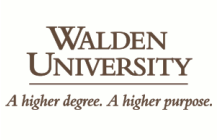

2019

Middle School Teachers' Acceptance and Use of Edmodo to Sustain Networked Collaboration

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This is to certify that the doctoral dissertation by

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has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
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2019

Abstract

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Howard Jehu Brent

MEd, Arcadia University, 1999

BA, Bowie State University, 1995

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

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Abstract

Although some middle school teachers integrate social media platforms into instruction, they generally use traditional and teacher-centered strategies rather than those that are innovative and student-centered. A gap exists in the literature on how teachers could use social media tools such as Edmodo to engage middle school students for innovative online collaboration. This qualitative case study explored the factors that contributed to the acceptance and use of Edmodo by middle school teachers in a Mid-Atlantic urban school district. Specifically, the research explored how teachers leveraged Edmodo to initiate and sustain networked collaboration with their students. The Unified Theory of Acceptance and Use of Technology 2 model, sociocultural development theory, and connectivism supported the conceptual framework. A criterion selection process was used to select 6 middle school teachers as participants. Data sources included 6 semi structured interviews, a focus group of 3 educational technology leaders, and school district documents. Data were analyzed using a priori codes based on the literature review and conceptual framework. Themes that emerged from the analysis included the following: acceptance and use of Edmodo as a communication platform, increased support of students' organizational needs, enhancement of professional practice, initiation of networked collaboration, barriers and challenges in networked collaboration, and sustained networked collaboration. This research may contribute to positive social change by informing educational leaders and teachers on how to best leverage social media tools such as Edmodo in the middle school classroom to actively engage students in online collaboration, fostering a more student-centered learning environment.

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Dedication

This dissertation is dedicated to my parents (Howard and Linda), and my partner for their constant encouragement and unconditional love. Also, I dedicate this study to my angels in heaven: my grandmothers, Catherine and Mary; and Aunt Lucy.

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First and foremost, I must acknowledge and give praise to Elohim, the All-Powerful One -- the God of Abraham, the God of Isaac, and the God of Jacob.

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I would also like to express my gratitude to my family, nieces and nephews, church family, colleagues at work, friends, and participants of this study for their continuous support and understanding. Their prayers, words of encouragement, and time spent with me during this process helped me make positive steps toward my finish line.

And last, but definitely not least, I want to thank my son, Jerimiah, for his patience, encouragement, and love. He will always and forever be my CHAMPION!

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Chapter 1: Introduction to the Study

Due to the ubiquituous use of mobile devices among teens today in the United States, access to the Internet and web-based social media platforms are more readily available. According to a recent report released by the Pew Research Center on the use of social media and technology by teens, 92% of respondents between the ages of 13 and 17 years reported going online daily (Lenhart, 2015). Of those surveyed, 76% stated that they used social media. The top social media platforms used by teens were Facebook (71%), Instagram (52%), and Snapchat (41%; Lenhart, 2015). Seventy-five percent of teens reported using more than one social netowork site, diversifying their social network use (Lenhart, 2015). Because teens are using these sites so frequently, classroom teachers should consider integrating social media into their instructional activities to meet the needs and interests of their digital-native students (Trnova & Trna, 2015).

Given such pervasive use of social media by teens, teachers need to harness these tools in the classroom to not only reach youth, but also help students develop 21st-century skills (collaboration, critical thinking, communication, and creativity) that will be critical to their success in the future (Benton-Borghi, 2013; Casey, 2013; Hammonds, Matherson, Wilson, & Wright, 2013). Current research supports the use of social media technologies to augment instruction; these technologies should be linked to pedagogy so that best practices can be developed for their proper implementation in lessons (Batsila, Tsihourisdis, & Vavougios, 2014; Churcher, Downs, & Tewksbury, 2014; Mao, 2014).

Mainstream social networking sites such as Facebook, Instagram, and Snapchat are not designed specifically for educational use; therefore, some school leaders are

concerned about the use of these platforms in the classroom to enhance instruction (Davis, 2011). Worries about security, advertising, and information sharing have led some educators to seek out social networking sites designed for classroom use (Davis, 2011; Mao, 2014). In spite of its Facebook-like appearance, Edmodo is safe for students and teachers and can be used to sustain networked collaborative experiences (Batsila et al., 2014; Davis, 2011). Edmodo has school-safe features that include the capability for teachers to post and manage online discussions, take polls, share files and multimedia content, track student progress using an online gradebook, form small groups, and connect with other teachers from various disciplines and other school districts around the world (Edmodo, 2016).

This study explored the acceptance and use of Edmodo among middle school classroom teachers as a social media platform to initiate and sustain networked collaboration to enhance instruction. In Chapter 1, I provide the background, problem statement, and purpose of the study. I also present the research questions and briefly explain the conceptual framework.

Background

The integration of social media platforms in instruction has enhanced the learning environment for both students and teachers. Churcher et al. (2014) conducted two case studies on the use of social media platforms, one with Facebook and the other with a wiki. In their qualitative study, they concluded that the use of Facebook increased participation among freshman-level college students; supported student ownership in course content, course design, and structure; fostered a shared learning experience where

students learned from one another; and increased the diversity of viewpoints. In their second case study, they found that the use of a *wiki*, a Web 2.0 tool that allows collaborative editing by users, has the potential to increase student participation and peer interactions (Churcher et al., 2014).

In agreement with Churcher et al. (2014), Mao (2014) found that high school students had positive attitudes and beliefs toward the use of social media in an educational context. He also concluded that the integration of Web 2.0 tools in the secondary school classroom increased student engagement with content, quality of assignments, and students' responsibility for their own learning (Mao, 2014). In addition to student perspectives, Batsila et al. (2014) used a quantitative design to investigate teachers' opinions of Edmodo. They found that overall, teachers had a positive attitude toward the use of Edmodo to increase student motivation and participation in class activities and completion of assignments (Batsila et al., 2014). Teachers indicated that they used the Edmodo site frequently and that as a result, their students were more motivated to participate in discussions and complete homework assignments (Batsila et al., 2014).

Through social media use, the role of the teacher has shifted from the traditional role of dissemination of information to that of facilitator of an online learning community (Churcher et al., 2014). According to Churcher et al. (2014), when using social media, an instructor should moderate the trajectory of user-generated content and community knowledge sharing, and facilitate a collaborative knowledge-creation process. Not everyone agrees with this proposition. For instance, Batsila et al. (2014) emphasised that

teachers' main concern should be to make lessons exciting for learners by arousing students' interest using Edmodo, which will motivate them and keep them from getting bored.

As a social networking site for the K-12 educational setting, Edmodo has been shown to motivate and fully engage students in the learning process as well as support collaboration among students and teachers (Davis, 2011). Batsila et al. (2014) surveyed 41 secondary education teachers of various disciplines to explore teachers' opinions on the use of Edmodo in their classrooms. Their results indicated that teachers believed that Edmodo is very motivating for their learners and supports their work (Batsila et al., 2014). Teachers explained that due to Edmodo use, their students participated more in their lessons and completed homework assignments. Additionally, students urged the teachers to use Edmodo more frequently (Batsila et al., 2014). Likewise, Holland and Muilenburg (2011) found that high school students who engaged in asynchronous small-group discussions on Edmodo made insightful responses and asked meaningful questions. Using reciprocal teaching, a reading framework consisting of four meaning-making strategies, students engaged in meaningful peer-to-peer discussions of the literature in small groups on Edmodo (Holland & Muilenburg, 2011).

In this study, I attempted to address a gap in knowledge related to the integration of social media tools in the K-12 classroom. Very few studies exist about the use of social networking in the K-12 educational setting. Greenhow, Gleason, and Li (2014) suggested that ongoing research is needed for documenting students' (ages 12-17) classroom experiences with social networking sites and how teachers are using them to

support learning. According to Churcher et al. (2014), there is a need to match social media use to pedagogy and effective instructional strategies. As more educators accept and use these tools, they need a clearer understanding of how social media can be used in pedagogically meaningful ways to enhance student learning.

Problem Statement

Middle school teachers lack research-based pedagogy to effectively integrate social media tools to initiate and sustain collaborative learning experiences with their students. This is primarily because the focus of research in this area appears to have been on the operability of these tools, rather than on ways to connect emerging technologies to student learning outcomes and best practices for pedagogy (Churcher et al., 2014). To this end, there is a need for further research on the development and use of social media in the classroom.

In addition to the lack of research on social media use and its connection to teaching and learning pedagogy in the K-12 educational setting, a significant gap exists in research concerning how social media platforms can be used more effectively in the classroom to support a more student-centered learning environment. Without this knowledge, teachers are not able to innovatively implement social media technologies in the classroom in a way that is supported by practical pedagogy. Using technology to match traditional methods of teaching will not create a more student-centered learning environment.

Purpose of the Study

The purpose of this study was to explore the factors that contributed to middle school teachers' acceptance and use of the social media platform Edmodo from the perspective of teachers and educational technology leaders. Additionally, the purpose of this study was to understand how Edmodo was used to initiate and sustain networked collaboration, thus allowing teachers to transition from a traditional teacher-centered model of instruction to a more student-centered learning environment. The phenomenon of interest for this study was the acceptance and use of Edmodo among middle school teachers to engage their students in collaborative learning experiences.

Research Questions

The following research questions formed the basis for this qualitative inquiry:

Research Question 1: What factors contributed to middle school teachers' acceptance and use of social media tools in the classroom?

Research Question 2: How are teachers using social media platform Edmodo to initiate collaboration?

Research Question 3: How are teachers using social media platform Edmodo to sustain networked collaboration?

Conceptual Framework

Vygotsky's (1978) sociocultural development theory, Siemens's (2005) connectivism, and Venkatesh, Thong, and Xu's (2012) Unified Theory of Acceptance and Use of Technology 2 (UTAUT2) model provided the theoretical lenses for this study.

A more detailed analysis of each of these theories and research supporting these theories can be found in Chapter 2 of this study.

Venkatesh et al.'s (2012) UTAUT2 model provides an appropriate theoretical lens to examine and explain the contributing factors that lead to teachers' adoption of social media technologies in the classroom. There are four core constructs that lead to the acceptance and use of technology in the workplace: performance expectancy, effort expectancy, social influence, and facilitating conditions. In this study, I have aligned this conceptual model to understand why teachers have adopted social media tools, and more specifically the social media platform Edmodo, to improve their teaching and facilitate student learning and engagement.

Vygotsky's sociocultural development theory was used to examine the research question about how teachers use Edmodo to initiate collaboration in the classroom among their students. Vygotsky (1978), regarded as the father of social constructivism, studied the role that social interactions play in the development of cognition. Vygotsky ascribed to a Marxist view in which technology and tools transform society and help humans to evolve socially, and in which these social interactions influence cognitive development. He argued that knowledge is constructed through dialogue and interaction with others (Vygotsky, 1978). Vygotsky stated, "Every function in the child's cultural development appears twice: first, on the social level, and later, on the individual level; first, between people (interpsychological) and then inside the child (intrapsychological)" (p. 57). The process of knowing and learning is both an individual and a social process, in that knowledge is co-constructed with others through collaboration (interpsychological), and

learning is the internalization of information at the individual level (intrapsychological) and the product of knowledge creation through collaboration with others (Churcher et al., 2014; Vygotsky, 1978).

Furthermore, Vygotsky's (1978) sociocultural constructivism emphasizes shared knowledge construction in that knowledge is distributed among individuals and objects, is acquired through shared experiences, and evolves through social negotiation. Vygotsky's zone of proximal development (ZPD) explains a learner's capacity for intellectual growth through guided support from a more knowledgeable other (MKO), such as a tutor or peer, mediated by technology and language (Vygotsky, 1978). Vygotsky posited that knowledge is co-constructed in a social environment, and in the process of social interaction with the MKO, language is used as a tool to transmit information and construct meaning (Churcher et al., 2014; Vygotsky, 1978). For the purpose of this study, I was interested in learning from teachers' and educational technology leaders' perspectives on how Edmodo can be used as a tool to initiate collaboration among middle school students as they engage in social interactions to transmit information and construct meaning. Sociocultural constructivists assume that through participation in interaction, learners individually appropriate shared knowledge, which could change their current level of understanding (Johnson, Kieling, & Cooper, 2013).

While Vygotsky's (1978) sociocultural development theory offers a theoretical lens for examining social interactions in the classroom between students and a classroom teacher, connectivism provides a theoretical foundation for better understanding how

social media may be used to create a more student-centered learning environment in the digital age to engage our millennial learners. Connectivism purports that knowledge is distributed across networks, and therefore learning in the digital age consists of the ability to navigate through these networks (Siemens, 2005). A *network* may be defined as connections among computer networks, learning communities, social networks, people, groups, organizations, systems, and nodes that are linked to create an integrated whole (Siemens, 2005). With connectivism, the formation of connections between nodes of information (i.e., networks) constitutes knowledge, and the ability to construct and navigate through those networks is learning (Siemens, 2005). Siemens (2008) further suggests that the act of learning is the ability to traverse these networks and recognize patterns.

