, wikis, and Twitter. The technology toolkit is a guide that assisted with the selection of digital tools that can be used in the classroom Donaldson (2014), Donaldson's findings indicated that students had a positive attitude about the contribution of learning technologies such as Google Docs and wikis, and the teachers generally felt comfortable introducing new technology in their classes.

Woodrich and Fan's (2017) findings that investigated the applicability of Google Docs in an online collaborative environment attributed students' positive attitudes to task-based collaborative learning to two factors: work performed by the collaborators (students working together) and learning from peers. Seventy-eight percent of the students reported having positive attitudes related to the role of the collaborator while 11% noted the importance of learning from peers. The results indicated that the students' previous learning experiences and the task-based writing instructions completed during the study influenced their attitudes favorably towards computer-mediated collaborative learning (Woodrich & Fan, 2017).

Similar to Woodrich and Fan (2017) who investigated the applicability of Google Docs in an online collaborative environment, Xiaoqing et al., (2013) conducted a quantitative study with 90 students and 10 teachers from five K-12 schools to investigate how teachers and students accepted and used new technologies. Xiaoqing et al. used the Task-Technology Fit theory and the Technology Acceptance Model as the framework for the study. The Task-Technology Fit theory alluded that performance will be higher when technology offers features and support that fit the requirements of the task (Goodhue & Thompson, 1995). Results showed that students' use of information and communication technology occurred more outside the classroom ($M = 2.52$, $SD = 0.68$) than inside ($M = 1.94$, $SD = 0.72$). Social influences contributed more to students' use of technology outside of the classroom than other factors. On the other hand, teachers used information and communication technology more inside the classroom ($M = 3.40$, $SD = 0.77$) and ($M = 2.95$, SD 087) than outside the classroom. Factors such as the frequent use of Microsoft

Office and multimedia software were contributing factors to the teachers' use of technology more inside the classroom. (Xiaoqing et al., 2013).

With the integration of technology comes changes in the instructional process that require different approaches for classroom management (Varank, 2013). Varank conducted a quantitative study with 450 secondary school teachers to investigate whether teachers' educational technology skills greatly impacted their classroom management skills. The results indicated that teachers who had high perceptions of educational technology self-skills had better classroom management skills. The results further showed that teachers' years of experiences and their educational technology skills were contributing factors to their activity management skills, behavior management skills, and classroom management skills (Varank, 2013). Similarly, Daher and Lazarevic (2014) examined instructors' preferences towards educational Web 2.0 tools to gain a better understanding of the barriers instructors faced while utilizing these tools. Daher and Lazarevic found that 23.8 % of the participants were currently using Web 2.0 technologies and 76.2% of the participants were not. Of those participants using Web 2.0 technologies, 60.9% indicated that they do not use collaborative tools such as Google Docs or wikis. The survey results identified several common barriers to the use and integration of technology in the classroom. The barriers included not having enough experience with Web 2.0 technologies, lack of technical support, lack of adequate tutorials, and lack of in-service training (Daher & Lazarevic, 2014).

Daher and Lazarec (2014) shared steps to successful integration and implementation of Web 2.0 tools including technology training, use, and continued

support of web 2.0 tools in the education process for instruction. The information in this study emphasized the purpose of Web 2.0 technologies and associated barriers that limit successful classroom integration. The knowledge of these barriers may benefit CTE administrators with the implementation of Web 2.0 technologies. Daher and Lazarec stressed the importance of teacher's intentions to use Web 2.0 technologies as tools to shape student learning.

Blaschke's (2014) mixed methods study with 300 students in an e-learning course, explored the role of social media in promoting cognitive and meta-cognitive learning development. Quantitative analyses of the pre-course survey indicated that nearly half of the students were familiar with Google Docs. The results from the end-of-semester survey showed that (69.5%) of the students perceived themselves as competent with the use of Google Docs and believed that the tool helped them to develop their cognitive and meta-cognitive skills. Seventy percent of the students agreed that their interaction with Google Docs helped them construct new knowledge and gain a better understanding of the course content. Student interview results showed that the students perceived Google Docs to be an effective tool to support collaborative writing and the construction of knowledge both asynchronously and synchronously (Blaschke, 2014).

Chen-Chung, Kuan-Hsien, Leon, and Chin-Chung (2016) claimed that peer review was an essential component of a student's creative performance and self-efficacy in using a Web 2.0 storytelling activity. Chen-Chung et al. used an experimental group, which used a rubric to assist them in reviewing their peers' stories, and a control group who did not use a rubric. The results indicated that the experimental group produced

more sophisticated stories than those in the control group. The results further indicated that the experimental group's creative self-efficacy was evident in their ability to successfully create a story, while the control group's creative self-efficacy did not. Chen-Chung et al.'s results supported the assumptions that the peer review process could help students to develop a refined level of reflection upon their creative work in Web 2.0 learning activities.

Regarding synthesis of the studies in the 21st Century Classroom: Integrating Web 2.0 Technologies section, Abdelmalak (2015) agreed with Karahan and Roehrig (2016) that there is a connection between technology, social interaction, and learning content as essential components of collaborative learning. Abdelmalak's study further indicated that the students perceived their use of Google Docs as a great way to collaborate and give them a sense of a learning community. The conclusion of Abdelmalak's study revealed that utilizing a variety of Web 2.0 technologies, such as Google Docs, is essential to building learning communities in collaborative learning environments. Likewise, Donaldson (2014) and Karahan and Roehrig discovered that there is a positive correlation between students' perception of Google Docs as a collaborative learning tool and how it engaged the students in the learning process. Varank (2013) agreed with Yu and Lee (2016) that utilizing technology in education had a positive impact on classroom management by motivating students and assisting them to achieve their targeted educational goals. Daher and Lazarevic (2014) and Capo and Orellana (2011) agreed that there are several common factors that affected the perceived use and integration of Web 2.0 technologies. These factors included lack of equipment, training, and funding.

Teachers' and Students' Views and Attitudes of Web 2.0 Technologies

Educators today constantly seek new ways to improve students' writing ability as well as enhance student engagement (Ambrose & Palpanathan, 2018). Utilizing computer-assisted tools for teaching/learning have the potential to improve students' writing skills (Ambrose & Palpanathan, 2018). Ambrose and Palpanathan investigated high school students' writing improvement and perceptions when using Google Docs. The researchers discovered that 74 out of 104 students' writing improved on a writing assignment when they used Google Docs. The students also had positive perceptions and attitudes about using Google Docs as they found it to be very reliable as well as a great tool for learning how to write. In a similar mixed methods study, Seyyedrezaie, Ghonsooly, Shahriari, and Fatemi, (2016) found that the students that used Google Docs to complete their five-paragraph essay writing assignment with peers were more confident in their writing abilities and performance than working independently. The students also indicated that using Google Docs was a contributing factor that led to the success in their writing performance.

There is limited research on teachers' perceptions and usage of Google Docs. Obtaining a clear understanding of teachers' perceptions and usage of Web 2.0 tools may assist CTE teachers with the integration of these tools in the classroom and afford students the opportunity to take control of their learning. Rdouan (2018) qualitative study examined the teachers' perceptions and attitudes towards using Web 2.0 technologies in language learning and teaching. Rdouan findings indicated that the teachers perceived the use of technology in the classroom as a useful tool that improved the overall learning

environment. Moreover, most teachers were reluctant to incorporate Web 2.0 technologies in their teaching practices and limited their use to sending or transferring learning materials. Similarly, Yu (2013) examined the attitudes and beliefs of 12 high school teachers related to emerging technologies and some of the challenges. The researcher emphasized how teachers perceived technology as an essential tool for all educators and how it made a difference in student performance. Findings from the study indicated that teachers claimed that when their students used computers, they enjoyed the experience, found learning to be fun, and it facilitated instruction in meeting educational objectives (Yu, 2013). Further findings by the Yu included two challenges (indicated by the teachers) to successfully implement new technologies. The two challenges expressed by Yu included the availability of computers in the classroom and the appropriate software.

Annamalai and Tan (2015) stressed that teacher's active engagement (teacher presence) was a source in motivating and facilitating student learning which helped them to improve their quality of writing. Active teacher engagement is an essential component in collaborative learning that is needed in CTE courses to encourage and motivate students while learning. Annamalai and Tan examined two teachers' interaction with 12 high school students in a beginner English as a second language course. Annamalai and Tan compared the interaction of two schools to interpret the effects of teacher interaction in collaborative learning environments. The framework that was used was Borup, Graham, and Drysdale's (2014) which focused on identifying teachers' engagement with the students while interacting in an online working environment. The findings indicated

that Teacher A from the urban school, was more actively engaged in the interaction with her students which led to the students being more motivated to learn and improved the quality of their writing. Teacher B from the suburban school, did not interact much with the students and only posted a few times to motivate them. The results further indicated that Teacher B showed no nurturing interaction with the students in suggesting ways to improve their narrative writing, and little assistance was given to the students to complete their essay. As a result, Annamalai and Tan indicated that the students were not motivated to complete their writing assignment and scores were low due to non-completion of the assignment and lack of motivation to improve their essay. Annamalai and Tan study showed how high school CTE teachers' active engagement (teacher presence) was a source to motivating and facilitating student learning which could help them to improve their quality of writing.

A study related to student perceptions of collaborative learning tools included Brodahl and Hansen's (2014) qualitative study with 177 beginner education students that investigated students' perception of using Google Docs and EtherPad as collaborative writing tools. The findings indicated that 48% of the students that used Google Docs to complete the assignment had a positive attitude regarding the collaborative tool, while 30% of the students had a negative attitude regarding using EtherPad. Students' perceptions of collaborative writing showed that 33.1% of the students found the tools to be easier to use than traditional word processors, 31.8% of the students enjoyed commenting and editing others' work, and 49.4% strongly agreed or agreed that they liked others to edit and comment on their work.

Brodahl and Hansen's (2014) research provided similar results to a study by Hu, Cheong, and Chu (2018) who explored the perceptions and attitudes of teachers and their students toward utilizing a wiki-based collaborative pedagogy to facilitate students' writing. Findings showed that the students perceived collaborative writing utilizing a wiki as beneficial in advancing their writing skills, increasing their group interactions, and expanding their writing audience. Student interviews highlighted greater communication levels with their peers than learning from other writing methods. Students further indicated that writing was more enjoyable when using a wiki rather than the traditional writing approach (Hu et al., 2018). The writing sample results showed that nearly 71.4% of the students achieved a higher score on their second writing sample due to using a wiki (Hu1 et al., 2018). Likewise, Sharp and Whaley (2018) examined students' perceptions of using wikis for collaborative writing. Employing constructivism as the critical lens, the researchers used a questionnaire to understand students' preferences for writing in a wiki that measured equal participation. The questionnaire analyses revealed that 70.1% of the students claimed that all group members contributed their equal share to complete the collaborative research report and 75% of the students were satisfied with their group effort in completing the project using a wiki (Sharp & Whaley, 2018). Sixty-five percent of the students agreed that wikis were a useful repository tool for collecting and organizing information for the collaborative research report. Students also noted that using wikis for group work encouraged group participation (Sharp & Whaley, 2018).

Similar to Ambrose and Palpanathan's (2018) study, Faizi, Chiheb, and Afia (2015) performed a qualitative study with 382 first year students to examine the

relationship between Web 2.0 tools and student learning. The results showed that 49% of the students indicated they devoted 40% of their time using Web 2.0 applications to improve their learning in various subjects (Faizi et al., 2015). Results further revealed that 97% of the students were actively engaged in creating educational content and sharing information with classmates, and 59% of the students agreed that Web 2.0 technologies played a major role in enhancing their learning experience. However, 22% claimed that Web 2.0 technologies will never replace learning in the classroom but should supplement it (Faizi et al., 2015).

Collaborative Learning and Writing Using Google Docs

Zheng, Lawrence, Warschauer, and Lin's (2015) qualitative case study examined how 257 sixth-grade students used Google Docs to write and exchange feedback, and the impact it had on students' standardized test scores. Zheng et al.'s results indicated that the students felt Google Docs provided a common environment for making revisions and editing, and they received more feedback from peers than working individually. The students also indicated that Google Docs helped them become more organized compared to writing on paper. Zheng et al. reported that students preferred Google Docs over other word-processing software and paper/pencil assignments because they edited their work more easily and received more feedback. The results further showed that Google Docs did not have a significant effect on the students' writing test scores nor their reading post-test (Zheng et al, 2015). In a similar qualitative study, Benito and Munoz (2013) found that 92% of the undergraduate students who used Google Docs reported they would use the tool again in the future for educational and professional use. The students also

perceived that using Google Docs to work collaboratively on an assignment was more helpful than working on an assignment individually. Although Zheng et al.'s results showed that Google Docs did not have a significant effect on the students writing scores, the students indicated that Google Docs helped them become better organized compared to writing on paper.

In many CTE courses, students do not associate the relevance of English as an essential component of their coursework (Waldman & Igarashi, 2016). Educators find it a challenge to engage them in what seems to be esoteric subjects (Waldman & Igarashi, 2016). CTE educators must link student schema and interest to student learning outcomes (Waldman & Igarashi, 2016). Studies have shown a positive correlation between Google Docs and improved writing samples in various courses (Suwantarathip & Wichadee, 2014; Iversen, 2018; Ebadi & Rahimi, 2017). Suwantarathip and Wichadee conducted a quasi-experimental study with 80 students in two first year English courses to investigate student attitudes towards collaborative writing using Google Docs and how they worked together. Suwantarathip and Wichadee found that a student group utilizing Google Docs attained a higher mean score than a group in a face-to-face classroom. The students' perceptions reported from the survey indicated that Google Docs made collaboration easier and that Google Docs was a useful tool for group work. The results of this study further indicated that the students using Google Docs in collaborative writing exercises had positive attitudes for learning (Suwantarathip & Wichadee, 2014). Suwantarathip and Wichadee also found a significant difference between the two groups' writing mean scores. The overall mean score indicated that the students in the Google Docs group

gained a higher mean score and had a more positive attitude towards collaborative writing using Google Docs than did the face-to-face group. In a similar study, Iversen (2018) confirmed how previous studies claimed that using programs such as MS Word/email to complete writing assignments worked better than technologies such as Google Docs and wikis. In Iverson's quantitative study that examined the experiences of 552 undergraduate students utilizing Google Docs as a writing tool, Iverson found that in contrast to previous studies, Google Docs now performed significantly better than MS Word due to users' gained experience with the tool. Ebadi and Rahimi (2017) reported that computer assisted tools such as Google Docs aided in students having a positive attitude about working in online peer editing groups, as well as, students significantly outperformed students working face-to-face in the classroom. The findings of Ebadi and Rahimi's quasi-experimental study with 40 beginner English as foreign language learners supported Suwantarathip and Wichadee's results. Ebadi and Rahimi's results indicated that students who used Google Docs on collaborative assignments outperformed students who completed the assignment face-to-face in overall writing skills.

Another study that supports collaborative learning using Google Docs include Seyyedrezaie, Ghonsooly, Shahriari, and Fatemi (2016) who used a mixed methods analysis with 48 sophomore students enrolled in a blended writing program to investigate the collaborative effects of Google Docs and students' perceptions of the tool. Seyyedrezaie et al.'s findings showed that Google Docs environments had a positive impact on improving students writing performance as measured on a writing test. Students had a positive attitude about using Google Docs and perceived it to be an online

tool that contributed to their success in writing performance through the collaboration with their peers and teacher interaction (Seyyedrezaie et al., 2016). The results from the paired sample t-test indicated an increase in the mean scores from the pre and post writing samples which indicated that the students' writing performance significantly improved after receiving instruction with Google Docs (Seyyedrezaie et al., 2016). Likewise, in Fan and Woodrich's (2017) quantitative study with 97 eighth-grade English language learners, the researchers found that the students who participated in anonymous collaborative writing using Google Docs produced more successful products in linguistically diverse environments and received higher scores on writing assessments.

Google Docs could be used as a useful tool to equip students with academic, employability, and technical skills that are important for employment in our emerging labor market (Stone, 2017). In Zhou, Simpson, and Domizi's (2012) quantitative study, the researchers concluded that Google Docs was a useful tool for 35 students in an introductory psychology course. When evaluating the effectiveness of using Google Docs in a collaborative writing activity, 93% of the students considered Google Docs a useful tool for collaborative writing and would use it in the future, and 7% considered Google Docs as not useful and not effective as in a face-to-face setting. Students also reported that Google Docs was beneficial in keeping everyone's work together and provided an effective way to share and edit among group members (Zhou et al., 2012). Zhou et al.'s study yielded similar results to Seyyedrezaie et al. (2016) indicating the effectiveness of using Google Docs in collaborative writing environments. Students indicated that Google Docs are an effective tool in improving their writing performance and would use the tool

again. Likewise, Wichadee's (2013) results indicated that the students' mean scores in both the on-line and face-to-face groups increased through collaborative learning.

Numerous studies examined synchronous conversations between learners during collaborative learning and found that teamwork was beneficial for student writing (Canham, 2017; Shintani & Aubrey's, 2016; Suwantarathip & Wichadee, 2014). Shintani and Aubrey's (2016) study examined 68 students to investigate how synchronous and asynchronous corrective feedback in computer-mediated environments affected their interaction in their target language. The experimental group received synchronous corrective feedback during the writing task, while the comparison group received asynchronous corrective feedback after the writing task. Shintani and Aubrey's results indicated that synchronous corrective feedback using Google Docs was more effective in improving students' accuracy due to feedback being provided while the students worked on the task. The results showed that the experimental group greatly improved in writing from the pretest to the posttest while the comparison group showed no improvements (Shintani & Aubrey, 2016). Canham (2017) explored how Google Docs and other collaborative writing tools could be used for technology-enhanced peer feedback. Although the findings showed that applications supported peer feedback, Canham indicated that students rated Google Docs above the other applications in terms of being very useful, user-friendly, and most favored.

Other studies related to the influence of Google Docs and how the tool could be beneficial in CTE classes included two qualitative studies, Abram (2016) and Wichadee (2013). Abrams examined computer-mediated collaborative writing among 28 first-year

learners of German. The results indicated that most of the learners actively participated in their collaborative writing task leading to an emphasis on content (Abrams, 2016). Analysis of the data revealed that regardless of the participatory pattern, the students were primarily concerned with generating content, with most groups achieving 95% accuracy on grammatical context (Abrams, 2016). Likewise, Wichadee examined writing abilities (the ability to condense information from various writing texts) between students learning in a traditional face-to-face collaborative environment and students learning in a wiki-based collaborative environment. The results indicated that the students' mean scores in both the online and face-to-face groups increased through collaborative learning. However, the group that was taught using the wiki improved their writing ability more than the course instructed in a face-to-face setting (Wichadee, 2013). The questionnaire results indicated that there was no statistical difference in the overall satisfaction between the two groups; however, students working in the wiki group indicated having more satisfaction than those in the face-to-face group. Although Wichadee's study is based on a first year undergraduate course, the findings may be used to provide information to CTE teachers about the use and benefits of Web 2.0 tools such as wikis.

Eteokleous, Ktoridou, and Orphanou (2014) addressed the importance of developing a community of inquiry as an educational objective for a course while using Web 2.0 tools. In Eteokleous et al.'s mixed methods study with 20 5th-grade students in a Language arts course, the results showed that 70% of the students agreed that the instructor provided clear instructions on how to participate in course learning activities;

sixty-five percent agreed that the instructor provided feedback that assisted them in identifying their strengths and weakness. Eighty percent of the students agreed or strongly indicated that using wikis gave them a sense of belonging in the course because of social interaction with others. The cognitive parameter results indicated that 60% of the students indicated they felt motivated to explore the content related questions as a result of shared knowledge among the group (Eteokleous et al., 2014).

Impact of Google Docs on Student Engagement and Motivation

Although many teachers are aware of Web 2.0 applications and the fundamental pedagogical theories and teaching methods, they are reluctant to plan a Web 2.0 lesson due to the lack of pedagogical and technical support (Kul & Celik, 2018). Web 2.0 technologies such as Google Docs allow users to collaborate, exchange, and construct information simultaneously (Tzotzou, 2018). Tzotzou's mixed-methods study indicated that it is important for educators to be able to choose and use the most appropriate Web 2.0 materials, activities, and methodology to reinforce a positive learning experience for the 21st century classroom. As it relates to the question about the outcomes of integrating Web 2.0 technologies, Virtanen and Rasi (2016) found that students' perspectives about Web 2.0 tools were highly positive and the students preferred the new, easily accessible, interactive tools over the older tools such as PowerPoint, whiteboards, and sticky notes. Virtanen and Rasi concluded that these findings are in line with previous research indicating that the integration of technological tools supported student engagement and satisfaction in learning.

Working with cloud computing is essential in CTE courses as it prepares students for a highly skilled workforce with a range of mid-level technical and professional skills (Stone, 2017). Schneckenberg (2014) emphasized that the key purpose of learning technologies from a pedagogical viewpoint is to enhance collaboration and social interaction between teachers and students. Schneckenberg's illustrative case study with 82 students in five business management courses explored and described the inter-connection between methods of cloud computing properties and social constructionism. Schneckenberg concluded that there is an inter-connection between methods of cloud computing properties and social constructionism. The findings also showed that the collaborative properties of cloud computing influenced learning factors on emotional, cognitive, spatial, and group levels that led to significant changes in the student to teacher roles and behaviors (Schneckberg, 2014). The changes included teaching behavior moving from authoritative guidance to constructive discussion that enabled the students to be open-minded and engaged in discussions as they became comfortable in the collaborative environment (Schneckberg, 2014).

Understanding student perceptions of cloud computing tools such as Google Docs is important in establishing instructional strategies that will keep learners motivated and eager to learn (Andrichuk, 2016). Student perceptions of Google Docs in CTE had received limited coverage in the current literature. However, other academic areas have reported the significance of this tool and the benefits associated with using it in instruction (Andrichuk, 2016). In a qualitative study by Andrichuk, 33 students in a technical education course were interviewed to determine the potential of cloud

computing technologies such as Google Docs, and ways it could be used to improve instructional strategies predicated on cooperative and constructivism learning. Andrichuk examined Google Docs and cloud computing technologies to explore the full potential of these technologies, and to gain a better understanding of how they can be used. The findings indicated that the students had a positive attitude toward using cloud computing to enhance instructions and learning content. The results also indicated that the students responded favorably to using Google Docs in the constructivist learning environment. Andrichuk also found that cloud computing, with the integration of Google Docs, is a strategic approach to instruction when constructivism and cooperative learning are the theoretical foundations. While this study investigated technical education students' abilities to collaborate utilizing cloud computing technologies, the use of these tools in high school CTE courses may be used to prepare students to work in our global economy. Andrichuk found similar results to Schneckenberg (2016) that showed how cloud computing technologies, such as Google Docs, could be used to improve instructional methods predicated on cooperative and constructivism learning. Both Andrichuk and Schneckenberg found that cloud computing with the integration of Google Docs was a solid approach to instruction when cooperative and constructivism learning serve as the theoretical backdrop. The strategies and methods described in these studies may serve as a reference point for additional approaches and research as more educators learn about the advantages of enhancing their instruction through cloud computing.

Al-Chibani's (2016) qualitative study investigated the impact of Google Docs on students' engagement and motivation in a collaborative learning environment. The

researchers used two questionnaires for the study. The first questionnaire focused on how the students liked the integration of technology into their writing class. The second questionnaire focused on the students' perception of the effectiveness and use of Google Docs. The findings indicated that the students had a positive attitude towards the collaborative writing process using Google Docs, and they found Google Docs easy to use. Al-Chibani also found that the communication between the students and teachers had a great impact on the students' writing skills, motivation, and attitude. The students also gained higher scores and confidence in their writing as a result of the teachers' comments on their writing assignments (Al-Chibani, 2016). Although this study focused on 25 students in a freshman English course, this study applies to my research in showing how Google Docs may be used in high school CTE courses to complete collaborative learning projects. Likewise, Ishtaiwa and Aburezeq's (2015) mixed methods study with 176 students investigated the impact of Google Docs on enhancing collaboration. Ishtaiwa and Aburezeq found that Google Docs was perceived as a valuable application to promote student-to-student and student-to-instructor interaction, and the tool could improve student content and interface interaction through the features and resources offered by the application.

Studies have shown interest in students' perceptions about using Google Docs to complete assignments versus the traditional paper/pencil approach as a topic. Lin, Chang, Hou, and Wu's (2016) quasi-experimental study investigated the effects of using Google Docs in collaborative concept mapping. The study design compared the differences between students utilizing Google Docs and those using the paper/pencil approach.

Although the findings showed no difference in learning between the paper/pencil and Google Docs groups, there was a significant difference in student performance on the physics concept representation. The results indicated that the Google Docs group had a positive attitude towards problem-solving and activity participation, and the students agreed that the discussion with peers helped them better understand the learning content (Lin et al., 2016).

Recent studies showed how Google Docs affords students the opportunity to actively engage while working in collaborative groups, gain more vocabulary knowledge, and made learning activities more interesting and useful (Liu, Lan, & Ho, 2014; Liu, Lan, & Ho, 2016). Liu et al's. (2014) quantitative study with 65 first year English-as-a-foreign-language students examined the effects of using Google Docs on students' motivation, vocabulary gain, and perceptions in a web-based environment. Liu et al. used socially web-based learning (Gale, 2003), a framework based on the assumption that knowledge should be constructed from multiple resources in collaborative learning environments. The findings indicated that the collaborators' group had a higher level of self-efficacy, motivational beliefs, and a positive perception of Google Docs than the individual group. The results also indicated that the collaborators' group gained more vocabulary knowledge than the individual group on the posttest resulting from collaborative work (Liu et al., 2014). Although this study examined learning experiences in a web-based environment and was able to provide significant results, the study lacked generalizability to the population and is inherently limited due to the small size in population. Further statistical analysis is needed with a larger population to depict better

results. With similar results, Liu, Lan, and Ho (2016) conducted another study focused on the impact of web-based collaboration on vocabulary improvements. The findings indicated that the students' mean score on the English vocabulary test increased significantly from the pretest (M = 23.22, SD = 7.44) to the posttest (M = 29.41, SD = 7.55) indicating that collaboration utilizing a Web-based tool affects knowledge development. Students' responses from the survey indicated that the students perceived that using Google Docs enhanced their learning of English vocabulary by collaborating with others using various strategies, and they had a positive attitude about learning English with Google Docs (Liu et al., 2016). While this study investigated English as a foreign language students' abilities to collaborate utilizing Web 2.0 technologies, the use of these tools in CTE courses would be beneficial as the students collaborate during group assigned tasks. Both of Liu et al.'s (2014, 2016) studies indicated similar results even with a different population size (65 versus 210 participants, respectively). The findings from both studies indicated that students' vocabulary knowledge increased due to collaborating with their peers, as well as, Google Docs being a tool to impact knowledge development.

The literature thus far examined how Google Docs is being used in various academic courses as a collaborative learning tool. Al-Chibani's (2016) findings indicated that students had a positive attitude towards the collaborative writing process using Google Docs, and they found Google Docs easy to use. Although the study focused on 25 students in a freshman English course, this study applies to my research in showing how Google Docs can be used in high school CTE courses to complete collaborative learning

projects. Seyyedrezaie, Ghonsooly, Shahriari, and Fatemi's (2016) study using mixed methods analysis with 48 sophomore students enrolled in a blended writing program indicated that students had a positive attitude about using Google Docs and perceived it as an online tool that contributed to their success in writing performance through the collaboration with their peers and teacher interaction. Seyyedrezaie's et al. study informed my research by showing the impact of Google Docs on students writing performance which is an essential component of collaborative learning in CTE courses.