In a connectivist learning environment, the task for the educator is to provide and orchestrate a blending of formal and informal learning opportunities as opposed to supporting traditional models of education (Siemens, 2008). Moreover, in a connectivist classroom, the educator uses Web 2.0 and social media tools to create learning experiences in which students engage with networks and learning is personalized. The shift of control from the teacher to the learners to access curricular resources and learning materials allows for a more autonomous and self-directed learning experience (Siemens, 2008).

Nature of the Study

Methodology

I conducted a qualitative single case study to document and examine the perceptions of middle school teachers and educational technology leaders on the use of social media in the classroom to enhance collaboration and to support a more student-centered classroom learning environment. The aim of the researcher in a case study is to examine a phenomenon or an event in depth and up close in its contextual conditions. Yin (2018) defines a case study as an empirical inquiry in which a researcher investigates a phenomenon in depth within its real-life context, relying on multiple sources of evidence. Likewise, in conducting this study, I hoped to explore how Edmodo was used by middle school teachers to augment collaborative learning experiences in the classroom and improve the academic performance of students, especially those students who were considered struggling learners. For this study, various types of sources of information and data points were collected in order to triangulate the data and provide greater accuracy. I interviewed six middle school teachers who used Edmodo in the classroom with their students, conducted a focus group with three educational technology leaders who made key decisions regarding technology integration within the targeted school district, and examined documents such as the school district's policies on technology integration and a technology integration matrix.

Definitions

Collaborative problem solving and networked collaboration: *Collaborative problem solving* occurs when participants problem solve together through mutual

engagement in a coordinated effort (Rochelle & Teasely, 1995). The focus of this study was on *networked collaboration,* where participants use social media technologies to engage in collaborative problem-solving discussions and activities.

Edmodo: A free online social media site for K-12 educational settings, Edmodo is a safe online environment where teachers and students can interact with one another in synchronous and asynchronous discussions, exchanging ideas and digital content (Carlson & Raphael, 2015; Edmodo, 2016). Teachers can also distribute quizzes, assignments, and polls; communicate with colleagues and parents; and set up small groups for student engagement (Carlson & Raphael, 2015).

Shared knowledge construction and shared learning: At the core of collaboration in collaborative learning experiences is the development of shared knowledge and learning among participants. Vygotsky (1978) posited that learning is a social process, in that the learner constructs his or her own knowledge as a result of social interactions. Therefore, he argued that social learning precedes cognitive development: "first, on a social level, and later, on the individual level; first, between people (*interpsychological)*, and then *inside* the child (*intrapsychological*)" (Vygotsky, 1978, p. 56). Collaboration generally involves mutual engagement, joint decision making, and discussion (Rochelle & Teasely, 1995). As a result, successful collaboration generally leads to the construction of shared knowledge and shared learning (Rochelle & Teasely, 1995).

Social media: In his book entitled *Engaging Students Through Social Media: Evidence-Based Practices for Use in Student Affairs,* Junco (2014) defines social media as "applications, services, and systems that allow users to create, remix, and share

content" (p. 5). He further states that social networking sites generally have features whereby users can *friend* or *follow* one another to connect socially on the Internet.

Assumptions

This study was based on the following assumptions: (a) participants used social networking tools to help students construct shared knowledge and shared learning, (b) participants knew how to use the social media platform Edmodo and its features to enhance instruction and engage their students, and (c) participants responded to the interview questions thoroughly and honestly based on their perceptions. These assumptions were necessary to identify patterns regarding how teachers used the social media platform Edmodo with their students in the middle school classroom to create a more student-centered learning environment where students were able to actively participate in their own learning process.

Scope and Delimitations

It should be noted that this research concentrated primarily on the acceptance and use of social media platforms by middle school teachers in College and Career Readiness Public Schools (CCRPS; a pseudonym), one of the largest school districts in the nation. With more than 128,000 students, CCRPS is the second-largest school system in its state and ranks in the top 25 largest school districts in the United States. Edmodo was selected as the social media platform because of its pervasive use by teachers in the school district. In fact, the school district supported its use in that it purchased its own Edmodo domain where teachers can network with one another across the entire district, and through which it can collect district-level data on Edmodo use.

The population of this single case study was delimited to six teachers and three educational technology leaders in order to understand their perceptions of social media use. Students' perceptions on this issue were purposefully not included. It was imperative to gain a clear understanding of how Edmodo was being used instructionally by teachers and was supported by educational technology leaders prior to understanding the perspective of students. Consequently, the study focused on how teachers were using it as a tool to engage students in online collaborative experiences and social interactions.

The conceptual framework of this study was delimited to sociocultural development theory, connectivism, and UTAUT2 as lenses to explain this phenomenon. With its premise that social interactions play a vital role in the learning process and cognitive development, sociocultural development theory was purposefully used to explore the social interactions among students, thus excluding other theoretical constructs of both behaviorist and cognitivist paradigms. As a relatively new learning theory for the digital age, connectivism was purposefully selected due to its proposition that participants can access knowledge through not only their connections with other people, but also their connections with digital tools and technology.

Transferability indicates the level to which the findings of my study can be applied to other districts with similar demographics. According to Yin (2018), it is the researcher's responsibility to provide thick descriptions in order to help readers to gain a deeper understanding of the context around the research setting and data collection. For this reason, I provide thick descriptions of the targeted school district and classroom setting where Edmodo was used as a collaborative social media tool. This may help my

readers determine whether the findings of my study are transferable to other districts and classrooms with similar demographics.

Limitations

There are several limitations that need to be mentioned. The selection of the participants was one limitation. It was a challenge to identify participants for this study who had experience using Edmodo in the classroom as a tool to engage students in collaboration. Finding teachers who used it as a learning management system to perform routine and classroom management functions such as posting assignments and class announcements was not such a challenge. However, it was difficult to find teachers who used Edmodo to enhance student collaboration, and who used it to support a more student-centered instructional environment where students were empowered to play an active role in the learning process.

Another limitation of this study was the data collection process. Because of time constraints, I considered emailing the questions to some of my participants. Creswell (2014) writes about ethical concerns with online data collection that are relevant to this study, such as participants' privacy protection, and authenticity of the data collected. When a researcher is seeking to protect the privacy of participants, email may not be the safest form of communication, especially given that emails can be encrypted by other online users. Instead, conducting interviews using tools such as Google Hangouts may be more secure.

Finally, another limitation is that the results of this study may not be transferable to a larger group, due to the small sample size and geographic location of the participants.

Significance

Social media and related technologies are increasingly used in educational settings (Abe & Jordan, 2013). Findings from this study may help teachers who use social media tools to identify and implement best practices and instructional strategies allowing them to shift from a traditional model of classroom instruction to a more student-centered constructivist approach, where student interactions and meaningful discourse are emphasized.

Most educational technological tools are developed by enterprises such as businesses and technology companies that are primarily focused on the functionality of the tools, not necessarily on student learning outcomes and best practices for instruction (Churcher et al., 2014). Churcher et al. (2014) asserted that advances in pedagogy have not kept up with new technologies in the classroom, so research is needed to match these tools with current pedagogy and best teaching practices to ensure proper implementation and to reach desired student learning outcomes. Most research on social media has been conducted in higher education; there has been less extensive research in the K-12 setting, with most focusing on high school (Mao, 2014).

With that being said, the findings of this study may also help educational technology leaders to improve professional development programs on how to best use social media in the K-12 classroom to enhance instruction and to promote constructivist principles that may assist in improving the overall academic performance of students while keeping them engaged in the learning process. This study may provide insight into the phenomenon of the use of social networking in the classroom to enhance

collaboration for the development of shared knowledge and negotiation to enhance learning.

This research on social media use in the middle school classroom has potential implications for positive change in instructional practices within classrooms of CCRPS. As outlined in the CCRPS 2016-2020 strategic plan, this district is committed to academic excellence and achievement for all students. Noted in the Coherence Framework of the strategic plan, CCRPS leaders hope to improve the quality of instructional practices. As a result, the findings of this study could inform educational technology leaders, classroom teachers, and building administrators of CCRPS concerning best practices and professional development in leveraging social networking tools to enhance student collaboration and engagement.

Summary

In summary, educators need to know how to use social media platforms effectively in the classroom to fully engage students in networked collaborative learning experiences to improve student performance and learning outcomes. Likewise, there is a need to match the use of social media to pedagogy in order to create a more student-centered learning environment.

In Chapter 1, I provided the background, problem statement, purpose, and significance of the study. I also identified the study's research questions, described in detail the conceptual framework, and provided the nature of the study. In Chapter 2, I provide a description of the literature search strategy, develop a conceptual framework, and review key literature pertinent to my study.

Chapter 2: Literature Review

Introduction

The purpose of this exploratory single case study was to investigate middle school teachers' acceptance and use of social media tools in the classroom setting to sustain networked collaboration with their students as they seek to support a more student-centered learning environment. There is minimal research on social media use in the K-12 educational setting, and the research that is available focuses more on secondary schools (Mao, 2014). Therefore, there is a need for further research in the K-12 educational setting to develop best practices in pedagogy for the proper implementation of social media tools to improve student learning outcomes (Churcher et al., 2014). Current teaching and learning pedagogy has not kept up with the implementation of new technologies that are being used in today's classrooms (Churcher et al., 2014). In addressing the gap in research on social media use in the K-12 educational setting, this study may be significant. Through this study, I attempted to connect social media use with pedagogy and best practices that engage students in meaningful collaboration.

The subtopics for this section address the literature search strategy, conceptual framework, engaging millennial learners in today's middle school classroom, affordances of social media tools for teaching and learning, student-centered instruction with social media, student collaboration with social media, teachers' perceptions of social media use, barriers to the integration of social media in the K-12 educational setting, and the use of Edmodo in the K-12 educational setting.

Literature Search Strategy

In researching the literature, I searched for journal articles, books, and peer-reviewed articles focusing on social media use in the middle school classroom using the search engine Google Scholar for preliminary information, and evidence-based literature searches and electronic references such as ProQuest Central, Education Source, Education Research Complete, Education Research Information Center (ERIC), and Thoreau. I used key terms such as *Edmodo*, *middle school*, *shared knowledge construction and shared learning*, *social media*, *social networking*, *student-centered instruction*, and *teaching and learning*.

Conceptual Framework

The conceptual framework for this study was based upon Venkatesh et al.'s (2012) UTAUT2 model, Vygotsky's (1978) sociocultural development theory, and Siemens's (2005) connectivism.

Unified Theory of Acceptance and Use of Technology 2 (UTAUT2) Model

Venkatesh et al.'s (2012) UTAUT2 model provides a theoretical explanation of the contributing factors that lead to teachers' adoption of social media technologies in the classroom. For technologies to impact the performance of an individual or improve productivity of an organization, they first must be accepted and used (Venkatesh et al., 2003). Venkatesh, Morris, Davis, and Davis (2003) developed the original UTAUT model as a comprehensive synthesis of eight models of technology acceptance: the theory of reasoned action, the technology acceptance model, the motivational model, the theory of planned behavior, a model combining the technology acceptance model and theory of

planned behavior, the model of personal computer (PC) utilization, the innovation diffusion theory, and the social cognitive theory. UTAUT identified four core constructs that lead to the acceptance and use of technology of employees in the workplace and/or organization: performance expectancy, effort expectancy, social influence, and facilitating conditions (Venkatesh et al., 2003). With a focus on the consumer use context, UTAUT2 integrated three additional key constructs: hedonic motivation, price value, and habit (see Table 1; Venkatesh et al., 2012).

Venkatesh et al. (2012) formulated the UTUAT2 model to determine the likelihood of success for a new technology to be accepted and used by a consumer based on seven core constructs. *Performance expectancy*, the strongest predictor of all of the constructs, is the degree to which an individual believes that using the technology will help in attaining gains in job performance, whereas *effort expectancy* is the degree of ease of the use of the technology. *Social influence* is the degree to which an individual perceives that others believe that he or she should use the new technology, while *facilitating conditions* involve the degree to which an individual believes that an infrastructure within the organization exists to support the use of the new technology (Venkatesh et al., 2003). *Hedonic motivation* is defined as the fun or pleasure that an individual experiences from using the technology, wherein *price value* involves the perceived benefits of the technology and the price or cost for using it for the individual (Venkatesh et al., 2012). *Experience* and *habit* are the last key constructs. Experience is the individual's prior use of the new technology over an extended period of time, whereas habit is the automatic use of the new technology as result of the use of the technology

over an extended period (Venkatesh et al., 2012). Additionally, Venkatesh et al. (2012) identified four factors (age, gender, prior experience, and voluntary use of technology) that influence the relationship between the seven constructs (see Table 1).