Another study showing the impact of Google Docs on student engagement and motivation was Karahan and Roehrig's (2016) study that included 22, 10^{th}-12^{th} grade students in an environmental science class. The results showed that students using Web 2.0 technologies in collaborative learning environments were able to learn from each other and reflect on what they learned, work on task at their own pace, and keep up with instruction when absent. Karahan and Roehrig's study also showed how the use of a collaborative learning tool such as Google Docs could be beneficial in CTE courses by showing a relationship between Web 2.0 tools and students' motivation and engagement. Likewise, Colak's (2015) study revealed that students that are actively engaged in collaborative learning environments, such as with Google Docs, are more successful when they are given the opportunity to work with other students with various learning styles.

Further research on how Google Docs is used in high school CTE courses was the scope of my study. The studies presented informed my research by indicating how Google Docs may be used in CTE courses and its influence on leading students to

develop the knowledge and skills required to be successful in college, careers, and their civic life. My study focused on the key concepts identified in my literature review to assist in closing the gap in the literature that explored how high school CTE teachers could use Google Docs to support collaboration, writing skills, and interpersonal engagement in collaborative learning environments. Examining how Google Docs was used in CTE classes supplemented the literature on Web 2.0 technologies in collaborative learning environments and provided best practices for teachers to use in the classroom. Effectively bridging this gap with the appropriate tools promotes student recognition that effective writing skills leads to quality composition and product skills that will be transferable to the workforce (Waldman & Igarashi, 2016).

Summary

Numerous studies concluded that Web 2.0 technologies (Google Docs) have changed the landscape of learning and positively impacted education by providing social platforms for students to interact and share information (Abdelmalak, 2015; Donaldson, 2014; Faizi et al., 2015; Karahan & Roehrig, 2016; Woodrich & Fan, 2017). Collaboration among students is a vital component of project-based learning and is essential in many CTE courses (Colak, 2015). Teachers' and students' perceptions of new technologies being implemented in the classroom are important to the CTE community in understanding pressing issues, making informed decisions, and evaluating instructional programs to meet the demand of the rapidly changing workplace (Daher & Lazarec, 2014; Rojewski & Hill, 2014).

The literature in this chapter addressed pertinent issues regarding the views and attitudes of Web 2.0 technologies (Google Docs) and how it may be used in collaborative learning environments. The review explored the importance of collaborative learning communities and how it leads students to develop the knowledge and skills that are required to be successful in college, careers, and their civic lives. The literature discussed in this chapter adds to the plethora of literature addressing the need to develop more instructional research on teachers' and students 'views and attitudes of an emerging collaborative writing tool, Google Docs, and how it can effectively support students writing abilities and interpersonal engagement in collaborative learning groups (Hsu, Ching, & Grabowski, 2014).

Chapter 3 details the discussion on the research design, rationale, and methodology used for my study. This chapter specifically examines the foundation and conceptual framework, the role of the researchers, instruments and data collection used, issues of trustworthiness, and ethical procedures.

Chapter 3: Research Method

The purpose of this study was to explore teachers' and students' views and attitudes about using Google Docs, and how high school CTE teachers use Google Docs as a teaching tool to support student collaboration, writing skills, and interpersonal engagement in collaborative learning. The lack of research on CTE teachers' views of Google Docs and how they could use this Web 2.0 tool to equip students with the necessary 21st-century skills triggered the need for further investigation of Google Docs and how it can support collaboration, writing skills, and interpersonal engagement in collaborative learning environments. There have been numerous efforts made in the educational system to improve students' reading, writing, critical thinking, and collaborative skills, but not many efforts focused on increasing literacy through CTE. There is an increased interest in how Google Docs could be used as a collaborative learning tool (Ishtaiwa & Aburezeq, 2015). However, educators have limited knowledge of how these groups function, especially in CTE classes. Examining teachers' and students' views and attitudes about Google Docs and how this tool was used in CTE classes supplemented the literature on Web 2.0 technologies and provided best practices for teachers to use in the classroom.

My study was conducted using qualitative methodology and a multisite case study design. The primary purpose of a multisite case study was to gain an in-depth understanding of something that is unique to the case so that the knowledge obtained from the study can be applied to other cases (Yin, 2009). This chapter includes a discussion of the following: research design and rationale, role of the researcher,

methodology, participant selection criteria, instruments, recruitment procedures, data collection process, data analysis, and issues of trustworthiness.

Research Design and Rationale

The research questions for my study were aligned with the qualitative framework of my research problem. A multisite case study design is used to investigate a phenomenon that is common to two or more real-world or naturalistic settings. A multisite case study design was essential in explaining how social learning theories aid with understanding how teachers at various sites construct active learning communities and how people learn in social contexts. The research questions that guided my study were the following:

1. How can Google Docs be used by teachers in a high school CTE class to support collaboration, improve writing skills, and enhance interpersonal engagement in a cooperative learning environment?

2. What are the views of high school CTE teachers about using Google Docs as a teaching device to support collaboration and to improve writing skills and interpersonal engagement in their classrooms?

3. What are the opinions of high school CTE students about their teachers using Google Docs as a learning tool to support collaboration and to improve writing skills and interpersonal engagement in their classrooms?

4. How do CTE teachers explain the influence Google Docs has on student learning?

The research questions for this study were vital to getting an in-depth understanding of how using Google Docs may support student collaborative learning. Gaining an understanding of how students are actively engaged using this tool, and the views of teachers who used Google Docs, added to the literature on Web 2.0 technologies and how Google Docs could be used in a high school CTE class to support collaboration in a cooperative learning environment (see Konstantinidis et al., 2013).

Research Traditions

Qualitative research is an informative and naturalistic approach used by researchers to study a particular phenomenon. Qualitative inquiry normally focuses on studying fairly small samples in depth (Patton, 2015). Qualitative methodology was selected for this study because it aligned with the framework and with the research questions addressed in the study. The rationale for using qualitative methods was that this approach allowed me to explore this topic in depth by utilizing multiple sources of data, collecting data in the natural setting, and being the primary instrument in collecting data. My literature review informed my research design and related to my topic by showing how Google Docs could be used in collaborative learning environments to support student learning in CTE courses.

Unlike quantitative research, which involves an experimental approach of the topic being studied, qualitative research involves small purposeful samples that enable the researcher to investigate current events in a real-life context (Patton, 2015). A mixed-methods approach was not considered because I was not seeking to test a hypothesis or

generalize my findings to a larger population. In this study, my purpose was to explore how Google Docs is perceived and being used in CTE courses.

Rationale for the Chosen Tradition

I used a qualitative multisite case study design. My selection of the multisite case study approach was based on Yin's (2014) contention that the purpose of a case study is to gain an in-depth understanding of something that is unique to the case, and the knowledge that is obtained from the study can be applied to other cases. According to Yin (2011), utilizing a multisite case study strengthens the findings by replicating the same phenomenon under different conditions and allowing a deeper exploring of the research questions. Merriam (1998) described a qualitative case study as "an intensive, holistic description and analysis of a bounded phenomenon such as a program, and institution, a person, a process, or a social unit" (p. xiii).

Conducting a qualitative case study involves exploring a phenomenon within its real-life context. A case study is used in many conditions to contribute to the knowledge of individual, group, organizational, political, social, and related phenomena (Yin, 2012). A case as described by Yin (2012) is "a contemporary phenomenon within its real life context, especially when the boundaries between the phenomenon and context are not clear and the researcher has little control over the phenomenon and context" (p. 13). The unit of analysis for this descriptive case study was the CTE career cluster of information technology in which students collaborate to complete an assigned research report on a given topic. I anticipated that the findings from this study would contribute to the

understanding of the social phenomenon of Google Docs and other Web 2.0 tools and how they may be used in high school CTE courses.

A case study approach was appropriate for my study because it gave me the opportunity to explore how and why Google Docs are used and perceived as a learning tool in high school CTE courses. According to Yin (2014), case studies are appropriate when researchers seek to gain a deeper understanding of the complexity of a phenomenon in real-life events. In my study, I explored how Google Docs are being used in the classroom to increase student engagement and to discover whether there is an impact on student learning and engagement. With the triangulation of data, I was able to gain a better understanding of the phenomenon because the data were gathered from two different locations. Using several data collection strategies increased the likelihood of obtaining broader and more realistic viewpoints about the issues focused on in this study.

Other qualitative traditions that could have been used include phenomenology, ethnography, grounded theory, and narrative. The phenomenological approach is used to describe individuals' lived experience about a phenomenon and their comprehensive description of the experience (Patton, 2015). Phenomenology was rejected because identifying individuals' lived experiences and perceived meanings was not the goal of my study. Grounded theory was rejected because I was not seeking to develop a new theory from the data. The narrative approach is a design of inquiry in which the researcher analyzes the lives of individuals and asks the individuals to provide stories and narratives about their lives (Patton, 2015). The narrative approach was considered as a qualitative method but rejected because my focus was not studying individuals. An ethnographic

design addresses a population over a prolonged period of time (Patton, 2015). Ethnographic research was eliminated because this tradition is best suited to investigate cultural changes over time, which was not the aim of my study. The case study design was appropriate for this study because this approach is interpretive and allows for discovery of what participants experienced and what happened during their lived experience (see Yin, 2014).

Role of the Researcher

As the researcher, I was the primary instrument for data collection. It is essential for the researcher to become involved with the participants because the researcher is the study's instrument in exploring participants' experiences (Yin, 2009). With the purpose of my case study being to explore the views and attitudes of teachers and students regarding Google Docs and how this tool is being used in high school CTE classes, conducting interviews with classroom teachers and focus group discussions with students was appropriate. I conducted, transcribed, and coded all of the interview data. I aligned the transcripts and digital recordings for accuracy. I also maintained a field notebook to make sure I adequately interpreted the teachers' responses. The notebook helped me reflect on the interview and discussion responses. This method also assisted in reducing bias in my research (see Patton, 2015). My role in the student focus group was to moderate discussions about the students' views and opinions of utilizing Google Docs to collaborate on assignments (see Krueger & Casey, 2015).

Methodology

This qualitative case study addressed the views and attitudes of teachers and students who use Google Docs in collaborative learning environments and the impact of this tool on students' writing skills, interpersonal engagement, and critical thinking skills. The study took place in two separate rural school districts with high schools in the East Coast region of the United States that employed Google Docs. This study consisted of interviewing two high school career and technical education teachers who were purposively selected based on their years of experience in the field and their use of Google Docs in the classroom. Focus group discussions were also conducted with students who were currently in selected teachers' classrooms.

Participation Selection Logic

The research sites were two urban school districts in the Eastern part of a Southern state within a 40-mile radius of each other. The two sites were selected because both promoted high school CTE while striving to meet the demand for a better educated workforce and offering courses for students to gain the competencies necessary in today's workforce. In the two school districts, there were 17 possible participants that were qualified to be a part of this study.

Participants for this qualitative case study were drawn from a pool of high school CTE teachers who are employed at the two selected research sites and are currently utilizing Google Docs within their instructional plans. Other participants included high school students who were currently enrolled in the selected teachers' courses. CTE directors at the school districts provided the email addresses of the selected teachers and

students and identified the appropriate course to recruit participants for the study. The study population consisted of teachers who met the following inclusion criteria: (a) taught in CTE for at least 3 years, (b) used Google Docs in their instruction, and (c) had students currently enrolled their class. Identified teachers and students were sent a letter of invitation (see Appendix A) to solicit participation.

A purposeful sampling strategy was used for this qualitative case study. Purposeful sampling involves identifying and selecting individuals or groups of individuals who have experienced or have knowledge about the phenomenon to be studied, which enables the researcher to select information-rich cases that illuminate the questions to be answered from the study (Patton, 2002). According to Yin (2011), purposeful sampling is "the selection of participants or sources of data to be used in a study, based on their anticipated richness and relevance of information in relation to the study's research questions" (p. 311).

The sample size for my focus group was eight, which allowed four participants to represent each of the two teachers participating in my study. The student focus group for this study was conducted by randomly selecting four students who were currently in each selected teacher's classroom and who returned their consent forms. Sampling for focus groups typically involves individuals of similar backgrounds and experiences who answer interview questions about a particular issue (Cheng, 2014). Krueger and Casey (2015) suggested that the number of participants in a focus group should be between four and 12 individuals. Krueger and Casey further noted that if a focus group is too large, it may be difficult to moderate the interview, and the participants' responsibility to provide accurate

opinions may also be reduced. Although Nguyen's (2018) study was conducted with a small focus group of students in Thailand, the results provided adequate information to show how the effectiveness of an instructional model used to aid students reduced their commonly committed errors in English writing while also enhancing their writing ability. Having a large number of participants in the focus group makes it difficult to manage the generous amount of data collected (Miles & Huberman, 2014; Patton, 2015; Yin, 2014).

Instrumentation

Data collection instruments for this study included an interview protocol for the teachers selected (see Appendix B) and a discussion guide for the focus group (see Appendix C). Data derived from the use of these instruments were used for triangulation of data and assisted with the development of rich accounts of the phenomenon to answer the research questions (see Yin, 2009). Patton (2015) stated that interviewing research participants is the most common type of data collection for qualitative research. Face-to-face interviews were conducted with the participants in this study. According to Beuving and Vries (2015), the use of human instrumentation with the method of purposive and directed sampling increases the data exposed and increases the researcher's ability to identify emerging themes that provide an in-depth and accurate account of cultural forms and contextual conditions.

Researcher-Developed Instruments

Interview protocol and focus group discussion questions were directly linked to the literature review and the research questions. The interview questions were open-ended questions designed to answer the research questions. Questions were worded and

not leading questions (Rubin & Rubin, 2012). A semi-structured interview approach was used to afford me the opportunity to probe for more information while engaging in the topic of discussion. The interview questions were aligned with my research questions.

Table 1 shows the alignment of the interview questions with the research questions.

Table 1

Interview Protocol

Research questions	Interview questions
1. How can Google Docs be used by teachers in a high school CTE class to support collaboration, improve writing skills, and interpersonal engagement in a cooperative learning environment?	1. What motivated you to use Google Docs as a teaching tool? 2. What kind of Google Docs do you use to help collaboration among students? 3. How does using Google Docs as a learning tool support collaboration in the classroom? 4. How does using Google Docs enhance student engagement on collaborative assignments? 5. Prior to using Google Docs, what other tools did you use to foster collaboration? If other tools were used, how would you describe the difference between the tools?

Table 1 (continued).

Research questions	Interview questions
2. What are the views of high school CTE teachers about using Google Docs as a teaching device to support collaboration and to improve writing skills and interpersonal engagement in their classrooms?	6. What are your views of the advantages of teaching with Google Docs? 7. What are your views of the disadvantages of teaching with Google Docs? 8. How would you describe the students' motivation and engagement level after using Google Docs? 9. How would you describe the impact Google Docs has on students' writing and when they work in collaborative groups?
3. What are the opinions of high school CTE students about their teachers using Google Docs as a learning tool to support collaboration and to improve writing skills and interpersonal engagement in their classrooms?	10. What is your view of using Google Docs to work collaboratively with your peers? 11. What are your opinions of how your grades have been impacted by using Google Docs to work collaboratively with your peers? 12. How has using Google Docs enhanced your learning experience?
4. How do CTE teachers explain the influence Google Docs has on student learning?	13. How would you describe the observed behavior of students who work collaboratively using Google Docs? 14. How would you describe the observed engagement of students working collaboratively on an assignment using Google Docs? 15. How would you describe the peer interaction and sharing of information while using Google Docs to collaboratively work on assignments?

Utilizing this approach enables the researcher to stay within the context of the research while having the capacity to obtain an in-depth understanding of the problem (Jamshed, 2014). It is essential that all the tools, especially those created by the researcher are accurate and consistent (Trochim & Donnelly, 2008). Trochim and Donnelly (2008) stressed the importance of dependability and how it is crucial to the researcher's account for changes in context that may occur during the research process and how these changes may affect how the researcher approaches the study. Dependability was validated with the interview and focus group questions by having the director of CTE critique the tools, utilizing various approaches to articulate concepts, and thinking through the concepts to ensure they were designed accurately (Trochim & Donnelly, 2008). Content validity related to the interview protocol and focus group interview for my study were established with the interview questions being based on the gaps identified in the current literature, and driven by my framework to address the research problem and the research questions.

The focus group discussions were based on the principles of Krueger & Casey (2015) design of questionnaires for focus groups. The focus group discussion questions were designed so that they were clear and simple, open-ended, understandable, colloquial as daily conversation, and designed after clear and comprehensive consideration (Krueger, 1998). A discussion guide was used to allow the discussion to produce quality data (see Appendix C). The guide changed as the study progressed and new themes emerged from the day to day analysis of data. The focus group interview lasted 35-40 minutes in an area designated by the administration.

Procedures for Recruitment, Participation, and Data Collection

The superintendents of the school districts served as the gatekeepers. The first step in the recruitment process was to email the superintendents of the school districts that I planned to use, a description of my proposal detailing the participant selection plan, meeting locations needed, participant time requirements, and a letter of cooperation (see Appendix D). Once the approval was obtained from the Institutional Review Board (IRB; # 05-02-19-0441849), I immediately sent a recruitment email to the CTE directors at the school districts to aid in obtaining email addresses and to recruit participants for the study. A confidentiality agreement was signed by the CTE directors to confirm that this person would maintain confidentiality about who participated.

The teacher selection process took about one week and consisted of sending out an inclusion survey using Google Forms to teachers to collect general information about their teaching experience and their knowledge and use of Google Docs in the classroom. Selected teachers were emailed a letter of invitation (see Appendix A). Once teachers agreed to participate in the study, a letter of consent was emailed to them. Parental consent forms and student assent forms were emailed once the students were identified. A follow-up email was sent after all consent forms were returned to the principals to discuss a time and location to conduct the interviews.

Data was collected through interviews with teachers and focus group discussions with the selected students. Room selection for the interviews were provided by the principals of the schools. Teacher interviews consisted of a 25 - 30 minute session with IRB approved questions with the purpose of establishing common themes. An interview

protocol (see Appendix B) was drawn up to conduct the interviews. Each interview was digitally recorded with a recorder that was pretested before the interview. Field notes were taken by the me during the interview. Field notes provided a way for me to record any additional information that would otherwise not be noticeable during the recording (Patton, 2002). Participants were reminded that this study was voluntary and they could leave the study at any time during the interview. Once the interviews were completed, I notified the participants within a week that a follow-up interview may be requested if needed to clarify any information provided.

Data Analysis

Miles, Huberman, and Saldaña (2014) recommended that data collection and analysis occur simultaneously. The benefits of this approach afford me the ability to engage in constant analysis and modification of the data collected. The teacher and focus group interviews were digitally recorded and then transcribed into a Microsoft Word document. After the transcription process, coding consisted of organizing the information into chunks of text before I interpreted the meaning (Yin, 2014). As a means to organizing information during the data collection process, an identification letter was assigned to each participant and attached to all data collected from that particular participant. After transcribing the teacher interviews and student focus discussions, I analyzed and examined the data in search of insights, concepts, or patterns (Yin, 2014). Codes were identified to match my research concepts and questions using an iterative code generating process working from simpler to more complex themes. The data analyzed from the interviews were entered into a Microsoft Excel spreadsheet and color

coded to make it easy to identify each component. Four columns were created within the spreadsheet indicating the research question number, the emerging theme, and the two interviewees' responses. This approach enabled me to quickly identify the common themes from the responses as they were related to the research questions.

Issues of Trustworthiness

Trustworthiness in qualitative research is established on the constructs of credibility, transferability, dependability, and conformability (Patton, 2002; Lincoln & Guba, 1985). The issue of trustworthiness in qualitative research is a topic that is often questioned by positivists because they argue that the concepts of reliability and validity cannot be addressed in the same aspect in naturalistic work (Shenton, 2004). There are strategies that could be employed such as triangulation of data, prolonged engagements, member check, peer briefing seeking feedback from respondents, and establishing a rapport with the participants that promote honesty and a sense of familiarity with the culture of the phenomenon. For my study, member checking and peer briefing were used during the private interviews with the teachers and during the focus group discussions

Credibility

In qualitative research, ensuring credibility is one of the most essential concepts in establishing trustworthiness (Lincoln & Guba, 1985). According to Merriam (1998), to establish trustworthiness, qualitative investigators must ensure that the findings are congruent with reality and the study measures or tests what it is intended to accomplish. For my study, credibility was established by employing a targeted participation through purposely sampling and the development of a sense of familiarity with the cultures of the

classroom through interviews with the teachers and student focus groups. Another method of ensuring credibility was with the triangulation of data to strengthen the confidence in the conclusion. Iterative questioning was a component during the interview process as well as member checks to ensure the accuracy of the data (Lincoln & Guba, 1985).

Transferability

In qualitative research, transferability refers to developing descriptive and contextual related statements that can be transferable to broader contexts while still maintaining its context-specific richness (Ravitch, & Carl, 2016). Using purposive sampling and providing a thick description and detailed information from a context were two recommended methods to ensure the transferability in naturalistic research (Shenton, 2004). I used purposive sampling to select teachers and students for my study that used Google Docs. Transferability of the findings in my study may inform future research regarding how Google Docs could be used in other CTE courses. I provided a detailed description of the data collected, analysis process, and results of each phase of the study to allow for greater accuracy of the information presented (Ravitch, & Carl, 2016).

Dependability

Lincoln and Guba (1985) argued that there is a close relationship between credibility and dependability. Identifying credible participants and gathering reliable information may enable future readers of a research study to assess the degree to which proper research practices have been followed as well as repeat the work in future studies. In my study, I used triangulation and an audit trail to validate the information by

indicating how the data were collected, recorded, and analyzed. The audit trail also ensures confirmability (Lincoln & Guba, 1985). The following documents were kept for cross-checking the inquiry process for the audit trail (a) raw data from the interview and focus group discussion; (b) documents and records collected from the field, and (c) field notes.

Confirmability

Confirmability is the degree to which a researcher maintains objectivity during qualitative research to reduce bias (Lincoln and Guba, 1985). Triangulation of data is one method that was used in my study to reduce the effect of investigator bias. During the interview process, I reiterated the interviewees' responses as a means to verify that the answers provided were understood. I also analyzed, transcribed, and coded the responses from the teacher interviews and focus group discussions. Lincoln and Guba (1985) states that maintaining an audit trail is also a good practice to achieve confirmability in qualitative inquiry because it offers visible evidence that the results are not the researcher's personal opinions and at the same time reduce the effect of investigators bias.

Ethical Procedures

The proposal for my research study as well as relevant information pertaining to the ethical nature of my study were sent to the Walden University's Institutional Review Board for approval. Before IRB approval, a letter of cooperation (see Appendix D) was sent to the superintendent of the school districts seeking approval to conduct the study. An email was sent to CTE directors to gain email addresses of CTE teachers at the

schools seeking volunteers. Volunteers were emailed a consent form including detailed information about (a) the study; (b) voluntary nature of the study; (c) benefits and risks of participating in the study; (d) confidentiality agreement; and (e) the rights of the participants to remove themselves from the study at any time during the process without consequences. A letter of invitation was emailed to the participants who agree to participate in the study (see Appendix C).

Confidentiality of the data used in this study was maintained by (a) using pseudonyms in the interview transcripts and write-up in the report; (b) securing field notes, audiotapes, and transcripts in a locked secure location; and (c) storing computerized documents on an external drive that was kept in a locked storage box. I was the only person with access to all the data that was collected. All data was secured and will be protected for at least five years which is a requirement by the IRB. I followed IRB regulations throughout each stage of the study.

Summary

The purpose of this qualitative case study was to explore how Google Docs was being used in high school CTE classes to support collaboration in a collaborative learning environment. In this study, I explored teachers and students' views and attitudes about Google Docs as a tool used in collaborative learning environments. This chapter included a detail description of the methodology that was used in this case study. This chapter elaborated on the research design and rationale for utilizing a case study approach and the role of the researcher through each stage of the process. The participant selection logic and inclusion criteria focused on high school CTE teachers and students who had

experience with using Google Docs in collaborative learning environments. This chapter also described the instruments used, data collection methods, and the data analysis plan. The empirical data that was collected for this study consisted of an individual interview and focus group discussions. Lastly, this chapter included a discussion of the issues of trustworthiness with detailed information about credibility, transferability, dependability, confirmability, and the ethical procedures pertaining to the participants and data collected for this study. The next chapter describes the setting of where the study took place and the demographics of the participants in the study. The chapter also goes into more detail about the actual data collected and analysis of the data for this study. Evidence of trustworthiness was addressed and the final results were presented.

Chapter 4: Results

The purpose of this study was to explore teachers' and students' views and attitudes about using Google Docs, and how high school CTE teachers used Google Docs as a teaching tool to support student collaboration, writing skills, and interpersonal engagement in collaborative learning. Data were collected from two CTE teacher participants and eight student participants through individual interviews and student focus group discussions. The information obtained through this study provided a collective means to explore teachers' and students' views and attitudes regarding Google Docs as a tool used in collaborative learning environments, as well as how it is being used by teachers. The study was guided by the following research questions:

RQ1**:** How can Google Docs be used by teachers in a high school CTE class to support collaboration, improve writing skills, and enhance interpersonal engagement in a cooperative learning environment?

RQ2: What are the views of high school CTE teachers about using Google Docs as a teaching device to support collaboration and to improve writing skills and interpersonal engagement in their classrooms?

RQ3: What are the opinions of high school CTE students about their teachers using Google Docs as a learning tool to support collaboration and to improve writing skills and interpersonal engagement in their classrooms?

RQ4: How do CTE teachers explain the influence Google Docs has on student learning?

This chapter includes details of the demographics of the participants, procedures for data collection and analysis, and the codes and themes that relate to the research questions. This chapter also details the assurance of trustworthiness. An explanation of how the results were related to each research question and aligned with the conceptual framework is also provided.

Settings

The setting for this qualitative case study was two urban high schools in the Southeastern part of the United States within a 30-mile radius of each other. The two sites were selected for this study because both promote high school CTE while striving to meet the demand for a better educated workforce and offering courses for students to gain the competencies that are necessary in today's workforce. School A has over 1,200 students in Grades 9-12. According to state test scores, less than 25% of students are proficient in math and less than 35% in reading. School B has over 600 students in Grades 9-12. According to state test scores, School B has similar proficiency scores to School A in math and reading and is performing lower than the state average in reading and math in their state. Schools A and B have the same student-to-teacher ratio. School A built a new school facility in the last 6 years that included updated technology that surpassed the equipment that was used in the old school. Each classroom now has advanced technology such as advanced media production equipment, multiple computer labs, and Chrome cart sets that are on target for preparing an advanced 21st-century classroom. School B is an older school built in the 1960s. The technological advancement throughout the school district shows continuous work toward the goal of enhancing each school to meet 21st-

century standards. All middle and high schools have chrome carts and computer labs that enable teachers to use tools such as Google Apps to enhance student learning.

Demographics

The participants in this study included two high school CTE teachers and eight students, which allowed four participants to represent each of the two teachers participating in my study. All participants were selected through purposeful sampling to ensure they could provide the data needed for my study. The teaching experience of the teachers ranged from 15 to 18 years. Both teachers had used Google Docs at least 3 years as part of their instruction. Student participants ranged from ninth to 11th graders and included one ninth grader, five 10th graders, and two 11th graders. All participants were given pseudonyms to protect their identity. Table 2 represents the teacher demographics, and Table 3 represents the student demographics.