Table 1

Core Constructs and Factors of the UTAUT2 Model

Core constructs	Influential factors
Performance expectancy—Belief that technology use will enhance job performance	
Effort expectancy—The degree of ease in the technology's use	
Social influence—Expectation of others in using the technology	
Facilitating conditions—Infrastructure support in use of the technology	• Age • Gender • Experience
Hedonic motivation—Pleasure in the use of the technology	• Age • Gender • Experience
Price value—Cost effectiveness of technology use	• Age • Gender
Experience and habit—Prior experience and automaticity in technology use	• Age • Gender • Experience

A number of studies have used the UTAUT model in their conceptual framework to research acceptance and use of digital technology in the educational setting (Brown, Englehardt, & Mathers, 2016; Ifenthaler & Schweinbenz, 2016; Kalonde & Mousa, 2016; Tosuntas, Karadag, & Orhan, 2015). For instance, Brown et al. (2016) conducted a qualitative study using UTAUT as a conceptual framework to examine 20 preservice teachers' use of iPads and apps with elementary students. The researchers contended that

even though preservice teachers found the iPads and apps appealing, they struggled with connecting these devices with student learning. Brown et al.'s findings suggested that the UTAUT framework may be useful for teacher training programs that want to improve preservice teachers' implementation of technological tools to improve student learning. Likewise, Ifenthaler and Schweinbenz (2016) used UTAUT to investigate the acceptance of tablets among 18 teachers at three different German middle schools. However, their findings indicated diversity in the attitudes toward the use of the technology, including performance expectancy, and facilitating conditions. Overall, these studies seem to highlight the importance of first examining teachers' acceptance and attitudes toward the use of social media platforms before one can fully investigate the application of these Web 2.0 tools in the learning environment. Hence, I sought to use the UTAUT2 model to further investigate teachers' acceptance and use of social media tools in order to gain a deeper understanding of their attitudes toward their use.

Sociocultural Development Theory

Vygotsky's (1978) sociocultural development theory posited that social interactions play a vital role in the cognitive development of children. Vygotsky proposed that learning is a social process in that the learner constructs his or her own knowledge through social interactions. According to Vygotsky, social learning precedes cognitive development: "first, on a social level, and later, on the individual level; first, between people (*interpsychological*), and then *inside* the child (*intrapsychological*)" (Vygotsky, 1978, p. 56). Learning occurs during the social interactions with the assistance of a more knowledgeable other such as a tutor, parents, a peer with a higher

level of understanding, or someone older (Vygotsky, 1978). Vygotsky believed that the child plays an active role in his or her own learning. With the assistance of the more knowledgeable other, the child is able to develop higher levels of cognitive thinking. Hence, Vygotsky proposed the term *zone of proximal development*, which refers to the area between what the child can do independently and what the child can do with the assistance and guidance of the more knowledgeable other. The zone of proximal development is where optimal learning can take place and where instruction and guidance should be given to best support a child's acquisition of knowledge (Vygotsky, 1978). Vygotsky believed that a child's social interactions and the internalization of these interactions at the individual level are critical for his or her cognitive development:

> Learning awakens a variety of internal developmental processes that are able to operate only when the child is interacting with people in his environment and in cooperation with his peers. Once these two processes are internalized, they become part of the child's independent developmental achievement. (p. 88)

Several studies have employed Vygotsky's sociocultural development theory as the theoretical lens to examine the use of social media technologies in classroom instruction. Churcher et al. (2014) conducted two case studies of instructor uses of social media platforms through Facebook and a wiki to examine the advantages and disadvantages of incorporating social media in course curricula using social constructivist best practices. They posited that Vygotsky's emphasis on groups in the construction of knowledge to promote learning can be used to develop pedagogical best practices in the use of social media and new technologies (Churcher et al., 2014). Social media

technologies connect students to virtual communities of practice and discussions (Churcher et al., 2014). As a result of the participatory nature of social media platforms, their study found that students were active in the collaborative knowledge creation process (Churcher et al., 2014).

Likewise, Chen and Bryer (2012) used Vygotsky's social learning theory in their qualitative study to investigate instructional strategies for using social media. They noted that social constructivism's basic principle is that students learn effectively by engaging in collaborative problem-solving activities, where collaboration is the most critical characteristic of social learning (Chen & Bryer, 2012). The use of social media as learning tools can connect both formal and informal learning environments, as well as connect learners with communities and experts across the world (Chen & Bryer, 2012).

In their quantitative study of knowledge sharing and social media use, Ma and Chan (2014) reported that Vygotsky's work on social construction provided the theoretical foundation that established that social interactions play a critical role in cognitive change, converting social knowledge into individual knowledge. Hence, it is through the process of socialization that shared knowledge can be converted to individual tacit knowledge (Ma & Chan, 2014).

Connectivism

Connectivism, a learning theory whose primary function is to describe the process of learning in the digital age, holds that knowledge is distributed across networks and that learning is an individual's ability to form various networks of connections and to recognize patterns (Siemens, 2006). Nodes are used to form a network. Nodes may be

people, organizations, libraries, websites, books, journals, a database, or any other sources of information (Siemens, 2006). Siemens (2005) offered a practical definition of a network as connections with the purpose of creating an integrated whole. He argued that a network may be defined as "connections between entities" (p. 5). These connections create an integrated whole, and when a change within the network occurs, the whole network is affected (Siemens, 2005).

For Siemens (2006), learning networks are structures that an individual creates both internally in his or her mind and externally in his or her environment to stay current and remain continually connected to new knowledge. The learner forms these networks in his/her mind to connect and create patterns of understanding (Siemens, 2006). As the learner interacts and engages with new knowledge, his or her mind continually adjusts and reshapes this information to reflect new knowledge. To remain current, today's learner is constantly updating and rewriting his or her networks (Siemens, 2006).

Siemens (2006) alleged that today's educational structures need to be reformed to meet the needs of millennial learners, contending that our classrooms still look like the classrooms of the past—the teacher at the front, students in rows. In other words, our educational system still operates on the factory model, employing learning theories that were constructed for that era. He argued,

> The pipe is more important than the content within the pipe. Our ability to learn what we need for tomorrow is more important than what we know today. A real challenge for any learning theory is to actuate known knowledge at the point of application (Siemens, 2005, p. 5)

He further contended that behaviorism, cognitivism, and constructivism are learning theories that were developed during a time when learning was not impacted through technology (Siemens, 2005). According to Siemens (2005), connectivism is a learning theory that is reflective of today's social environment where millennial learners are constantly engaged with digital tools and technology, and where knowledge is growing exponentially.

As a result, connectivism is a theory describing how learning happens in a digital age and is developed by the integration of principles that seek to explain and support learning within a networked society (Siemens, 2006). Siemens (2006) identified the following as the principles of connectivism:

- Learning and knowledge require diversity of opinions.
- Learning is a process of connecting specialized nodes of information sources.
- Knowledge rests in networks.
- Learning may reside in non-human appliances, and learning is enabled/ facilitated by technology.
- Capacity to know more is more critical than what is currently known.
- Learning and knowing are constant, and on-going processes.
- Ability to see connections and recognize patterns and make sense between fields, ideas, and concepts is a core skill.
- Currency (accurate, up-to-date knowledge) is the intent of all connectivist learning activities.

- Decision-making is itself a learning process. Choosing what to learn and the meaning of incoming information is seen through the lens of a shifting reality. While there is a right answer now, it may be wrong tomorrow due to the alterations in the information climate affecting the decision. (p. 31)

Because of the pervasive use of digital tools and lifestyles, millennial learners expect their instructional learning environments to meet their needs with the adoption of tools and approaches to teaching and learning that reflect their digital habits (Siemens, 2008). Additionally, millennial learners expect their learning environments to be participative, engaging, and active, and they expect to be presented with opportunities to use digital tools such as blogs, wikis, social networking, podcasts, and virtual worlds (Siemens, 2008). As participative tools continue to develop and be used by millennial learners, the need for autonomy and control over their own learning experiences in formal learning environments also increases (Siemens, 2008).

Four Metaphors of Educators

The use of technology and digital tools has not only impacted the learning environment of millennial learners, but also affected the roles of educators who attempt to establish learning spaces in a networked environment that support autonomous and self-directed learning. Siemens (2008) proposed four metaphors that can be used to describe the changing roles of educators in a networked learning environment: educator as master artist, educator as network administrator, educator as concierge, and educator as curator (see Table 2).

Table 2

Four Metaphors of a Teacher's Role in a Connected Classroom

Metaphor	Key attributes
1. Teacher as a master artist (Brown)	• Students are actively working in front of teacher and peers • Teacher meets the individual needs of all her students • Students are free to utilize digital resources and collaborate with other students
2. Teacher as a network administrator (Fisher)	• Teacher helps students gain skills in forming networks • Network connections are aligned with course outcomes • Teacher encourages self-directed learning, active participation, and self-reflection
3. Teacher as a concierge (Bonk)	• Teacher provides "soft guidance" as students navigate the Web of online resources • Teacher allows students time to explore online resources on their own
4. Teacher as a curator (Siemens)	• Teacher is viewed as an expert in his or her field • Teacher allows student autonomy and encourages self-directed learning in exploring online resources to enhance students' knowledge within the field • Teacher fosters an environment where students can create, explore, and connect with online resources to support learning.

The first of the metaphors presented by Siemens (2008) is the master artist. Adopted from John Seely Brown, Siemens described the metaphor of the master artist as the "atelier model of learning... and describes learning as enculturation into a place" (p. 15). Just as a master artist working in an art studio or workshop in an open space with his or her students, the teacher observes the activities of all his or her students and employs innovative approaches to meet each student's individual needs (Siemens, 2008). In this context, the students utilize a variety of digital resources and collaborate with each other, not solely relying on the expertise of the instructor (Siemens, 2008).

The second model presented by Siemens (2008) is Clarence Fisher's model of "teacher as a network administrator" (p. 15). Siemens argued that not only is our mind an evolving set of connections between concepts, students and their learning should also be constructed in networks. The role of the teacher, then, is to help students gain the skills to form these connections and establish networks for learning. These network connections are to enable learners to meet course outcomes; while at the same time, the educator encourages self-directed learning, active participation, and self-reflection to gain conceptual understanding of these key concepts (Siemens, 2008).

Thirdly, as cited by Siemens (2008), Curtis Bonk advances the metaphor of an educator as a concierge, responsible for guiding students through the process of finding resources to enhance learning opportunities. Students need to have immediate access to online resources having the teacher to serve as "tour guides" as they navigate the Web (Siemens, 2008). "The concierge serves to provide a form of 'soft' guidance – at times

incorporating traditional lectures and, in other instances, permitting learners to explore on their own," (Siemens, 2008, p. 16).

Finally, Siemens (2008) proposed the educator as a curator. He argued that educators have a dual role in today's classroom: as an expert in one's field and as a guide who encourages learner exploration (Siemens, 2008). Furthermore, he argued that a curatorial teacher acknowledges learner autonomy, and therefore, creates a learning environment where knowledge is "created, explored and connected" by the learners as opposed to dispensing knowledge to fill the minds of the learners (Siemens, 2008, p. 17). While curators are considered experts in their field, they are opposed to the traditional teacher-centered approaches and encourage the freedom of learners to explore (Siemens, 2008).

In essence, the curatorial teacher encourages self-directed and autonomous learning, where learners are free to explore a specific subject matter through various digital online resources and allows learners to create connections that will help develop their own understanding of key concepts within the field (Siemens, 2008).

Several researchers have explored Siemen's connectivism in their studies (Conradie, 2014; Jones & Dexter, 2014; Kellogg, Booth, & Oliver, 2014; Trnova & Trna, 2015). For instance, Conradie (2014) examined connectivism in relation to the development of self-directed learning in personal learning environments (PLEs). Conradie conducted a single case study of 76 learners, ages 21 to 29, in an information and communication technology class to understand the implications of implementing the constructivist learning approach to support self-directed and self-regulated learning in

PLEs. Conradie defines self-directed learning as a process where individuals take the initiative to identify their own individual learning needs and goals, identify the materials and resources for learning, selecting and implementing appropriate strategies, and evaluating learning outcomes. Thus, in self-directed learning, the shift of control in the learning process is from the teacher to the learner, and requires self-motivation, initiative, self-efficacy, and autonomy. Conradie conducted semi-structured interviews utilizing a five-point Likert scale to measure specific factors of motivation, engagement, collaboration, and self-actualization. The factors engagement and collaboration rated the highest which are pertinent factors of connectivism and self-regulated learning (Conradie, 2014). Conradie concluded that connectivism is an invaluable pedagogical framework for the development of PLEs. Although some learners found PLEs that supported self-regulation challenging, most participants were motivated and engaged with collaboration and self-actualization.