Table 2

Teacher Participant Information

Teacher pseudonym	Sex	Years of teaching experience	Courses currently teaching
T1	F	15	Principles of Business and Finance Career Management Teacher Cadet 1 & 2
T2	F	18	Principles of Business and Finance Career Management Marketing

Table 3

Student Participant Information

Student pseudonym	Sex	Grade
S1	M	10th
S2	M	10th
S3	M	11th
S4	M	10th
S5	F	10th
S6	F	10th
S7	F	9th
S8	F	11th

Data Collection

After receiving IRB approval to conduct my study, I emailed the CTE director with the recruitment letter to solicit teacher names and email addresses. When I sent the letter of cooperation (Appendix D) to the superintendent in August 2018, he checked with the CTE director to determine whether a study of this nature would be feasible in their district. The CTE director provided an affirmative answer. The CTE director discussed the nature of my study at a meeting with the teachers and mentioned to them that they should be expecting an email from me in the near future. On May 3, 2019, the CTE director emailed me seven names and email addresses of potential participants. I emailed

the letter of invitation (Appendix A) to the seven teachers. I also emailed the confidentiality agreement letter to the CTE director because she provided me the names and email addresses of potential teachers. The teacher selection process took about 1 week and consisted of sending out an inclusion survey using a Google Form to the teachers to collect general information about their teaching experience and their knowledge and use of Google Docs in the classroom. Selected teachers were emailed a letter of invitation (see Appendix A). Once teachers agreed to participate in the study, a letter of consent was emailed to them, as well as a confidentiality agreement letter because they provided me the email of the potential students and parents. Parental consent forms and student assent forms were emailed once the students were identified. A follow-up email was sent after all consent forms were returned to the principals to discuss a time and location to conduct the interviews.

Out of the seven emails sent to potential teacher participants, six teachers responded within 2 days. The two teachers met the inclusion criteria of (a) taught in CTE for at least 3 years, (b) used Google Docs in their instruction, and (c) taught the same subjects. An email was sent to the four teachers not selected for the study thanking them for their interest to participate in my study. I did not select the other four teachers due to the subjects they taught and the timing of the email response to me about being interested in participating in my study. Three teachers taught in the Family and Consumer Science Department and the other was in the Business Education Department, the department I was interested in, but she responded to my initial email 4 days later.

Data were collected through interviews with teachers and focus group discussions with the selected students. The two teacher interviews and first focus group discussion were completed on May 15, 2019. The second student focus group interview was conducted on May 22, 2019, due to a delay in receiving the consent forms. Room selection for the interviews was provided by the principals of the schools, which consisted of conference rooms within the school. Teacher interviews consisted of a 30-35 minute session with IRB-approved questions. I created the interview protocol (see Appendix B) to conduct the interviews. Each interview was digitally recorded with a reliable recorder that was pretested before the interview. Field notes were also written by me during the interview to record any additional information that would otherwise not be noticeable during the recording. Participants were reminded that this study was voluntary and they could leave the study at any time during the interview. Once the interviews were completed, I notified the participants that within a week a follow-up interview may be requested if I needed to clarify any information provided. A follow-up email was sent to both teachers two days after I transcribed the interviews for clarification of some answers they gave to the interview questions.

The focus group discussions were conducted on May 15, 2019, and May 21, 2019. The focus group discussion questions were designed so that they were clear and simple, open-ended, understandable, and colloquial. A discussion guide was used to allow the discussion to run smoothly and produce high-quality data (see Appendix C). The guide changed as the study progressed and new themes emerged from the day-to-day analysis of data. The focus group interviews lasted 25-30 minutes and were conducted in

an area designated by the teacher. Each focus group interview was digitally recorded with a reliable recorder that was pretested before the interview. Field notes were also written by me during the interview to record any additional information that would otherwise not have been included in the recording.

Data Analysis

Data collection and analysis occurred simultaneously. The benefits of this approach afforded me the ability to engage in constant analysis of the data collected. The teacher and focus group interviews were digitally recorded and then transcribed into a Microsoft Word document. After the transcription process, coding consisted of organizing the information into chunks of text before I interpreted the meaning. To organize the information during the data collection process, I assigned each participant a pseudonym and attached it to all data collected from that participant. After transcribing the teacher interviews and student focus group discussions, I analyzed and examined the data in search of insights concepts, themes, or patterns. Codes were identified to match my research concepts and questions using an iterative code-generating process working from simpler to more complex themes (see Table 4). The data analyzed from the interviews were entered into a Microsoft Excel spreadsheet and color coded to identify each component. Five columns were created within the spreadsheet, indicating the research question number, the emerging theme, and the two interviewees' responses. This approach enabled me to quickly identify the common themes from the responses because they were related to the research questions. The identified themes were entered into a

Word document table indicating the research questions, emerging themes, and examples from the transcripts (see Table 5).

Table 4

Codes, Definitions, and Examples

Code	Definition	Example
Collaboration (CO)	Individuals working together on a common task.	"I see the kids using it but I allow them to use it to communicate with one another in your group. They can ask their group mate a question instead of asking me all the time. They can also communicate about assignments." (T1)
Student Engagement (SE)	The level of attention and interest students express during the learning process that motivates learning.	"Google Docs helps kids to be able to submit their assignments faster whether its using Google classroom or sharing a document with me its actual little seconds saving it and then sending it and attaching it, it just saves time. The students really enjoy that aspect." (T1)
Student Motivation (SM)	Student engagement and drive during the learning process.	"I think it just depends on the assignment. If a teacher is creative, and a lot of that is trial and error, you know what works and what doesn't work, but if a teacher can organize a lesson appropriately, then yes it can save time and the students are eager to learn something different." (T2)
Peer Editing (PE)	Providing feedback to assist writers in improving their writing as well as allowing the writer to see their writing from the readers' perspective.	"a lot of times when they are working collaboratively with Google Docs I'll hear the conversation or the laugher when someone corrects something someone else has written, because these kids, I call this era the microwave generation because they like feedback immediately so it is nice for them to be able to make corrections and provide input." (T1)
Instant Teacher Feedback (ITF)	Immediate feedback provided on student work samples that enhance learning and improve assessment performance.	"As compared to using the basic independent work I would say the kids get immediate feedback from me or their peers." (T1)
Social Skills (SS)	Skills used to communicate and interact with one another verbally and non-verbally, through gestures or body language.	"Being a team player is crucial to building social skills and being a respectable student." (T2)
Learning Tools (LT)	Teaching aids that assist teachers in supporting students during the learning process.	"I think it's pretty good as a learning tool. A lot of teachers like can easily share docs with their students and we can just read off of it." (S2)

Table 5

Themes and Examples

	Theme	Theme	Theme	Theme
RQ 1	Theme 1: Student-centered learning	Theme 2: Fostering collaboration and social skills	Theme: 3 Accessibility of Google Docs	Theme: 4 Usage of Google Docs
Example	Example: "In the classroom students can collaborate together without having to save a file and then send it to each other through email and it's a live working document." (T1)	Example: "Being a team player is crucial to building social skills and being a respectable student." (T1)	Example: "I like the accessibility of Google Docs students can access GD from their home as long as they have Internet connection which is really nice." (T1)	Example: "I select and write lessons that are aligned to the standards for particular grade levels. Moreover, I select lessons that require a project needed for word processing." (T2)
RQ 2	Theme 5: Student motivation and engagement using Google Docs	Theme 6: Perceived advantages and disadvantages of Google Docs	Theme: 7 Impact on students writing using Google Docs.	
Example	Example: "As far as motivation and engagement, when my students are working on an assignment together they are more engaged and motivated because they are actually working together and can get a better understanding of a concept with everyone providing feedback and information." (T2)	Example: "The collaborative advantages also allow students to have personal space to work in silos or independently and in spaces where they can work in person." (T1). "A disadvantage to GD is that all students may not have internet access at home." (T2)	Example: "They can also comment on each other's writing such as noting incorrect grammar They realize that this is "our" grade. We need to make sure everything is correct." (T2)	
RQ3	Theme 8: Students perception of working collaboratively with their peers	Theme 9: Perceived advantages and disadvantages of using Google Docs	Theme 10: Students perception of Google Docs as a learning tool	
	Example: "I think it is really easy because it's so convenient and you can easily share it with your peers, anybody can view it, you can type on it, it's just make more convenient." (S1)	Example: Advantage "The advantages of working together is that we can get the work done faster and also we think of more creative ideas, multiple minds think better than one." (S6). "You can get your work done faster" (S1) Disadvantage: "people will slack up and not do their work and get credit for everybody else work." (S5)	Example: "I think it is a great learning tool actually. It brings out, it helps students share ideas more with their peers and it helps people open up more and they don't have to be scared to share their ideas (S1).	
RQ 4	Theme 11: Google Docs impact on student learning and achievement	Theme 12: Peer interaction using Google Docs		
	Example: "The students see their mistakes, and make progress and growth from there. They were able to see the needed changes that had to be made and fixed them as they worked within the Google Doc." (T2)	Example: "I think like the multiple connection with each other in their groups and myself, we can all look and communicate and it's kind of empowering to them because they actually are able to give feedback and its non-verbal." (T2)		

Evidence of Trustworthiness

Trustworthiness in qualitative research is established on the constructs of credibility, transferability, dependability, and conformability (Patton, 2002; Lincoln & Guba, 1985). There are strategies that can be employed such as triangulation of data, prolonged engagements, member check, peer briefing seeking feedback from respondents, and establishing a rapport with the participants that promote honesty and familiarity with the culture of the phenomenon. For my study, establishing a rapport with the participants, triangulation of data, member checking and peer briefing were used during the private interviews with the teachers and during the focus group discussions.

Credibility

In qualitative research, ensuring credibility is one of the most essential concepts in establishing trustworthiness (Lincoln & Guba, 1985). According to Merriam (1998), to establish trustworthiness, qualitative investigators must ensure that the findings are congruent with reality and the study measures or tests what it is intended to accomplish. For my study, credibility was established by employing a targeted participation through purposeful sampling as well as the development of a sense of familiarity with the cultures of the classroom through interviews with the teachers and student focus groups. Another method of ensuring credibility in my study was with the triangulation of data to strengthen the confidence in the conclusion. Iterative questioning was also a component during the interview process as well as member checks to ensure the accuracy of the data.

Transferability

In qualitative research, transferability refers to developing descriptive and contextual related statements that can be transferred to broader contexts while still maintaining its context-specific richness (Ravitch, & Carl, 2016). Utilizing purposive sampling and providing a description and detailed information from a context are two recommended methods to ensure the transferability in naturalistic research (Shenton, 2004). Purposive sampling was used to select teachers and students for my study that used Google Docs. Transferability of the findings in my study may inform future research regarding how Google Docs could be used in other CTE courses. My study also established transferability by providing a clear and detailed description of the data collection and analysis procedures, and results of each phase of the study to allow a greater accuracy of the information presented.

Dependability

Lincoln and Guba (1985) argued that there is a close relationship between credibility and dependability. Identifying credible participants and gathering reliable information will enable future readers of a research study to assess the degree to which proper research practices have been followed as well as repeat the work in future studies. In my study, triangulation and an audit trail were used to validate the information by indicating how the data was collected, recorded, and analyzed. The audit trail also ensured confirmability (Lincoln & Guba, 1985). The following documents were also kept for cross-checking the inquiry process for the audit trail (a) raw data from the interview

and focus group discussion; (b) documents and records collected from the field; and (c) field notes.

Confirmability

Confirmability is the degree to which a researcher maintains objectivity during qualitative research to reduce bias (Lincoln and Guba, 1985). Triangulation of data was one method that was used in my study to reduce the effect of investigator bias. Member checking occurred during the interview process with me reiterating the interviewees' responses as a means to verify that the answers provided were understood. I also analyzed, transcribed, and coded the responses from the teacher interviews and focus group discussions. Lincoln and Guba (1985) states that maintaining an audit trail is also a good practice to achieve confirmability in qualitative inquiry because it offers visible evidence that the results are not the researcher's personal opinions and at the same time reduce the effect of investigators bias. A reflective journal was used throughout the data collection process to reflect on my thoughts and provide insight to information obtained from the interviews.

Results

This section presents the results of my study with themes to support each research question. As themes emerged from the coding process, they were analyzed to ensure the alignment with the research questions and the conceptual framework.

Research Question 1

Four themes emerged in my analysis of responses to Research Question 1. Figure 1 presents a visual breakdown of the four themes. In this section, I present a detailed explanation of each theme and the findings.

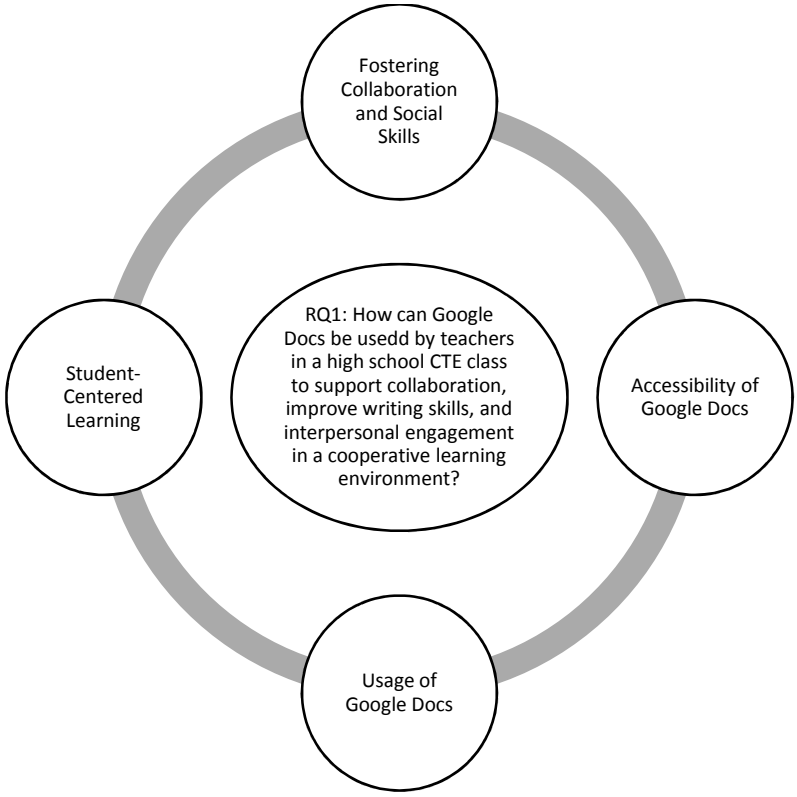

Figure 1: Themes related to Research Question 1.

Theme 1: **Student-centered learning.** Student-centered learning was a key concept identified by the teachers. Using Google Docs, teachers identified that students can work together on an assignment and assist each other as needed without any direct contact from the teacher. During the interview, T1 indicated, "It's nice seeing the students working together to complete a common task." T2 also attested the accessibility of Google Docs and how she sees more student-centered learning occurring. T2 stated,

"It allows the students to communicate with one another in their group and assist each other with assignments."

Theme 2: Fostering collaboration and social skills. The teachers expressed that using a variety of Web 2.0 technologies, such as Google Docs, was essential to building learning communities in collaborative learning environments. The teachers also discussed how fostering collaboration and social skills was very important in preparing the students for the workforce. During the interview T1 stated, "It is very important to foster collaborative projects because this allows the students to think outside the box and build social skills which are becoming the expectancy in the classroom now and in future careers." T2's aspect of fostering collaboration and social skills was related to students sharing information within their learning community. T2 stated, "I actually get my students to share notes with each other as well as myself." Based on the interviewees' responses, both teachers saw Google Docs as a tool for fostering collaboration and social skills. Online collaboration using tools such as Google Docs foster student-centered learning and student engagement that is essential in promoting inquiry and communication skills.

Theme 3: Accessibility of Google Docs. Students being able to complete assignments while being engaged with their peers to form a common consensus on their work assignments was identified as a key component of the accessibility of Google Docs. The teachers emphasized how they could provide feedback, observe, encourage, and facilitate students' work as they gather the information needed to complete an assignment. Both T1 and T2 agreed that the instant feedback to students was a great

feature of Google Docs that provided the students with real-time responses. T1 acknowledged this when she stated, "I call this generation of students the microwave generation because they like feedback immediately, so it is nice for them to see the corrections and the input." Both T1 and T2 agreed that using Google Docs in learning and teaching, students, as well as teachers, can simultaneously work on the same document while providing additional information, making corrections, and providing feedback in a collaborative manner.

Theme 4: Use of Google Docs. The CTE courses taught by the teachers equip students with the 21st century skills that are needed to meet the high demand for more technical skills that are essential in the workforce. The teachers expressed that when they implemented 21st century collaborative tools such as Google Docs, they discovered that the students had a positive attitude towards active participation and problem-solving, and higher learning motivation. The teachers discussed the types of Google Docs lessons and assignments they used to foster collaboration among students. T1 replied, "My students write short essays based on articles depending on what piece of the curriculum we are working on, and business documents." T2 explained how she assigns lessons based on the standards as a way of using new methods to get learning across. T2 stated, "I select and write lessons that are aligned to the standards for particular grade levels. Moreover, I select lessons that require a project needed for word processing and other Google Docs functions." Both teachers indicated that collaborative technology such as Google Docs had an impact on student learning by providing many opportunities for collaboration and

assisted them to be more efficient while embracing new ways to prepare students for their future careers.

Research Question 2

Three themes emerged in my analysis of responses to Research Question 2. Figure 2 presents a visual breakdown of the four themes. In this section, I present a detailed explanation of each theme and the findings.

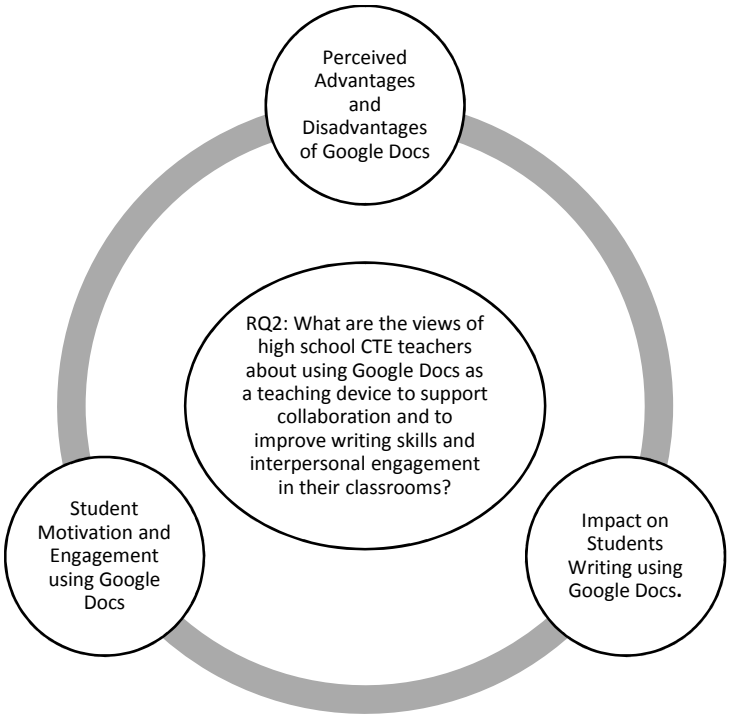

Figure 2: Themes related to Research Question 2.

Theme 5: Student motivation and engagement using Google Docs. When asked to describe the students' motivation and engagement level after using Google Docs, T2 stated, "When my students are working on an assignment together they are more engaged and motivated because they are actually working together and can get a better understanding of a concept with everyone providing feedback and information."

T1 based student motivation and engagement while using Google Docs on the assignment that was created by the teacher. Both teachers indicated that their students were more engaged when they worked on an assignment together. T1 also stated that the engagement level of students while working on an assignment together is dependent on the assignment that was assigned.

Theme 6: Perceived advantages and disadvantages of Google Docs. Both teachers agreed that when students are actively engaged in collaborative learning environments, such as with Google Docs, they are more successful. According to the teachers, there are advantages and disadvantages to using Google Docs during the learning process. According to T1, some advantages included the flexibility and ease of use of Google Docs. T1 stated, "These collaborative advantages also allow students to have personal space to work in silos or independently and in spaces where they can work in person collaboratively to complete tasks and assignments." Likewise, T2's perception of the collaborative advantages of teaching with Google Docs was positive. T2 stated, "Using Google Docs enables me to provide feedback in real-time which is very helpful as well as peer editing. Also, another advantage is that Google Docs would hold the student accountable for his or her work." My study identified some disadvantages to using Google Docs. Both teachers spelled out common disadvantages to using Google Docs that could hinder the successful implementation of this tool. The disadvantages included students may not have Internet access at home to access homework assignments or missing classwork, and the occasional problem with the Internet not working properly for students to access Google Docs in class.

Theme 7: Impact on students' writing using Google Docs. The teachers discussed how using Google Docs had enhanced and improved their students' writing assignments. When I asked T2 to describe the impact that Google Docs had on students' writing when they work in collaborative groups, she stated, "It helps them rethink what they are saying and plan more when they are writing. The students can also comment on each other's writing such as noting incorrect grammar." T1 responded to the question about the impact of Google Docs on students' writing by stating, "The students can peer edit each other's work in the group, which I require each student to comment on one another's input to the assignment as far as grammar errors and providing the correct information, etc." T2 also felt the students saw their collaborative assignment as a teamwork task when she stated that, "They realize that this is 'our' grade. We need to make sure everything is correct. So they peer edit each other's section of the report and make comments where needed."

Research Question 3

Three themes emerged in my analysis of responses to Research Question 3. Figure 3 presents a visual breakdown of the three themes. In this section, I present a detailed explanation of each theme and the findings.

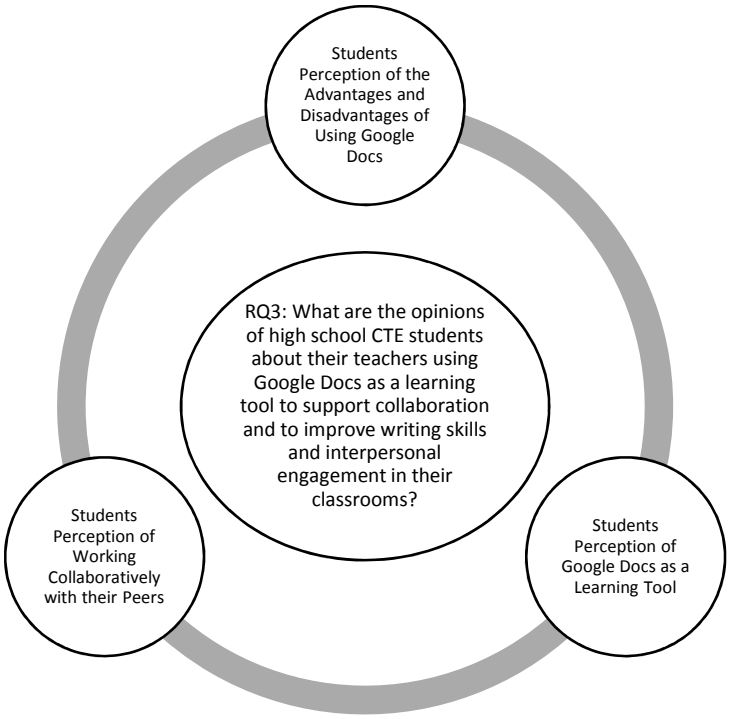

Figure 3: Themes related to Research Question 3.

Theme 8: **Students' perception of working collaboratively with their peers.** The students perceived Google Docs as being a great tool to use when working with their peers. When asked their views of using Google Docs to work collaboratively with your peers, S1 stated, "I think it is really easy because it's so convenient and you can easily share it with your peers, anybody can view it, you can type on it, it's just more convenient." S2 added, "Yes it easier to share with them [peers]. You could just share it through email and both of you can edit at the same time instead of just like passing in a piece of paper." S3 shared, "I think it's great. It's great to like look at each other's responses and being able to work together collaboratively." Similar to S1's and S2's responses about Google Docs and the ease of use and being convenient, S4 stated, "I like it because it is real convenient because you can work in it wherever you are at." S6, S5,

and S8 liked the aspect of working as a team and assisting each other with the assignment and being able to see other opinions. S6 stated, “I think using Google Docs is a good thing because you get to see other people opinions when they are working on their assignment or answering questions.” S8 stated, “I think it’s good because you work as a team, if one of your answers are incorrect then one of your peers can change it.” S7 added, “I think it’s good because you get to work faster.”

Theme 9: Students’ perceptions of the advantages and disadvantages of using Google Docs. The students’ perceptions of the advantages of using Google Docs reflected a common notion that Google Docs was a faster tool to use to get an assignment done with the help of others and getting feedback from the teacher. S4 stated, “I say the advantages are there is more input and more points of views and ideas when it just more people than just one.” S6 added, “The advantages of working together is that we can get the work done faster and also we think of more creative ideas; multiple minds think better than one.” Although S1, S2, and S5 didn’t see any disadvantages to using Google Docs, a key disadvantage to working collaboratively using Google Docs was someone could get credit for others’ work or students slacking up and still getting full credit for the assignment. S3 stated, “Somebody can take your name off the document after you have contributed a lot of time and work and then turn it in for a grade for what we all did together.” S5 and S7 discussed how the work could become unorganized. S5 stated, “Stuff will be everywhere.” S7 added, “When it’s a group one person wants to do it a different way other than the way it was assigned it can get messy.”

Theme 10: Students' perception of Google Docs as a learning tool. All the students acknowledged Google Docs as being a great learning tool. S1 stated, "I think it is a great learning tool. It helps students share ideas more with their peers." S2 added, "I think it's pretty good as a learning tool. Lots of teachers can easily share docs with their students." S4 expressed, "I really liked Google Docs as a learning tool because we can take notes on Google Docs and share ideas and learn from one another. Both S5 and S6 discussed how Google Docs is a good tool to get the work faster by working collaboratively and how you can learn from others. All students agreed that their grades were positively impacted because they worked together, but a key factor to that was dependent on who was in your group. S8 felt using Google Docs impacted her grades by stating, "It has impacted my grades on assignments because multiple brains are working together to complete the assignment trying to make a good grade. It's all about the grade."

Research Question 4

Two themes emerged in my analysis of responses to Research Question 4. Figure 4 presents a visual breakdown of the two themes. In this section, I present a detailed explanation of each theme and the findings.

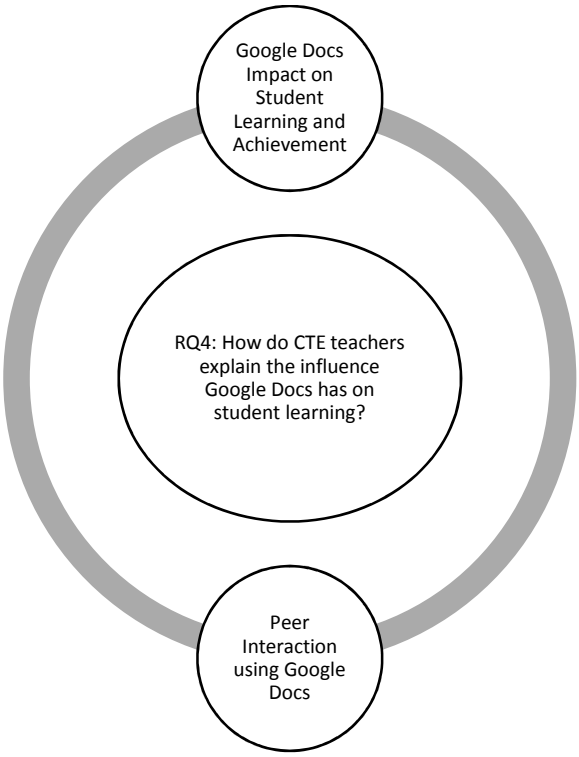

Figure 4: Themes related to Research Question 4.