In another study, Jones and Dexter (2014) used connectivism as a theoretical lens in a qualitative study of middle school teachers to explore their experiences of three modes of professional development: formal, informal, and independent modes of learning. Jones and Dexter conducted six focus group interviews in two middle schools of one of the largest school districts in the U.S. that serves almost 60,000 students. Through the use of purposeful sampling, 40 math and science teachers were selected to participate in this study. Jones and Dexter contended that connectivism reconciles the dichotomous nature of independent learning and learning through communities.

Jones and Dexter (2014) also concluded that both formal and informal modes of learning are complimentary, and that all three modes (formal, informal and independent learning) work together as a holistic system. For instance, they explained that an effective learning environment should consist of the following four attributes: it should be learner-centered, where learner's interests, and prior knowledge and experiences are considered; knowledge-centered, where the learning environment fosters the development of deep understanding; community-centered, where the development of common information and shared meaning takes place; and assessment-centered, where feedback and assessments provide learner guidance (Jones & Dexter, 2014). The three modes of learning work together to ensure an effective learning environment that supports the four attributes. For instance, while formal PD is useful to ensure the exposure to essential skills and utilize outside experts to provide support, this mode is typically not considered very learner-centered. Whereas, informal and independent modes are more learner-centered in that they are useful in meeting the individual learner needs and taking the learners' interests into account. Therefore, Jones and Dexter (2014) concluded that school districts should consider developing professional development activities for technology integration in all three modes to support teacher learning holistically.

While Conradie (2014), and Jones and Dexter (2014) explored connectivism as it relates to professional development and PLEs in blended environments, Kellogg et al. (2014) used connectivism to investigate the process of peer-supported learning networks in MOOCs, massively open online courses for educators in the K-12 educational setting.

They attempted to explore the patterns of peer interactions and the structure of peer networks, and to what extent do these networks result in the construction of new knowledge (Kellogg et al., 2014). In this mixed methods case study, 655 (40% of total) peer postings from DLT course and 232 (31% of total) from EQP course were analyzed.

Trnova and Trna (2015) conducted a design-based research study to address the issue of motivational effect of communication technologies on connectivism in science education. They argued that today's traditional teaching methods need to be updated and include connectivist principles in order to increase millennial students' motivation for science (Trnova & Trna, 2015). The research resulted in the development of a collaborative action research on social media technology (i.e. Skype) used by both teachers and students. The collaborative action research was carried out online between two classes, one in the Czech Republic and the other in Portugal. Trnova and Trna (2015) concluded that connectivist methods and tools provided positive outcomes for students and significantly contributed to the development of competences of teachers in science education.

In summary, the UTAUT2 model, sociocultural development theory, and connectivism will serve as the theoretical framework for my study to investigate how teacher's use social media in the classroom to initiate and sustain networked collaboration (see Figure 1). Before such networked collaboration can take place, teachers must first accept and use social media tools to engage their students. Hence, the UTAUT2 model provided the lens needed to explore this phenomenon more deeply. More specific to my study, it helped me dig deeper in investing the factors that influence

the educators' decision on the acceptance and use of Edmodo with their students in the classroom.

Next, sociocultural development theory provided the theoretical lens needed to investigate how teachers use social media tools to enhance and initiate student-student and student-teacher collaboration (see Figure 1). In other words, this theory was used to further investigate how teachers employ best practices using social learning tools to initiate and enhance social interactions among their students for individual construction of knowledge. As mentioned previously, collaboration is a key characteristic of social interactions; and therefore, it is imperative to investigate how teachers use Edmodo as a learning tool to engage students in the construction of knowledge through student-student and teacher-student collaboration. Finally, Connectivism will be used to best understand how Edmodo is used as a social learning tool to foster social interactions among students, and to gain a closer look at the roles teachers play to sustain networked collaboration.

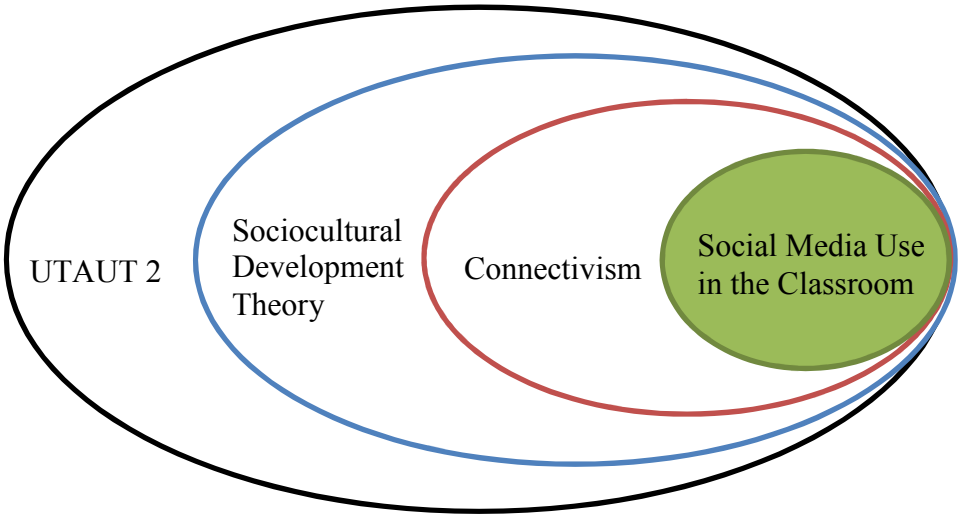

Figure 1. A visual representation of my conceptual framework of UTAUT2 model, sociocultural development theory, and connectivism.

Engaging Millennial Learners

Millennials, a term introduced by Howe and Strauss (2000), refers to those people who were born between 1982 and 2004. Other terms used to name this generation are *digital natives*, *net generation*, *generation @*, *dot.com generation*, and *net kids* (Kilian et al., 2012).

At the beginning of this century, researchers have tried to identify personality traits that best describe this generation of millennials. For instance, Howe and Strauss (2000) have identified seven core traits of millennials: they are special, sheltered, confident, team-oriented, conventional, pressured, and achieving. Pensky (2001) added that millennials are used to receiving information very quickly, and prefer multi-tasking, graphics to text, random access, and hypertexting. Additionally, millennials thrive on instant gratification and frequent rewards; while at the same time, prefer games to "serious" work (Pensky, 2001). This appears to be the case today. Abe and Jordan (2013) described students today as being "born with a chip" (p. 17). Millennials have grown up with MTV, reality TV, the Internet, PCs/Macs, video games, Facebook, Twitter, Flickr, Skype, iPods and iPads, iPhones, and TV/DVD remotes "as appendages to their bodies" (Abe & Jordan, 2013, p. 17). In other words, our youth today are often described as being very tech savvy, and consider technological devices as integral parts of their daily lives, which is partly due to the convenience and immediate access to mobile devices (Lenhart, 2015).

Millennials' Acceptance and Use of Social Media

Several studies examined technology acceptance and usage of millennials and their behaviors to challenge the popular assumption that this generation surpasses the previous generation in terms of their technology experiences (Chandler, 2013; Gu, Zhu, & Guo, 2013; Kilian, Hennigs, & Langner, 2012; Wang, Hsu, Campbell, Coster, & Longhurst, 2014). For instance, Chandler (2013) conducted a quantitative study to investigate prior experiences of students with social media tools. He surveyed 800 upper primary school students about their knowledge of emerging technological tools and applications. For data collection, teachers allowed students to complete a questionnaire during class which lead to a return rate of 83%. Statistical techniques such as Pearson's chi-squared test were used for data analysis. Unlike previous researchers, Chandler (2013) found that students' relationship with technology is more complex and nuanced than is conveyed by a simple branding of digital natives, and that millennials learn more about new media in the classroom rather than outside of school (Chandler, 2013). This study supports the assertion that even though this generation is constantly surrounded by digital tools, online activity, video games, and cell phones, teachers need to provide ample opportunity for students to use technology in the classroom to help students use these tools for educational purposes (Chandler, 2013).

Similarly, Wang et al. (2014) found the idea, digital natives being more tech savvy than their digital immigrant teachers, very misleading. In their mixed methods study, Wang et al. (2014) surveyed and compared 24 middle school science teachers' and their 1,060 students' inside-outside school technology experiences, and conducted focus

group interviews to investigate barriers that prevented them from using technology in school. According to the results of their data, the majority of teachers and students used the same top three technologies at home, which were cellphone, laptop computer, and desktop computer. These technologies were used to support both entertainment and academic work.

Likewise, Gu et al. (2013) conducted a quantitative study using stratified random sample technique of 90 K-12 students and 10 teachers from five districts (two urban and three suburban) in Shanghai, China to understand how teachers (digital immigrants) and students (digital natives) differ in technology usage in and out of school, and their attitudes toward it. Unlike Chandler (2013) and Wang et al. (2014), Gu et al. (2013) investigated the users' patterns of technology usage, and presented suggestions for technology integration into instruction.

In agreement with Chandler (2013) that one's relationship with the use of emerging technology is more complex, Gu et al. (2013) identified four factors that influence both digital native's and digital immigrant's acceptance of technology: outcome expectancy, task-technology fit, social influence, and personal factor. In terms of outcome expectancy, users' acceptance of technology is determined by their internal beliefs and attitudes about technology, and its perceived usefulness and ease of use. Task-technology fit is the degree to which technology meets the individual needs of the user in performing a specific task (Gu et al., 2013). While one's own beliefs about the use of technology is important, Gu et al. (2013) also found that perceived social pressure and influence have a significant positive affect on an individual's beliefs about the use of

technology. Finally, personal factors (self-efficacy and personal innovativeness with technology) influence acceptance of technology use (Gu et al., 2013). Self-efficacy is defined as the belief in one's capability to perform a specific task, and this belief determines what behaviors to undergo, how much effort to put into it, and what emotional responses to exhibit; whereas, personal innovativeness is the degree to which an individual will try out new technology (Gu et al., 2013).

Gu et al. (2013) found that students have access to a variety of digital tools to use, and ample opportunity to use these technologies outside of school than in the classroom. This study revealed that both teachers and students are using these tools more frequently in the classroom than outside of school (Gu et al., 2013). While there were gender and grade level differences with technology usage among students, this was not the case among teachers' use of technology (Gu et al., 2013).

In their aim to assess if millennials are a homogeneous group as suggested by other authors, Kilian, Hennigs, and Langner (2012) conducted a large-scale empirical study with 813 participants aged 30 years and younger. For data collection, the researchers used an online questionnaire; the results indicated that even though social media use is generally high, millennials are less homogeneous than the literature suggested, and identified three different subgroups of millennials (Kilian et al., 2012). Kilian et al.'s (2012) typology is based on the different types of media users that is connected to their media behavior and motivation. To examine media usage behaviors of millennials, Kilian et al. (2012) focused on social media use because it generated feedback and active participation from its users. Like Gu et al. (2013), Kilian et al.

(2012) found that people use media to fulfill specific needs; however, Kilian et al. (2012) added that people's choices of media use is based on their past experiences.

Several studies have reported how emerging technologies are beneficial to fully engaging millennial learners in the learning process (Aviles & Eastman, 2012; Langer-Osuna, 2015; Phillips & Trainor, 2014; Lovin & Lambeth, 2015). For instance, Aviles and Eastman (2012) conducted an exploratory study of millennial business students to discuss how technological tools, such as Web 2.0 and online learning management systems, can be used to improve millennials' educational performance. They reported that business students perceived technology tools, such as personal computers, laptop computers, course websites, discussion groups, message boards and online assessments, were more effective than traditional methods (Aviles & Eastman, 2012).

Phillips and Trainor (2014) examined the flipped-classroom approach using emerging technologies to teaching accounting to the millennial generation of students and to explore accounting students' attitudes toward this approach. The results of the survey of 125 accounting students suggested that students were primarily exposed to the lecture style of instruction, but preferred learning by doing rather than by listening (Phillips & Trainor, 2014). Students were exposed to a variety of technologies and preferred the use of the flipped classroom approach (Phillips & Trainor, 2014). Phillips and Trainor (2014) suggested that millennial students should have a preference for interactive and experiential-learning experiences of the flipped classroom approach.

Langer-Osuna (2015) examined how African-American students used a computer as a resource in a technology-driven, project-based algebra classroom. In this qualitative

study, they analyzed how students interacted with one another and used the computer to support academic functions and social interactions. The study was conducted in a science, technology, engineering, and mathematics (STEM) and project-based learning high school. All courses were taught through collaborative, applied projects where students worked in design and technology teams. Langer-Osuna (2015) found that the autonomy of students in project-based activities created an environment where students worked collaboratively on projects, while at the same time engaged in conversations unrelated to the classroom, but to youth popular culture. Students leveraged their cultural experiences and identities to share ideas and ask for help from their peers about mathematical practices (Langer-Osuna, 2015).

Even though it was important to examine current studies that support the use of social media technology in the classroom, it was as equally important for one to explore current research on the affordances of these tools, and how these affordances help improve the learning environment.

Affordances of Social Media Tools for Teaching and Learning

Affordance is a term used to refer to an object's perceived utility (Wagner, Vollmar, & Wagner, 2014). Focusing on the affordances of social media technology prevents one from paying too much attention to the technological features, and instead focus on the possible uses that would be impossible without the technology (Wagner et al., 2014). Mao (2014) argues that technology affordances are critical to examining learning technologies and how they impact learning. In terms of social media use in the classroom, many researchers have considered the interactivity affordances of social

media that have increased social interactions and engagement (Mao, 2014). While several studies have explored the affordances of social media use in education at the high school and college levels (Agosto, Copeland, & Zach, 2013; Manca & Ranieri, 2016; Mao, 2014; Matzat & Vrieling, 2016; Mbati, 2013; Northey, Bucic, Chylinski, & Govind, 2015; Thompson, Gray, & Kim, 2014), very few studies have addressed this issue at the middle school level (Carpenter & Krutka, 2014; Eamer, Hughes, & Morrison, 2014; Szeto, Cheng, & Hong, 2016).

Student Collaboration and Knowledge Sharing

Some experts have found that one primary affordance of social media use is student collaboration and knowledge sharing. For instance, in their study, Agosto, Copeland, and Zach (2013) found that the use of blogging was effective in encouraging student collaboration and knowledge sharing in a blended learning environment of a graduate course, which is a combination of online and face-to-face delivery of learning. Ten of 28 student blogs were randomly selected for analysis to test blended education in a face-to-face course (Agosto et al., 2013). Authentic collaboration involves students working together and sharing tasks to produce jointly-created work that is more than dividing the activities amongst each other to produce a product (Agosto et al., 2013). Consequently, collaboration in a blended learning environment emphasizes student interaction engaging them in opportunities to construct new knowledge (Agosto et al., 2013). Through the use of blogs in the learning process, researchers have noted an increase in peer-to-peer interaction and learning, and student autonomy (Agosto et al., 2013).

Likewise in their mixed methods study, Earner, Hughes, and Morrison (2014) also found social media to be useful in enhancing student collaboration. and engagement. Unlike Agosto et al. (2013), Earner et al. (2014) found that social media and digital Web 2.0 tools are also useful in building a strong sense of community and social identity/presence among students. In this study, the researchers examined how 77 middle school students in three sixth grade classes in an inner-city school in Toronto, Canada explored, developed, and shared their own cultural identities using social networking site, Ning. During the entire project, students posted their poems and digital projects they created using other Web 2.0 tools on Ning, while providing peer-feedback, and participating in class discussions and whole class think-pair-shares (Earner et al., 2014). They noted the following affordances of social networking and Web 2.0 tools: students were eagerly engaged in the project, the digital Web 2.0 tools enabled students to freely share their cultural identities in a safe community, and created a sense of belonging in an inclusive collaborative environment (Earner et al., 2014). Both Langer-Osuna (2015) and Earner et al. (2014) agree that through the use of social media students are able to develop a sense of cultural identities and social presence.

Educators' Reluctance Toward the Use of Social Media

Although research has shown that social media use has the ability to enhance instruction, still educators are reluctant to use them. Mao (2014) conducted a mixed methods study to investigate high school students' affordances for social media, and found that students depended on social media for social connections. He also noted that teachers rarely used the tool for classroom teaching and learning, while students' use for

learning was abundant yet incidental and informal. Mao (2014) suggested that social media should be used as effective learning tools by teachers to support students' prior experiences with social media in the learning environment.

In a mixed methods research, Carpenter and Krutka (2014) conducted a survey of 755 educators on how and why Twitter, a microblogging social media tool, is used in the K-16 educational environment. Findings indicated that educators typically use Twitter for professional development, primarily to share resources (96%), collaboration with other educators (86%), networking (79%), and participation in Twitter chats (73%) (Carpenter & Krutka, 2014). Due to school district policies that prohibit Twitter use by students, very few educators (17%) use Twitter for class activities. Teachers who used Twitter for teaching and learning purposes indicated that this tool is useful in extending student-student and student-teacher discussions, such as out-of-class review sessions and book discussion groups (Carpenter & Krutka, 2014). Some teachers have mentioned using Twitter for formative assessments and connecting their students to experts outside of school. Overall, educators enjoyed using Twitter for its efficiency and accessibility providing instant access whenever needed (Carpenter & Krutka, 2014).

Additionally, Manca and Ranieri's (2016) study provides empirical evidence on how 6,139 Italian higher education scholars are using social media for personal, teaching and professional purposes. In agreement with Mao (2014) and Carpenter and Krutka (2014), they found that most scholars use social media professionally for networking and collaborating with peers, and for disseminating research (Manca & Ranieri, 2016). On the other hand, scholars are very reluctant to employ social media tools for teaching and

learning practices (Manca & Ranieri, 2016). Consequently, they noted that scholars who have prior experience with using their institution's e-learning platforms or delivering online or blended learning, are more inclined to use social media with their students (Manca & Ranieri, 2016). However, Matzat and Vrieling (2016) found that Dutch secondary education teachers who practice self-regulated learning were more inclined to use social media with their students.

In retrospect, when considering the affordances of social media technology, the research tends to conclude that social media has an array of affordances to enhance the learning process. Hence, the first step in the implementation of social media technologies in the classroom is to investigate and understand teachers' perceptions concerning these digital tools (Akbari, Naderi, Yasdi, Simons, & Pilot, 2016).

Teachers' Perceptions of Social Media Use

Several researchers investigated teachers' perceptions towards social media use in the learning environment (Mao, 2014; Georgakainas & Zaharias, 2016; Akbari et al., 2016; Jacquemin, Smelser, & Bernot, 2014; Carpenter & Krutka, 2014; Soomro, Kale, & Zai, 2014; Rezaei & Meshkatian, 2017). To investigate the attitudes of both teachers and students toward the use of social networking in the formal learning setting, Akbari et al. (2016) used the technology acceptance model as the theoretical framework for their quantitative study. The technology acceptance model attempts to determine the circumstances in which users accept and adopt new technologies, and explains how perceptions are influenced by the users' attitudes (Akbari et al., 2016). According to this model, *perceived usefulness, perceived ease of use,* and *attitudes towards usage* of

technology are the major factors that impact *behavioral intension to use* a technology (Akbari et al., 2016) (see Table 3).

Table 3

Major Factors of the Technology Acceptance Model

Major factor of TAM	Definition
Perceived usefulness	The degree to which an individual believes that using technology will improve outcomes.
Perceived ease of use	The degree to which an individual believes that using technology is free of effort.
Attitudes toward usage	The degree to which an individual evaluates and associates technology with the job. This includes the overall design and features of the technology, and the user's beliefs and attitudes towards the technology.
Behavioral intention to use	The degree of a user's willingness to use technology.

The researchers surveyed 95 teachers and 209 students of five universities in the Netherlands. The questionnaire contained 20 statements that measured the four major factors of TAM as outlined in Table 3 above. Their study found that perceived ease of use significantly influenced *perceived usefulness*. In other words, when teachers and students understood how easy social media technologies were to use, then they believed that these digital tools were useful in the learning environment. (Akbari et al., 2016). Hence, they concluded that when teachers and students perceive social media to be useful and easy to use, then a positive attitude towards the use of social media increased; likewise, their intention to use these tools would also increase (Akbari et al., 2016).

Akbari et al.'s (2016) findings appear to be somewhat consistent with other studies. For instance, Georgakainas and Zaharias (2016) conducted a quantitative study

to test a seven-factor model to explain 206 elementary and secondary Greek teachers' behavioral intentions to use social media in the classroom. Like, Georgakainas and Zaharias's (2016) seven-factor model included constructs from TAM; however, their study also included constructs from two other theories, the theory of planned behavior and the diffusion of innovation by Rogers. Their findings revealed that three factors had a significant impact (experience, perceived usefulness, trialability), two factors (subjective norms, perceived ease of use) had a weaker impact, while two factors (observability, curriculum) did not have an impact at all (Georgakainas & Zaharias, 2016). In keeping with Akbari et al.'s (2016) findings, Georgakainas and Zaharias (2016) concluded that teachers acknowledged the effectiveness of social media use in improving learning and performance of their students.

Soomro, Kale and Zai (2014) examined 102 pre-service teachers' and 26 teacher-educators' of a public university in Pakistan experiences and attitudes toward using social networking sites for collaborative learning. In this quantitative study, they examined pre-service teachers' and teacher-educators' experiences in the use of Facebook as a collaborative learning tool. The results indicated that participants' use of Facebook were limited to social purposes. Teacher-educators had a negative attitude toward using Facebook for collaborative learning, while pre-services teachers indicated an overall positive attitude towards using this social media tool.

Likewise, Rezaei and Meshkatian (2017) studied Iranian English teachers' perceptions of social media use in relation to their teaching. They surveyed 46 teachers and found that the participants responded favorably towards the use of social media in the

classroom. Georgakainas and Zaharias (2016), Rezaei and Meshkatian (2017) and Soomro, Kale and Zai (2014) studies are similar in terms of the ages of their participants who were in favor of social media use. For instance, most respondents of Rezaei and Meshkatian's (2017) study were dominated by females younger than 30 years old. The mean age of preservice teachers who revealed a positive attitude towards social media use in Soomro, Kale and Zai's (2014) research was also younger than 30 years. In Georgakainas and Zaharias's (2016) study, the participants were between the ages of 25-35 years. Even though most of the faculty in both Rezaei and Meshkatian's (2017) and Soomro, Kale and Zai's (2014) studies were familiar with using social media in their personal lives, it appears that the younger teachers thirty-five and under were more inclined towards using it as a blended and collaborative tool for learning with their students (see Table 4). This trend in terms of the ages of participants was an important factor to consider as I conducted my study.

Table 4

Teachers' Perceptions of Social Media Use and Age Groups

Study	Perceptions of faculty (≥ 35)	Perceptions of faculty (< 35)
Soomro, Kale and Zai, 2014	Positive	Negative
Georgakainas and Zaharias, 2016	Positive	n/a
Rezaei and Meshkatian, 2017	Positive	n/a
Carpenter and Krutka, 2014	n/a	Negative

Several studies were conducted to investigate faculty's perception of Twitter as a social networking tool for the classroom. For instance, Jacquemin, Smelser, and Bernot (2014) conducted a case study to assess the use of Twitter and perception of utility in

higher education classrooms among faculty, graduate and undergraduate cohorts. They collected survey information from 22 undergraduate students, 16 graduate students, and 17 faculty members in the Department of Biology at Ball State University. Their findings indicated that undergraduate students were found to use and update social media more than graduate students and faculty. The majority of the faculty did not use social media, and were unsure or against its use in the classroom environment (Jacquemin et al., 2014). Surprisingly, undergraduates were divided on the integration of social media in courses, while graduate students viewed its inclusion more favorably (Jacquemin et al., 2014). In contrast to this view, 76% of the faculty did not use social media in the classroom and were unsure (31%) or reluctant (56%) to incorporate it into their courses (Jacquemin et al., 2014). Jacquemin et al.'s study does not indicate the median age of the faculty members; therefore, one is not able to compare their results with the previous studies to determine if age is an important contributing factor that could provide insight into the negative perception of Twitter use from the faculty.

Carpenter and Krutka (2014) also investigated the perceptions of teachers and their use of Twitter in the instructional environment. In this mixed methods study, Carpenter and Krutka (2014) investigated 755 K-16 educators concerning how and why they use Twitter. Eighty-four percent of the participants used Twitter daily primarily for professional development. Professional development uses included collaboration with other educators, networking, and participation in Twitter chats (Carpenter and Krutka, 2014). Nintey-six percent of the respondents indicated that they shared and acquired educational resources via Twitter (Carpenter and Krutka, 2014). Consequently,

Carpenter and Krutka (2014) indicated that while previous research suggested that university instructors used Twitter for professional development, their findings suggested the same as true for K-12 teachers.