Theme 11: Google Docs' impact on student learning and achievement. Using Google Docs and its influence on student learning was reported as being positive and productive by both teachers. T1 and T2 indicated that Google Docs had a positive influence on students' achievement. Google Docs was described by the teachers as a tool that could be used to increase student readiness for today's workplace demands and improve students' career preparation experience. T2 replied, "I can give live feedback if the document is shared with me. The students see their mistakes and make progress and growth from there." Likewise, T1 stated, "Using Google Docs also enhances student achievement because the student see that they have room to improve based on feedback given by the teacher as well as collaborative feedback from group members." T1 also

noted that using Google Docs was also beneficial for students who are absent because they are able to access the assignment from home.

Theme 12: Peer interaction using Google Docs. When I asked the teachers to describe the peer interaction and sharing of information while using Google Docs to collaboratively work on assignments, T2 replied, "I think like the multiple connection with each other in their groups and myself, we can all look and communicate and it's kind of empowering to them because they actually are able to give feedback and it's non-verbal." T2 saw the peer interaction as being helpful at times. T2 stated, "My lower learning students really benefit from the sharing of information and the assistance they receive from members of the group." T1 saw the peer interaction as being chaotic at times, but also a positive experience for the students. T1 also acknowledged the fact that utilizing Google Docs enabled the students work with one another collaboratively to complete a common assignment.

Figure 5 displays common themes and patterns identified from the data. After transcribing the teacher interviews and student focus discussions, I analyzed and examined the data in search of insights, concepts, themes, or patterns. Data collected from the teachers and students were common in thought and presented no discrepancy of data.

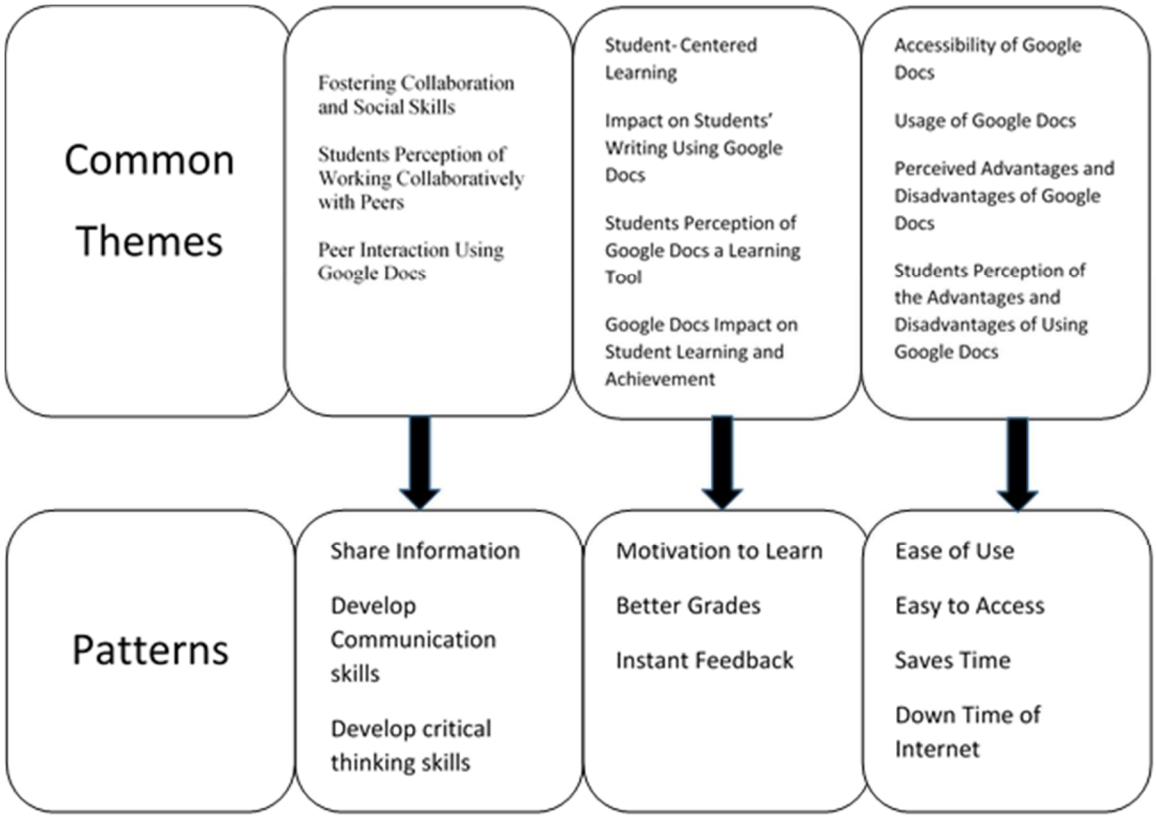

Figure 5: Common themes and patterns.

The patterns formed from the themes were derived from common responses of raw data collected from the interviews. The first group of common themes pertained to fostering collaboration and social skills, students' perception of working collaboratively with peers, and peer interaction using Google Docs. The patterns of data identified by the teachers and students included sharing of information and developing of communication and critical thinking skills. Both teachers noted that as students collaborate to complete a common task, they build their communication and critical thinking skills, which are essential to being productive in the classroom and the workforce.

The second group of common themes consisted of student-centered learning, students' perception of Google Docs as a learning tool, and the impact of the tool on students' writing, learning, and achievement. Common patterns of data included students' motivation to learn, better grades achieved, and instant feedback. Both teachers provided similar statements regarding students taking ownership of their learning, and that students were more engaged and motivated to complete assignments when they worked with their peers. Both teachers agreed that the students liked receiving the instant feedback on assignments as they worked on completing the task. The students saw Google Docs as a learning tool because they were able to share information with their peers. The teachers stated that as the students saw their mistakes, they were able to make the needed changes and make better grades.

The third group of common themes pertained to accessibility, use, and perceived advantages and disadvantages of Google Docs. The teachers and the students commonly agreed that Google Docs saved time on completing assignments and the tool was easy to use. A disadvantage mentioned by the teachers was the down time of the Internet, and some students may not have Internet access at home.

Summary

In summary, my study explored teachers' and students' views and attitudes about using Google Docs, and how high school CTE teachers used Google Docs as a teaching tool to support student collaboration, writing skills, and interpersonal engagement in collaborative learning. The teachers and students expressed positive views about their

views and use of Google Docs in collaborative learning environments. Each question in my study and the results were clearly examined and analyzed.

Research Question 1 addressed how Google Docs can be used by teachers in a high school CTE class to support collaboration, improve writing skills, and interpersonal engagement in a cooperative learning environment. The results revealed that collaborative technology such as Google Docs impacted student learning by providing greater opportunities for collaboration and promoted more student-centered learning and student engagement which is essential in promoting inquiry and communication skills. The teachers stressed that fostering collaboration and social skills as being important in preparing students for the workforce. The teachers also agreed that when utilizing Google Docs in learning and teaching, students, as well as teachers, are able to simultaneously work on the same document while providing additional information, making corrections, and providing feedback in a collaborative manner. In addition, the lessons that were selected to be used with Google Docs were aligned with the standards for particular grade levels that required basic word processing as the method for completing the assignment.

Research Question 2 addressed the views of high school CTE teachers about using Google Docs as a teaching device to support collaboration and to improve writing skills and interpersonal engagement in their classrooms. The teachers indicated that when their students are working on an assignment together they are more engaged and motivated because they are actually working together and can get a better understanding of a concept with everyone providing feedback and information. The results also indicated that Google Docs saves time by enabling the students to submit their

assignments faster whether it's using Google classroom or sharing a document with the teacher. The teachers discussed how the students enjoyed that aspect of Google Docs and were eager to be the first group to turn in their assignment and they enjoyed working together. Some advantages of using Google Docs as indicated by the teachers include

- flexibility and ease of use
- saves time
- fosters collaboration
- grade and return an assignment instantly
- provides feedback in real-time
- students are held accountable for his or her work
- students are able to work in different locations

Some disadvantages as indicated by the teachers include

- Google Docs need more advanced features like word processing software
- the occasional downtime of the Internet at school
- students may not have internet access at home

As far as the impact on student writing while using Google Docs, the teachers discussed positive views indicating that the students can make correction to their writing as indicated by me [teacher] or their peers which helps them by rethinking what they are saying.

Research Question 3 addressed the opinions of high school CTE students about their teachers using Google Docs as a learning tool to support collaboration and to improve writing skills and interpersonal engagement in their classrooms. The students

indicated that Google Docs was easy to use, and a convenient tool to collaborate with their peers on a common assignment. The students indicated that Google Docs was a great tool that made learning more engaging. My study also found that students indicated that their writing was enhanced due to the feedback from their teachers and peers.

Research Question 4 addressed how do CTE teachers explain the influence Google Docs has on student learning. Using Google Docs and its influence on student learning was reported as being positive and productive by both teachers. My study supported research findings that Google Docs was the most useful tool for working in collaborative environments, and an efficient tool to support collaborative learning in many academic platforms, such as CTE. My study also revealed that utilizing Google Docs in instructions impacted student learning and achievement. The teachers discussed how using Google Docs enhanced student achievement because the students were able to see that they had room to improve based on feedback given by the teacher as well as collaborative feedback from their peers. Google Docs was also reported as a good tool to use for students who are often absent.

This chapter presented the findings on teachers' and students' perceptions of Google Docs as a collaborative learning tool. The findings revealed that Google Docs was a great tool to use to foster teamwork and collaboration, aided in influencing student motivation and engagement, impacted student learning and achievement, and was an excellent tool to be used by CTE teachers to enhance high school career and technical courses. Chapter 5 includes a discussion of the interpretation of the findings, limitations of the study, recommendations, and implementations.

Chapter 5: Discussion, Conclusions, Recommendations

The purpose of this study was to explore teachers' and students' views and attitudes about using Google Docs and how high school CTE teachers used Google Docs as a teaching tool to support student collaboration, writing skills, and interpersonal engagement in collaborative learning. I conducted interviews with classroom teachers and conducted student focus group discussions. After conducting, transcribing, and coding all of the interview data, I aligned the transcripts and digital recordings for accuracy. I also maintained a field notebook to make sure I interpreted the teachers' and students' responses accurately.

In this chapter, I discuss and interpret the findings according to each research question. This chapter also includes discussion of the limitations of the study, as well as the implications of this study related to social change. Lastly, recommendations for future research and practice are presented.

Interpretation of the Findings

Through analysis of the data collected in this study, I identified 12 themes to describe patterns in the overall perceptions and views related to each research question and interpreted them in the context of the conceptual framework and current literature. In the following sections, I describe the alignment of themes and research questions and how the findings relate to the conceptual framework and current literature.

Interpretations for Google Docs as a Supportive Collaborative Tool

Web 2.0 technologies such as Google Docs has been reported as an efficient tool to support collaborative learning in many academic platforms (Tejaswani & Madhuri,

2015). Thiele et al. (2014) reported how teachers indicated Google Docs was an essential tool to support collaborative learning environments. Teachers in Thiele el al.'s study contended that Google Docs could be used as a tool to transform learning by making the classroom more active and student centered while providing the students with opportunities to work with different partners and increase their comfort level when working with other classmates. The findings of my study yielded similar results in that the teachers indicated the importance of fostering collaboration with their students and building students' social skills, which are key to their becoming respectable students and team players in the workforce. The findings of my study also revealed how the teachers liked the role of being facilitators in their students' learning while providing a more student-centered learning environment.

Increased student engagement appears to be another benefit of using Google Docs. Karahan and Roehrig (2016) reported how the use of a collaborative learning tool such as Google Docs was beneficial in CTE courses by showing a relationship between Web 2.0 tools and students' motivation and engagement. Likewise, Colak (2015) revealed that students who are actively engaged in collaborative learning environments, such as with Google Docs, are more successful when they are given the opportunity to work with other students with various learning styles. The findings from these previous studies support my study because the teachers I interviewed perceived that the students were more engaged with their lessons when Google Docs was used, and the students reported enjoying working together to complete assignments rather than working

independently. The teachers also indicated how students with various learning abilities could work together and learn from one another while completing assignments.

Interpretation for Student Engagement and Writing

Studies conducted by Cummings (2016) and Suwantarathip and Wichadee (2014) support the teachers in my study who acknowledged the positive impact of Google Docs on student writing. Both studies revealed that using Web 2.0 technologies such as Google Docs can maximize students' engagement and participation while also assisting them in developing flexible strategies for writing collaboratively (Cummings, 2016; Suwantarathip & Wichadee, 2014). Using Google Docs also enabled the students to provide immediate feedback, share comments, and edit each other's work to improve their writing and social skills (Cummings, 2016; Suwantarathip & Wichadee, 2014). The findings from the current study yielded similar results showing that students were more engaged while working collaboratively on assignments and that the positive feedback given by the teachers and peers impacted the students' writing and social skills by providing them the assistance needed to communicate and address the mistakes that were made.

Google Docs appears to be a tool that supports students' overall learning. Rdoua's (2018) findings indicated that the teachers perceived the use of technology in the classroom as a useful tool that improved the overall learning environment. Similarly, C. Yu (2013) reported that teachers claimed that when their students used computers, they enjoyed the experience and found learning to be fun, and that students' use of computers facilitated instruction in meeting educational objectives. The findings from my study

supported and added to the findings of Rdoua and C. Yu by indicating some key advantages of using Google Docs. The teachers in my study indicated that using Google Docs (a) provides flexibility and ease of use, (b) saves time on the completion of assignments and grading, (c) fosters collaboration, (d) allows for grading and returning an assignment instantly, (e) allows teachers to provide real-time feedback, (f) fosters students' accountability for their work, and (g) lets students work in different locations.

Other findings by C. Yu (2013) included two challenges (indicated by the teachers) to successfully implement new technologies. The two challenges included the availability of computers in the classroom and the appropriate software (C. Yu, 2013). My study supports and adds to the findings of C. Yu in that the teachers indicated the occasional downtime of the Internet at school and students lacking Internet access at home.