Very few educators used Twitter for instructional purposes. For instance, only 23% of the participants used Twitter to communicate with their students, parents (18%), in-class (17%), and out-of-class (16%) (Carpenter and Krutka, 2014). Carpenter and Krutka (2014) argued that if Twitter can be used to help educators learn from each other in meaningful ways, then it stands to reason that it might also be beneficial to students and parents offering them the same opportunities. Carpenter and Krutka (2014) also noted that even though the largest group of Twitter users are those who are between 18-30, their study failed to include younger and less experienced educators.

It is quite clear that research studies on teachers' perception of social media technology have mixed results. This is also the case in terms of the conclusions made by scholars that have examined teachers' use of social media tools and student collaboration.

Student Collaboration With Social Media in Education

As previously mentioned, one of the key affordances of social media platforms is their potential to be used to leverage collaboration in the learning process. Al-Rahmi and Zeki (2017) conducted a quantitative study of 340 Malaysian higher education students to explore the use of social media in collaborative learning in the context of learning the Quran and Hadith. They concluded that students were able to share and exchange information with their peers using social media platform, but also found that social media was useful, easy to use, enjoyable, and satisfied needs of the learners (Al-Rahmi & Zeki,

2017). Their findings contradicted the findings in Lu and Churchill's (2014) research that investigated the effect of social interaction on learning with social media. Lu and Churchill (2014) investigated the social interactions of 13 undergraduate students in Hong Kong through the use of Elgg-based social networking platform throughout a semester. They found that social interaction via social networking was short-lived, individual-centered, and casual (Lu and Churchill, 2014). Their findings also suggested that even though social interactions through the use of social networking lead to more enhanced engagement, a high level of cognitive engagement was not demonstrated Lu & Churchill, 2014).

In contrast with Lu and Churchill's (2014) findings, Northey, Bucic, Chylinski and Govind (2015) conducted a quasi-experimental field study to examine the use of Facebook (FB) as a social media tool and its impact on student engagement through asynchronous learning and academic outcomes. During a 13-week undergraduate marketing course, 400 undergraduate students were divided into 13 small groups (Northey et al., 2015). Six of the 13 groups were randomly selected to be involved in the study. Four of the six groups were randomly assigned to the experimental treatment called the FB group, and two class groups served as the control groups (Northey et al., 2015). Ten percent of the students' final grades consisted of in-class participation marks. The FB earned participation marks by using the Facebook page for out-of-class asynchronous discussions. The six groups comprised a total of 118 students (84 students in the FB group and 34 students in the non-FB group).

Consequently, Northey et al.'s (2015) findings intimated that students who participated in the FB group demonstrated active engagement in the consumption and co-creation of knowledge, and finished the course with higher final grades. Thus, Northey et al. (2015) concluded that when educators provide asynchronous learning through the use of social media and other Web 2.0 platforms, students become more engaged, actively participate through co-creation of knowledge, and achieve better grades. For this to take place, however, an asynchronous learning ecosystem must be tied to the learning outcomes of the course (Northey et al., 2015).

Consistent with Northey et al.'s (2015) findings, Agosto, Copeland, and Zach (2013) found that the implementation of social media technologies fosters increased collaboration and knowledge sharing. Both studies used two different social media tools. While Northey et al. (2015) used Facebook as the medium in which students were engaged in knowledge sharing and co-creation, Agosto et al. (2013) employed the use of blogs. They argued that the use of blogs in higher education supports the learning process, increases peer-to-peer interaction and learning, and enables student control over learning (Agosto et al., 2013). They also noted that students prefer the use of blog postings because it helps them better understand the course content through their own postings and comments from their peers (Agosto et al., 2013). Agosto et al. (2013) randomly selected 10 out of 28 student blogs of a library of science (LIS) undergraduate course. The researchers used a qualitative content analysis method to analyze and report the patterns within the student blog postings. Agosto et al. (2013) found that blogs

supported collaboration and knowledge sharing in a blended learning environment, and encourage its use in library of science college courses.

Although social interactions and student collaboration is enhanced due to social media emerging technologies, several studies have identified barriers that make it challenging for teachers to integrate these tools into the instructional environment.

Barriers to Social Media Integration in the Educational Setting

Even though educators may use social media in their personal lives to connect with family and friends, and may agree that social media shows potential for enhancing teaching and learning practices, very few are using these tools for academic purposes (Sobaih, Moustafa, Ghandforoush, & Khan, 2016; Ifenthaler, & Schweinbenz, 2016). This, in part, may be due to the barriers and challenges many educators face in the adoption of social media technology as a teaching and learning tool.

Wang, Hsu, Campbell, Coster, and Longhurst (2014) conducted a mixed methods study of 24 middle school science teachers and their students (1,060) to investigate the barriers that prevent them from using technology in school. In this study, they identified five barriers for technology integration (see Table 5).

The first barrier Wang et al. (2014) identified is the lack of access of technology or reliable internet connectivity. The researchers stated that this was the most frequently mentioned challenge that teachers face (Wang et al., 2014). Although teachers had access to technology, many of their students did not. As a result, teachers needed to use the computer lab or the school's mobile laptop carts to make integration possible. The second most cited integration barrier was the lack of time teachers had to plan technology

integrated activities (Wang et al., 2014). Teachers spent too much time teaching material to prepare students for state mandated assessments; therefore, they had very little time to plan for technology enriched lessons. Another challenge of technology integration was the lack of knowledge and skills regarding technology (Wang et al., 2014). Because of their lack of knowledge, teachers did not feel comfortable in sharing their vulnerability in front of their students. On the other hand, those teachers who considered themselves as tech savvy, felt that they lacked the strategies needed to connect technology to teaching and learning. Finally, teachers were faced with school district policies that prevented them from integrating technology into their instruction with students (Wang et al., 2014). Often times, students were not able to use their personal devices at school, and certain web sites were blocked even if these devices and websites had educational value (Wang et al., 2014).

Sobaih, Moustafa, Ghandforoush, and Khan (2016) also conducted a mixed methods study; however, unlike Wang et al. (2014), their study consisted of eight faculty members in Egyptian higher education institutions in tourism and hotel management programs to explore the values and use of social media as a teaching and learning platform in higher education in developing countries. Consistent with Wang et al.'s (2014) findings, Sobaih et al. (2016) identified barriers faced by educators in integrating social media technologies for instructional purposes. Their findings suggest that faculty members have great value in the use of social media platforms for academic purposes; however, actual use in the classroom by faculty was at minimal level (Sobaih et al., 2016).

Sobaih et al. (2016) identified eleven barriers in using social media tools for teaching and learning. The first barrier presented was privacy and security (Sobaih et al., 2016). Faculty members were concerned about their privacy in terms of their personal profiles and befriending their students on social network sites, such as Facebook (Sobaih et al., 2016). The second barrier that prevented faculty from embracing social media use in the classroom was their belief that social media was a source of entertainment, thus a waste of time from teaching and learning (Sobaih et al., 2016). The third barrier was related to the faculty's lack of control and monitoring student's academic activities, originality of work, and posts (Sobaih et al., 2016). The fourth barrier was the digital divide between the students and faculty (Sobaih et al., 2016). Many of the faculty believed their students were more advanced in using technology; and thus, trying to keep up with them would be challenging (Sobaih et al., 2016). The fifth barrier was related to the limitations of various mobile devices (Sobaih et al., 2016). Some of the faculty felt that their devices may not be up-to-date in terms of battery life, and screen size to effectively utilize the social media tools (Sobaih et al., 2016).

The sixth barrier was related to faculty members' lack of knowledge in terms of grading online activities and calculating a final grade at the end of the semester (Sobaih et al., 2016). The seventh barrier was related to the inability to integrate social media with the most commonly used learning management systems (LMS) supported by the universities (Sobaih et al., 2016). The LMS augmented traditional lecture modes of teaching; and therefore, faculty members perceived that they lacked the training to change their teaching method to a more student-centered focused teaching methods using

social media (Sobaih et al., 2016). The eighth barrier was related to the lack of support from the university in integrating social media into teaching and learning (Sobaih et al., 2016). Consistent with concerns of the educator in Wang et al.'s (2014) study, many faculty members expressed that policies set by the universities prevented them from using social media in the classroom with their students (Sobaih et al., 2016). The ninth barrier was related to limited internet access on campus. Similar to Wang et al.'s (2014) study, many educators struggled with reliable connectivity to the internet. The tenth barrier was students' abuse of social media in terms of posting improper comments, and negative posts about faculty members (Sobaih et al., 2016). Finally, the eleventh barrier was related to students' lack of technological skills in using social media for academic purposes (Sobaih et al., 2016). Faculty members felt even though students may use social media in social settings, they do not know how to use these tools effectively to enhance their learning (Sobaih et al., 2016).

Many other studies that included barriers in the implementation of technology in teaching and learning were consistent with the findings of Sobaih et al. (2016) and Wang et al. (2014) (Brown et al., 2016; Ifenthaler & Schweinbenz, 2016; Gammon & McGranahan, 2015; Valetsianos et al., 2013; Flanigan & Babchuk, 2015;). For instance, Brown et al. (2016) conducted a qualitative study using the UTAUT model to examine preservice teachers' use of iPads in their coursework and field placements. Twenty participants in a cohort-based elementary teacher certification program in the Midwestern US were selected to participate in this study (Brown et al., 2016). In addition to their coursework on teaching children, the preservice teachers taught pre-kindergarten,

kindergarten, or first grade classes in a public school setting for 12 hours per week (Brown et al., 2016). Brown et al. (2016) indicated that teachers struggled to connect the iPads with student learning, and more specifically, how to use iPads for student-centered instruction. The researchers also noted that even though preservice teachers were required to use technology for projects in their coursework, teacher education programs did not provide a stand-alone technology integration course that would increase preservice teachers' confidence and attitudes towards using the technology (Brown et al., 2016). Due to the lack of technology support in the school building especially from mentor teachers, preservice teachers were less motivated about using the iPads with their students. Brown et al. (2016) stressed that preservice teachers who work with mentor teachers with poor attitudes toward technology integration may also develop similar attitudes of their mentors.

Ifenthaler and Schweinbenz (2016) also conducted a qualitative study using the UTAUT model to investigate the acceptance of tablets amongst German teachers in the K-12 educational setting. Eighteen teachers of three different middle schools were selected to participate. The researchers have identified the following barriers that German middle school teachers faced regarding the implementation of technology into their teaching: (1) time and effort with regards to technology infrastructure within the school, (2) lack of support in troubleshooting hardware and software issues, (3) the lack of support with integrating technology with instruction, and (4) trouble determining applications that has educational value (see Table 5) (Ifenthaler & Schweinbenz, 2016).

Table 5

Barriers of Social Media Integration in the Classroom

Barriers of social media integration	Wang et al., 2014	Sobaih et al., 2016	Ifenthaler & Schweinbenz, 2016
Lack of technology and Internet access	X	X	
Lack of support in troubleshooting hardware and software issues			X
Lack of time to plan and implement technology-enhanced activities	X		
Lack of technology skills	X	X	X
Lack of technology-integration skills	X		X
Lack of support and resources due to school policies	X	X	X
Privacy and security concerns		X	
Student distracted by social media; time wasted on academics		X	
Inability to monitor and control student behavior and activities		X	
Digital divide between faculty and students		X	
Lack knowledge regarding grading and assessment		X	
Lack of student knowledge in the use of social media for academic purposes		X	

As previously mentioned, privacy and student security are the main concerns that teachers have regarding the integration of social media technology into the classroom (see Table 5). Hence, many educators have adopted Edmodo, an educational social media platform for the K-12 educational setting. It is described by many researchers as having a Facebook-like appearance; however, unlike Facebook, only students with a unique code can access the platform, which helps protect students' privacy, and reduces security risks and abuse (Thibaut, 2015, Gan, Menkhoff, & Smith, 2015; Al-Said, 2015; Nee, 2014; Semingson, Smala, & MacDonald, 2014; Hossain & Wiest, 2013). As a result, students can comfortably collaborate and share their ideas with other students in an ease to use, secure, and safe online social networking environment (Yunkul & Cankaya, 2017; Gan, Menkhoff, & Smith, 2015; Al-Said, 2015).

Edmodo Use in the Educational Setting

Edmodo: What Is It?

Developed in 2008 by Nic Borg, Jeff O'Hara, and Crystal Hutter, Edmodo is an educational platform designed to offer teachers and students an online social networking experience in the K-12 educational setting (Edmodo, 2016; Beltran-Cruz & Cruz, 2013). Today, it is one of the most popular social media tools being used in classrooms all over the world, having reached over 87 million users (Edmodo, 2016; Uzun, 2015).

Affordances and Acceptance of Edmodo

Edmodo's features allow teachers to transform their practice from a traditional mode of instruction to a more collaborative, student-centered and blended-learning environment. Similar to learning management systems that are used in many universities

world-wide, such as Blackboard, Moodle, and Ning, teachers can post grades, assign quizzes, alert students about upcoming projects and assignments, keep calendars, take attendance, and monitor their students' online activity (Hossain & Wiest, 2013). However, what sets Edmodo apart from the widely accepted learning management systems are its features that support collaborative learning and social engagement beyond the confines of the physical classroom setting (Uzun, 2015). In support of this claim, Thibaut's (2015) qualitative study on how Edmodo supports learning in an Australian sixth grade classroom of 30 students identifies several Edmodo affordances that support learning and foster student collaboration. Edmodo allows students to participate in synchronous and asynchronous interactions, post comments and share digital media with their fellow classmates, and design their own profiles to construct their own online identities (Thibaut, 2015). Thibaut categorizes Edmodo affordances into five areas:

- access of information and content,
- distribution of resources, knowledge sharing, and dialogue,
- platform for collaboration,
- platform for sharing through multiple modes of expression, and
- platform that supports interaction and authoring processes (Thibaut, 2015).

Very few studies on the acceptance of Edmodo by teachers have been conducted. One of the goals of my study is to address this gap. Ursavas and Reisolglu (2017), however, is one of the few studies that provides insight on this topic. In their quantitative study, Ursavas and Reisolglu (2017) examine the acceptance of Edmodo among 129 Turkish pre-service teachers. To understand their participants' acceptance of Edmodo,

the researchers used the technology acceptance model (TAM), which is one of the eight models included in the development of the UTAUT2 framework. Ursavas and Reisolglu (2017) found that pre-service teachers' perceived ease of use determined behavioral intention. Other factors that led to the adoption of Edmodo were the participants' attitudes towards the use of Edmodo and its perceived usefulness (Ursavas & Reisolglu, 2017). In terms of my research question regarding the factors that contributed to middle school teachers' acceptance and use of social media, it was important to note whether or not my findings were consistent with this study.

Studies on the Use of Edmodo in the Classroom

Several studies investigated the use of Edmodo in the classroom setting (Jones & Rice, 2017; Nee, 2014; Thibaut, 2015; Wendt & Rockinson-Szapkiw, 2014; Wendt & Rockinson-Szapkiw, 2015; Wichadee, 2017). For instance, in a mixed methods study, Nee (2014) investigated the impact of Edmodo use in the classroom on academic achievement of 140 Malaysian biology students. Upon completion of a pre-test, students were divided randomly into two groups, the experimental group and the control group. Both groups were taught the same content of the biology course through conventional methods for three consecutive weeks for five 40 minute periods per week. In addition to the teaching of course content, the experimental group engaged in online communication using Edmodo. A post-test was administered for quantitative data, and in-depth interviews were conducted to obtain qualitative data. Nee's (2014) results indicated that students who were instructed using Edmodo outperformed those students in the control group who were taught by conventional approaches. There were several themes that

were found in the interview data, which were used to explain the difference in performance between the two groups: (1) Edmodo fosters self-paced learning, (2) Edmodo encouraged hands-on approach to learning, which eliminated boredom, (3) Edmodo allowed for the integration of multimedia to support complex conceptual understanding, (4) Edmodo increased student enjoyment of learning and motivation, (5) Edmodo allowed for the exposure of extra information, and (6) Edmodo improved communication and interactivity (Nee, 2014).

On the contrary, in another quantitative study, Wendt and Rockinson-Szapkiw (2014) investigated the effects of online collaboration on 90 eighth grade students' physical science literacy. Like Nee's (2014) study, Wendt and Rockinson-Szapkiw (2014) divided students into an experimental group, which used Edmodo to complete collaborative activities, and a control group, which completed assignments in a face-to-face environment. However, unlike Nee's (2014) findings, Wendt and Rockinson-Szapkiw (2014) found that students in the control group had fewer science misconceptions that students who participated in collaborative activities using Edmodo. In another quantitative study of 84 eighth grade physical science students, Wendt and Rockinson-Szapkiw (2015) found that students who participated in traditional classroom environment had a higher sense of community than students who participated in collaborative activities using Edmodo.

Wichadee (2017) conducted a quantitative study to develop a blended learning model using Edmodo as a language learning tool, and to examine Edmodo's effectiveness in supporting oral proficiency, motivation and attitude. Eighty-four Thailand students in

an intermediate English course at a private university were divided into two groups. Both groups of students were taught English using the PPP model, but students in the experimental group also used Edmodo to support online learning. Wichadee (2017) found that students in the experimental group developed higher oral proficiency, and had more motivation than students in the control group. Additionally, students in the experimental group had a positive attitude towards the use of Edmodo and blended learning.

Barriers and Constraints of Edmodo Use

Several researchers have identified barriers and challenges that students face regarding the integration of Edmodo as a teaching and learning tool (Al-Said, 2015; Batsila et al., 2014; Thibaut, 2015; Uzun, 2015). For instance, Batsila et al. (2014) noted in their mixed methods study on teachers' opinion of the use of Edmodo that even though teachers believed Edmodo to be motivating for their students and supported their work, teachers expressed concern with the possibility of Edmodo being used excessively by students. Other barriers that students face in terms of Edmodo use also include limited internet access, lack of computer ownership, and limited computer competency (Uzun, 2015). Likewise, Thibaut (2015) identified four challenges of students as they used Edmodo to support their learning: (1) need for self-regulation, (2) need to set boundaries, (3) need for access, and (4) troubleshoot. Finally, Al-Said (2015) identified barriers regarding the use of Edmodo's mobile app on mobile devices: (1) low mobile battery lifespan, and the storing of large files on mobile devices.

Students' Perceptions and Attitudes Toward Edmodo

Several studies were conducted that explored students' perceptions and attitudes toward Edmodo use as a teaching and learning tool in the educational setting (Al-Said, 2015; Balasubramanian, 2014; Uzun, 2015; Yunkul & Cankaya, 2017). For instance, Uzun (2015) conducted a qualitative study to investigate students' attitudes toward Edmodo. Fifty-two pre-service teachers enrolled in an introduction to computers course at a teacher education program in a university in Turkey participated in this study. Uzun (2015) found that students had a positive attitude towards Edmodo use to improve learning through active participation and social communication. Students believed that Edmodo supported face-to-face learning, allowed for easy access of course materials, improved communication that lead to increased student engagement and motivation, promoted the completion of projects and assignments at a self-pace, and encouraged active participation that fostered positive relationships with instructors (Uzun, 2015).

Yunkul and Cankaya (2017) conducted a quantitative study of 298 undergraduate students in a university in Turkey to develop a scale that can be used to determine students' attitudes towards Edmodo. As a result of their study, they developed the Edmodo Attitude Scale (EAS) made up of four factors: collaboration, usefulness, instructor support, and self-confidence. Vegh, Nagy, Zsigmond, and Elbert (2017), on the other hand, conducted a quantitative study to examine the efficacy of Edmodo in a high school biology course. Fifty-eight Hungarian students of two 10^{th} grade classes participated in this study. Both classes were taught the same curriculum, but the experimental group used Edmodo. The researchers found that the experimental group

developed a positive attitude towards biology, but no change was observed in the control group (Vegh et al., 2017). Additionally, the experimental group indicated a favorable positive impact of Edmodo use in the classroom (Vegh et al., 2017).

Likewise, Balasubramanian (2014) conducted a quantitative study to determine whether Edmodo should be used as a teaching strategy to support a student-centered learning environment. Of the 285 Malaysian student participants of a private university, 249 students used Edmodo. Balasubramanian (2014) found that students had a positive attitude towards Edmodo, which is consistent with Uzun's (2015) findings. Students believed that Edmodo should be integrated into the learning environment because it encouraged and supported student engagement and responsible learning (Balasubramanian, 2014).

Summary

In summary in Chapter 2, I provide a comprehensive review of the literature on the topic of social media use in the educational setting. In the introduction, I restate the purpose of the study, and identify the gap in research regarding the use of social media in the K-12 classroom environment. The conceptual framework for the study, which includes Venkatesh et al.'s (2012) unified theory of acceptance and use of technology (UTAUT) 2 model, Vygotsky's (1978) sociocultural development theory, and Siemen's (2005) connectivism, is fully explained and supported by recent studies. In addition, current research is presented and analyzed regarding the engagement of millennial learners, affordances of social media tools for teaching and learning, teachers' perceptions of social media use, student collaboration with social media in education,

barriers to social media integration in the educational setting, and Edmodo use in the educational setting.

Several themes emerged from the literature review on social media use in the educational setting. Firstly, our youth today have access and are using a variety of digital tools daily in their personal lives; therefore, it would be advantageous for teachers to embrace these tools and integrate them into instruction to enhance teaching and learning practices. Secondly, social media platform affordances support student collaboration, knowledge creation and sharing, and social engagement. Thirdly, younger teachers (under 35 years old) generally have a positive attitude towards the use of social media technologies; whereas, much older teachers generally are more reluctant to use these platforms and have a negative perception. In spite of their reluctance to use social media tools in the classroom, most teachers are using social media platforms in their own personal lives. Next, there are several barriers and challenges that teachers face in the integration of social media technology. Lastly, Edmodo can be used to transform from a traditional and teacher-centered mode of instruction to a more student-centered learning environment where student collaboration and engagement are supported.

In Chapter 3, I provide a description of the research method used for this study. Furthermore, this chapter includes the research design and rationale, role of the researcher, research sample and population, data collection tools, data collection and analysis, issues of trustworthiness, and ethical considerations.

Chapter 3: Research Method

Introduction

The purpose of this study was to explore the acceptance and use of the social media platform Edmodo among middle school teachers. More specifically, I hoped to gain a deeper understanding of how these teachers use Edmodo to engage their students in collaboration, fostering a more student-centered learning environment.

In this chapter, I provide a detailed description of the research method, design, and rationale, and I discuss my role as a researcher. Additionally, I provide a detailed explanation of my participant selection criteria; instrumentation, participant, and data collection procedures; and data analysis plan. I conclude with a discussion of trustworthiness issues and ethical procedures that were used in my study.

Context for the Study

To ensure confidentiality, I refer to the school district of my study as *College and Career Readiness Public Schools (CCRPS)*. Located in the southeastern region of the United States, CCRPS is considered one of the top 25 largest school districts in the nation, and it is the second largest school district in its state. CCRPS currently provides public education for over 128,000 students. Approximately 61.4% of the students are African American, 29.6% are Hispanic, 4.2% are Caucasian, 2.8% are Asian, 0.4% are Native American, and 0.2% are Pacific Islander. CCRPS serves 63.8% of students who are eligible to receive free and reduced-price meals, 11.1% of students are eligible to receive special education services, and 15.8% of students are identified as English language learners. Currently, the district has a total of 211 schools with approximately

9,000 teachers. Pertinent to this study, 24 of the 211 schools are middle schools (Grades 6-8).

Research Design and Rationale

For the research design of this study, I employed an exploratory single case study in the qualitative research tradition. According to Yin (2018), a case study is an empirical method used to investigate a current phenomenon in depth within a real-world context. Stake (1995) expounded on this definition by adding that a researcher conducting a case study is particularly interested in capturing the complexities of a single case while focusing on its interaction within its contexts. With this in mind, I hoped to gain an in-depth understanding of the factors that contributed to the acceptance of Edmodo. Additionally, I hoped to explore and understand how this social media platform was used by CCRPS middle school teachers to engage students in collaboration.

Our youth today have immediate access to networked mobile devices and are using these devices daily in their personal lives as a way of connecting with their peers using social media platforms (i.e., Facebook, Twitter, and Instagram). There is a need for research to explore how to best use social media platforms in the classroom to help our youth take advantage of these devices for academic purposes. However, the problem with technology integration in today's classroom is that emerging technology tools are still being adopted to mimic traditional teacher-centered instructional practices (see Appendix B). On the other hand, teachers in the K-12 classroom who want to integrate these tools into their instruction lack knowledge and adequate professional development in leveraging these social media tools to transform their classrooms into more student-

centered learning environments where student collaboration and engagement are supported. Consequently, the findings of this study could provide educational technology leaders, administrators, and classroom teachers some guidance in terms of professional development and best practices in the integration of social media tools to support student engagement and networked collaboration.

Research Questions

The following research questions formed the basis for this qualitative inquiry:

Research Question 1: What factors contributed to middle school teachers' acceptance and use of social media tools in the classroom?

Research Question 2: How are teachers using social media platform Edmodo to initiate collaboration?

Research Question 3: How are teachers using social media platform Edmodo to sustain networked collaboration?