Interpretations for Student Perceptions of Google Docs

Consideration of students' perceptions of Google Docs as a learning tool and working collaboratively with their peers was also addressed in the current literature. The findings of my study are consistent with research by Virtanen and Rasi (2016) who found that students' perspectives of Web 2.0 tools were highly positive and that the students preferred the new, easily accessible, interactive tools over the older tools such as PowerPoint, whiteboards, and sticky notes. The students in my study indicated that Google Docs was easy to use and a convenient tool to collaborate with their peers on a common assignment. The students also indicated that Google Docs was a great tool that made learning more engaging, and that their writing was enhanced due to the feedback

from their teachers and peers. Virtanen and Rasi's findings were consistent with my research regarding the connection between students working collaboratively with their peers and the impact it had on student learning. The students in my study described how they were more dependent on learning from their peers rather than getting direct instructions from their teachers.

Interpretations for Student Learning

The impact of Google Docs on student learning and achievement and peer interaction was addressed in the current literature. My study supported previous findings that Google Docs was a useful tool for working in collaborative environments and an efficient tool to support collaborative learning in many academic platforms, such as CTE. Thiele et al. (2014) reported how participants indicated Google Docs was an essential tool to support collaborative learning environments. Thiele et al. contended that Google Docs could be used as a tool to transform learning by making the classroom more active and student centered while providing the students with opportunities to work with different partners and increase their comfort level when working with other classmates. In a similar case study that addressed the impact of students working in collaborative groups, Tejaswani and Madhuri (2015) found that students gained new knowledge and skills that were essential to their overall well-being when they worked with their peers. The transferable skills obtained while collaborating in group discussions were beneficial to collaborating and networking (Tejaswani & Madhuri, 2015). My study supports the findings of Tejaswani and Madhuri because the teachers indicated that utilizing Google Docs in instructions impacted student learning and achievement. The teachers discussed

how using Google Docs enhanced student achievement because the students were able to see that they had room to improve based on feedback given by the teacher and from collaborative feedback from their peers. The teachers in my study reported that Google Docs was also a good tool to use when students are absent.

Limitations of the Study

There were three limitations that were taken into consideration when analyzing the findings of this study. A common limitation associated with qualitative research is the relatively small sample size limits generalization. Smaller sample sizes are common in qualitative research because they enable the researcher to have better control over the data. I used a small sampling group that included two teachers and eight students in two focus groups distributed across two school districts. I addressed this sampling limitation by using purposeful sampling for the selection of the participants, which minimized bias and produced more meaningful data.

Potential student bias and researcher bias were limiting factors taken into consideration for this study and were addressed proactively. I controlled student bias in the form of the potential desire to please their teacher through the assurance of confidentiality with secluded sessions for the focus group discussions, and I reminded the students that they could withdraw from the study at any time.

Lastly, researcher bias was another limitation of this study. My experience with using Google Docs in my classes, as well as the potential to infuse personal views and interpretation of the teachers' and students' responses, was also taken into consideration when I conducted my interviews and focus group discussions. Carefully structuring the

interviews and focus group discussions and transcribing the interviews provided the initial control of bias. Additionally, awareness was maintained through the use of reflective journaling, which enabled me to ensure my personal experiences were separated from the participants' responses. This practice also heightened the awareness of my perceptions, which prevented the likelihood of me generalizing my perceptions onto the students' responses.

Recommendations

Developing a learning culture that supports Google Docs as a collaborative learning tool that enhances students' learning at various academic levels and areas merits further consideration in the literature. Most of the research found during the literature review focused on teachers' and students' perception of Google Docs and the use of the tool. There was limited research that addressed a link between secondary and high school CTE teachers' use of Google Docs and professional development on how to effectively integrate Google Docs as part of instruction. Further research should also concentrate on teachers who use Google Docs in CTE courses to obtain an understanding of teachers' self-efficacy and what changes are needed in the development of curriculum to meet the needs of students learning in the 21st century. With the implementation of new technologies comes the responsibility for teachers to design lessons that meet the standards and objectives to be mastered. The teachers in the current study indicated that more time is needed in planning their lessons when the task of implementing technology is involved.

In considering bridging the gap in knowledge from middle school to high school in using Google Docs, researchers could concentrate on the secondary educational level to explore the benefits of implementing Google Docs early in the learning process. The current study focused on high school CTE students and teachers. Teachers in my study indicated that some students' initial exposure to Google Docs occurred in their classes. Researchers could also focus on secondary CTE teachers and compare the results obtained from high school CTE educators that could also add relevant information on this topic. This research would assist in bridging a gap between secondary CTE teachers and high school CTE teachers shared knowledge obtained by using Google Docs. Finally, repeating this study in other content areas and demographic regions may reveal consistent trends with schools evidencing positive perceptions of Google Docs as a tool for collaborative learning.

Implications

This study established the groundwork for understanding how teachers and students perceive Google Docs when used as a collaborative learning tool during instruction. This study may influence social change by showing how collaborative learning could support students to actively learn and be successful in their technical education courses and careers. This study added valuable insights to a limited field of research by addressing how the use of Google Docs may (a) influence students' learning; (b) develop their communication, decision-making, and social skills; and (c) create a positive attitude toward collaborative writing. The knowledge gained from this study provided a new perspective from the lens of the participants on Web 2.0 technologies

such as Google Docs by providing feedback on how Google Docs could be used as a collaborative learning tool in CTE courses, as well as meet the demands of equipping a better-educated workforce with employable skills needed in today's economy.

A deeper understanding of teachers' and students' perceptions of Google Docs has the potential to impact positive social change at various levels. The levels that were impacted by this study included individual, institutional, and societal. At the individual level, classroom teachers may consider the perceptions of Google Docs shared in this study to motivate students who are otherwise unengaged in the learning process to read, write, work collaboratively, and apply critical thinking skills in authentic situations. These are skills needed in the 21st-century workforce. The results from this study indicated that collaborative learning using Google Docs impacted students' learning and improved their social, decision-making, and communication skills, while potentially improving their attitudes toward collaborative writing. At the institutional level, if teachers use Google Docs as part of their instruction, they may see a significant impact on their students' learning and academic achievement. Lastly, at the societal level, this study may impact positive social change by enabling high school decision-makers to align educational objectives to prepare students for the workforce with the necessary 21st-century skills.

Conclusion

The paradigm shift from traditional communication and media devices to digital devices over the last decades has made a significant impact on how we connect with one another (Donaldson, 2014). The fast-changing pace of technological advances led to

significant changes in educational settings. This change, which is in response to meeting the requirements of the 21st century skills initiative, required educators to redesign teaching and learning activities (Delgado et al., 2015).

With the demand for new skills from those entering the workforce, many educators were assigned with the responsibility of ensuring that students are prepared for entry into this fast-changing world (Donaldson, 2014). With the high demand of producing a better educated workforce with the use of technology, there was a need for more research on how CTE teachers could use Google Docs as a teaching tool to develop students' 21st century skills needed to work productively in today's workforce. These 21st century skills which include being able to work collaboratively in diverse teams, think critically, and communicate effectively are essential because they are transferable skills that can facilitate a person moving from one field or job to another for a lifetime of success in their career (Park et al., 2017). These skills are also essential in life because they empower individuals to tackle and understand problems in their communities.

With the high demand of producing a better educated workforce with the use of technology, there was a need for more research on how CTE teachers could use Google Docs as a teaching tool to develop students' 21st century skills needed to work productively in today's workforce. By gaining an in-depth understanding of the perceptions and attitudes of teachers' and students on the use of Google Docs during classroom instructions, this study presented considerations of what teachers' and students' perceived to be valuable insights about the impact of this tool on teaching and learning. Findings allow researchers to examine already explored topics through another

lens. In my study, topics related to using Google Docs in the classroom were identified and analyzed to gain a understanding of the impact this tool had on teaching and student learning. Analyzing teachers' perceptions of Google Docs revealed insights related to their views of the impact of Google Docs on student learning and achievement, students' motivation and engagement, and how the tool fostered collaboration and social skills. Additionally, considering students' perception of Google Docs revealed insight related to their views of Google Doc as a learning tool and their views of working collaboratively with their peers. Both considerations serve as a foundation for future researchers to consider the phenomena of Google Docs through a larger lens that addresses both perceptions and practices.

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Appendix A: Letter of Invitation

Dear [Teacher]

Hello my name is Jannotta Faulkner and I am a doctoral student at Walden University. I would like to invite you to participate in my research study about the views of teachers and students on how Google Docs supports Career and Technical Education (CTE). I am interested in examining how high school CTE teachers use Google Docs to support collaboration, writing skills, and interpersonal engagement in the CTE career cluster of Information Technology. To gather data for this study, I would like to conduct a 30-45 interview with you to obtain information about your views of Google Docs and how students use Google Docs in an effort to enhance 21st century learning skills.

By participating in this study you will help me to discover how students use Google Docs when the tool is used to complete assignments and the impact Google Docs has on students' interpersonal engagement, achievement, and collaborative skills. Your experience with Google Docs may help other teachers have a positive experience with their students as well as provide best practice techniques on how to incorporate an emerging technology such as Google Docs into their lessons. You may also consider new ideas or reorient your perspective on Google Docs as you reflect on your experiences during the interview.

If you are willing to participate in my research study on the views of how Google Docs supports Career and Technical Education, please respond with an email your intention to participate. I will then email you an informed consent form with additional details about my research study and your rights as a research study participant.

Thank you for your consideration and I hope to hear from you soon.

Jannotta Faulkner
Doctor of Philosophy Student
Walden University
Jannotta.faulkner@waldenu.edu

Appendix B: Teacher Interview Protocol

Introduction and Background

Hello and thank you for agreeing to participate in research study to gain a better understanding on the views and attitudes of Google Docs and how it is being used in Career and Technical Education classes. Our interview is expected to last 30-45 minutes. All information will be will be kept confidential, and I encourage you to ask questions at any time during the interview.

Permission to Record the Interview

Do I have your permission to record our conversation for the purpose of transcribing our interview?

Time of Interview:

Date:

Method:

Interviewer:

Interviewee:

Interview questions

Research Question 1: How are Google Docs being used in a high school CTE class to support collaboration, improve writing skills, and interpersonal engagement in a cooperative learning environment?

Interview questions

1. What motivated you to use Google Docs as a teaching tool?
2. What kind of Google Docs do you use to help collaboration among students?

3. How does using Google Docs as a learning tool support collaboration in the classroom?
4. How does using Google Docs enhance student engagement on collaborative assignments?
5. Prior to using Google Docs, what other tools did you use to foster collaboration?
    a. If other tools were used, how would you describe the difference between the various tools?

Research Question 2: What are the views of high school CTE teachers about using Google Docs as a teaching device to support collaboration and to improve writing skills and interpersonal engagement in their classrooms?

Interview questions

1. What are your views of the advantages of teaching with Google Docs?
2. What are your views of the disadvantages of teaching with Google Docs?
3. How would you describe the students' motivation and engagement level after using Google Docs?
4. How would you describe the impact that Google Docs have on students' writing when they work in collaborative groups?

Research Question 3: What are the opinions of high school CTE students about their teachers using Google Docs as a learning tool to support collaboration and to improve writing skills and interpersonal engagement in their classrooms?

Interview questions

1. What is your view of using Google Docs to work collaboratively with your peers?
2. What are your opinions of how your grades have been impacted by using Google Docs to work collaboratively with your peers?
3. How has using Google Docs enhanced your learning experience?

Research Question 4: How do CTE teachers explain the impact Google Docs has on student learning?

Interview questions

1. How would you describe the observed behavior of students who work collaboratively using Google Docs?
2. How would you describe the observed engagement of students working collaboratively on an assignment using Google Docs?
3. How would you describe the peer interaction and sharing of information while using Google Docs to collaboratively work on assignments?

Interview Wrap-up

This concludes our interview. I thank you for your time and cooperation in helping with this study. The results of this study will add to the literature on the views, attitudes, and usage of Google Docs in Career and Technical Educational courses.

Are there any other information, questions, or comments you would like to add? Are there any other information, questions, or comments you would like to add?

Once again thank you for assistance.

Appendix C: Focused Group Discussion Guide

Opening

Introduce yourself (name, grade, goals after high school).

Introductory Questions

What are your view of using Google Docs to work collaboratively with your peers?

Transfer Questions

What do you believe are the advantages of using Google Docs to collaboratively work on assignments with your peers instead of independently?

What do you believe are disadvantages of using Google Docs to collaboratively work on assignments with your peers instead of independently?

Key Questions

What are your opinions of using Google Docs as a learning tool?

What are your opinions of how your grades have been impacted by using Google Docs to work collaboratively with your peers?

Specific Question

What is your opinion of using Google Docs to complete an assignment versus the traditional paper/pencil method?

Closing Question

Overall, how has using Google Docs enhanced your learning experience?

Final Question

Do you have any additional comments on Google Docs and how you have used them in other subjects?

Appendix D: Letter of Cooperation

School District Name

July 30, 2018

Dear Jannotta Hines Faulkner

Based on my review of your research proposal, I give permission for you to conduct the study titled *Views of Teachers and Students on How Google Docs Support Career and Technical Education* within the School District. As part of this study, I authorize you to invite high school Career and Technical Education Teachers and students to participate in this study and to conduct interviews with them. I also authorize you to allow the teachers to review the findings of your study for plausibility as well as disseminate your findings to the participants and administrators of the school sites. Individual participation will be voluntary and at their discretion.

We understand that our organization's responsibilities include providing a conference room at each site for the interviews. 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 in the setting.

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 Institutional Review Board. In addition, the researcher will not include your name or anything else that could identify you in the study reports.

Sincerely,

_____

Printed Name of Authorizing Personnel

_____

Authorizing Personnel Written or Electronic * Signature

_____

Date of Consent

The Uniform Electronic Transaction Act regulates electronic signatures. Legally, an "electronic signature" can be the person's typed name, their email address, or any other identifying marker. An electronic signature is just as valid as a written signature as long as both parties have agreed to conduct the transaction electronically.