Rationale for Chosen Tradition

My research questions were exploratory in nature; therefore, the case study design was the best fit for this study (see Appendix A). I hoped to explore the complexities of the important circumstances that surround the single case of social media use in the middle school classroom setting (Stake, 1995). In agreement with Stake's assertion (1995), Yin (2018) argued that a case study is a more suitable research methodology if a researcher seeks to explain and explore a phenomena in depth. With this in mind, I hoped to understand how middle school teachers in CCRPS had come to embrace and accept the use of the social media platform Edmodo. Likewise, I hoped to explore in

depth how Edmodo was being used in the middle school classroom setting, where teachers initiated student-to-student and student-to-teacher collaboration, and sustained networked collaboration, which transforms an instructional environment from a teacher centered-environment to a more student-centered approach to learning.

Other research designs were not appropriate for this study. For instance, in a quantitative experimental study, the researcher generally has questions about a large population and selects a sample of that population to get answers to those questions (Maxwell, 2013). In a case study, in contrast, the researcher states a question that is suited for a bounded case and uses purposeful selection to get answers to questions regarding the case being studied (Maxwell, 2013). From Stake's (1995) perspective, quantitative researchers are primarily focused on control and explanation of a specific phenomenon, while qualitative researchers seek to deeply understand the interrelationships of a phenomenon (case or cases) and its context. In a narrative research design, on the other hand, the researcher is primarily focused on exploring the life of an individual through the use of storytelling. Likewise, phenomenology was not suitable because the researcher's primary focus in phenomenology is to understand the essence of a phenomenon. The researcher using this design hopes to describe the essence, from a philosophical perspective, of individuals' lived experiences (Moustakas, 1994). Additionally, a grounded theory approach would not have been suitable for my study because my goal as the researcher was not to develop or to generate a theory from the data collected in the field. Lastly, my focus was not to study a group or a specific culture to understand shared patterns and beliefs, which is the primary focus of the researcher in

an ethnological study. Instead, the case study research design was the best approach because, as a researcher, I hoped to develop an in-depth description and analysis of a single case, triangulating multiple sources for data analysis (Yin, 2018).

Role of the Researcher

My role as a qualitative researcher was multifaceted. One of my primary responsibilities was to design an effective methodology that would be used to answer the research questions that I had identified for this study. Additionally, as the researcher, I had to develop a theoretical framework and become knowledgeable about what was currently known about my topic. According to Yin (2018), the theoretical framework is critical in that a case study's findings should be able to provide empirical evidence to support analytic generalizations (or lessons learned) regarding the theoretical concepts and propositions of the topic to be explored.

As the researcher, I was also responsible for collecting data and developing a case study protocol that was used to guide me through the data collection process. According to Yin (2018), in order to be successful in data collection, a researcher must (a) ask good questions, (b) be a good listener, (c) stay adaptive, (d) have an in-depth understanding of the issues being studied, and (e) conduct research ethically. I had to use effective strategies, as suggested by Yin (2018), that ensured proper data collection. Lastly, it was critical in my role as the researcher that I employ strategies and techniques to effectively analyze and interpret the data.

At the time of my study, I was employed as a consulting teacher for CCRPS, the targeted school district; however, I did not serve as a supervisor, nor were any of my

clients included as participants in my study. As a consulting teacher, I worked with teachers who were considered underperforming and ineffective based on their previous formal observations conducted by their administrators. My clients were nontenured teachers who had less than 3 years of teaching experience within the school district. The participants in my study, on the other hand, were tenured teachers who had worked in the targeted district for more than 3 years and had not been identified as underperforming by their administrator. To limit any potential for researcher biases or power relationships, I selected middle school teachers as participants in my study from schools where I did not have clients and where I had not served as a consulting teacher.

Methodology

Participant Selection Logic

The goal of participant selection was to obtain individuals who were credible, knowledgeable, and capable of providing in-depth, complex, and diverse understandings about the phenomenon being studied (Ravitch & Carl, 2016). Purposive sampling was used to select participants for this qualitative research. To this end, I purposefully and intentionally selected individuals to participate in my study because of their ability to provide in-depth answers to my research questions.

Because it is not the goal of qualitative research to generalize its findings, sample size was not the primary focus of my study (Ravitch & Carl, 2016). I selected a small number of participants in order to gain in-depth information about the phenomenon being investigated. The focus in sample selection for qualitative studies is selecting participants who are credible and meaningful to the study (Patton, 2015). For this reason,

a small sample of six middle school teachers and three educational technology leaders at CCRPS was selected.

Instrumentation

Yin (2018) proposed that case study evidence may come from a variety of sources, and he identified the six most common forms: documentation, archival records, interviews, direct observations, participant observations, and physical artifacts. He further suggested that each source may be beneficial to case study research; however, when collecting data, one should follow four principles (Yin, 2018). These principles served as a guide as I developed an instrumentation plan for this study.

First, Yin (2018) suggested that multiple sources of evidence should be used. He argued that case studies that use multiple sources of evidence are rated more highly than those studies that use single sources (Yin, 2018). For this reason, I collected evidence from the following multiple sources in my investigation of middle school teachers' acceptance and use of Edmodo: interviews, a focus group interview, and documentation. The rationale for using multiple sources of evidence in my study was twofold. First, collecting evidence from multiple sources allowed me to conduct an in-depth study of a phenomenon in a real-world context. Secondly, collecting data from multiple sources allowed me to develop converging lines of inquiry through data triangulation, which strengthened the construct validity of my study (Yin, 2018).

The second principle that I used to guide me in the development of my instrumentation plan involved the creation of a case study database to organize and document the data collected for my study (Yin, 2018). For collecting and documenting

my data, I used Microsoft Word (a word-processing tool) and NVivo (computer-assisted qualitative data analysis software). Specific procedures for the collection, documentation, and storage of evidence are discussed in greater detail in the section on procedures for data collection. Maintaining a chain of evidence is the third guiding principle espoused by Yin (2018). He noted that this, like triangulation discussed in Principle 1, helps to increase the construct validity of information in a study. The reader of my study should be able to follow collected evidence from the initial research question through the case study findings. This should also prevent data from being lost or ignored due to my own bias.

Lastly, the fourth principle recommended by Yin (2018) is to exercise care when using data from social media sources. Yin stated that the sources of evidence for case study research can be represented by social media, but one must be careful in doing so. In conducting the focus group session with educational technology leaders, I used Google Hangouts, a social media platform. In doing so, I checked whether each person identified as an individual participant in the study was actually present in the online session and was not represented by someone else.

I designed the following data collection instruments for this study: an interview protocol for middle school teachers, a focus group protocol for educational technology leaders (see Appendix D), and a document review protocol (see Appendix E).

Interview protocol for middle school teachers. Ravitch and Carl (2016) noted that the primary goal of interviews in qualitative studies is to understand individuals' lived experiences and perceptions and how they make sense of the phenomenon of

interest. They added that qualitative interviews may help in developing detailed and contextualized descriptions of experiences and points of view. According to Yin (2018), an interview protocol includes a set of questions that reflect the researcher's line of inquiry, which serve to remind the researcher about the data to be collected. He further stated that the main purpose of the protocol is to help keep the researcher on track (Yin, 2018). With this in mind, I hoped to conduct one-on-one, semistructured interviews with six middle school teachers in order to understand their experiences and perceptions of their acceptance and use of the social media platform Edmodo. A semistructured interview protocol allowed for flexibility between an inductive interview process and a structured protocol to serve as a guide to keep the researcher on track in answering the research questions. I developed open-ended questions, allowing for follow-up questions to probe for specific examples whenever needed. It is important to note that I used my research questions, the conceptual framework, and the literature review to develop them, and to establish content validity. In addition to establishing content validity, a peer debriefer, who was considered an expert in the field of educational technology, provided feedback on the effectiveness of my interview questions. Thus, in order to be considered content valid, each interview question was well constructed in order to answer my research questions regarding the acceptance and use of Edmodo by middle school teachers to support collaboration.

Procedures for the pilot study. Because I developed the interview protocol as the researcher, a pilot study was conducted to test its feasibility and to refine the research questions of the main study. Prior to conducting the case study, I asked a peer debriefer,

who was considered an expert in the field of educational technology and held an advanced degree, to review my protocol and provide feedback. I made changes to my protocol based on the feedback received.

Ravitch and Carl (2016) recommended that individuals selected to participate in a pilot study meet the participant selection criteria of the main study. To this end, I asked two colleagues who had experience with using Edmodo in the classroom with their students and who met the criteria outlined in the main study to participate in a full-length interview as outlined in the interview protocol. Afterward, I collected and analyzed the data to ascertain whether the research questions of the main study were answered. Ravitch and Carl recommended the following reflective questions to serve as a guide in analyzing the data collected from the interview of a pilot study:

1. What patterns emerged from the participants' responses?
2. Were there any questions that were confusing?
3. Were there any issues with the flow or sequencing of the questions?
4. Were the right follow-up questions asked?

A pilot study report was written in a form of a memo that included a response to the above reflective questions, as well as a detailed explanation of what changes needed to be made as a result of the pilot study. Additionally, in this report, I addressed any logistical and technological issues, and I presented recommendations for correcting them.

Focus group protocol for educational technology leaders. A focus group of three educational technology leaders was conducted using a video conferencing platform, Google Hangouts. According to Ravitch and Carl (2016), focus groups provide an

opportunity to generate information from participants in a group setting that may not arise from individual interviews. The researcher is purposeful in creating the conditions to observe and facilitate the interaction of the participants to collect the data needed to answer the research questions (Ravitch & Carl, 2016). Ravitch and Carl also maintained that a focus group is an effective forum for exploring the attitudes, opinions, and experiences of participants about a specific group. In developing the focus group protocol, I used the following guidelines recommended by Ravitch and Carl:

- Focus groups should range in size from four to six participants, allowing the inclusion of all participants' perspectives.
- Consider recruitment strategies to get participants who meet sampling criteria.
- Have a notetaker present who can also serve as a peer debriefer.
- Set ground rules, encouraging participants to respect each other's opinions.
- Engage participants and create conditions for everyone to equally participate.
- Consider the technical aspects of the focus group data collection.
- Communicate issues of confidentiality to participants.

Document review protocol. Similar to the interview protocol, the document review protocol served to keep me, the researcher, on track in terms of what data was important while reviewing documents. The review of pertinent and contextual documents was essential to data collection (Patton, 2015). The documents relevant to this study that were collected were CCRPS's policies on technology use, and a technology integration matrix. In reviewing these documents, I looked for additional information that were critical to answering my research questions (see Appendix E). The

piloting of each instrument (the interview protocol, the focus group protocol, and the document review protocol) were essential to ensure that the instruments were well constructed for data collection during the *actual* study. As previously mentioned, the interview and focus group questions had been developed by me, the researcher; therefore, the pilot study allowed me the opportunity to refine the research questions for the main study.

Procedures for Recruitment, Participation, and Data Collection

Procedures for recruitment. CCRPS educational technology leaders and middle school administrators were contacted by email to identify educational technology leaders in the district, and middle school teachers who used Edmodo in their classrooms with their students. Upon formulating a list of potential participants, A Letter of Invitation outlining the procedures for participation in my study were emailed (Appendix C).

Criterion sampling strategy, requiring participants to meet criteria to participate in the study, was used to ensure that the right participants were selected. The following criteria for participation in my study was used:

Criteria for teacher participants:

1. Participant must have taught in the school district of the study for at least three years or more in core content areas (mathematics, reading, language arts, science, social studies, and health),
2. Participant must be currently using Edmodo with his/her students to support collaboration, and

3. Participant should not have been placed on a growth plan by administration due to low performance.

Criteria for educational technology leader participants:

1. Participant should serve as an educational technology leader in the school district of the study,
2. Participant should have experience in working with teachers in providing professional development with technology integration, and
3. Participant should have experience with developing educational technology curriculum and instructional resources.

Procedures for participation. Each participant were informed that his or her participation in this study would be completely voluntary, and that they could withdraw from participation at any point. To this end, each participant agreeing to participate were asked to sign a consent release form. Teachers, who have agreed to volunteer, participated in a 45 to 60-minute interview through Google Hangouts or face-to-face, whichever format worked for them. After the interview, participants were contacted by email to schedule a debriefing session to review the transcript of the interview. Likewise, educational technology leaders, who had agreed to volunteer, participated in a 60-minute focus group session using Google Hangouts platform.

Procedures for data collection. As mentioned previously, semistructured interviews of middle school teachers and a focus group session of educational technology leaders were conducted. Also documents that provided additional answers to my research questions were reviewed. During each face-to-face interview, a recording

device were used and transcribed in a Word document. During a debriefing session that took place at least 48 hours after the interview, each interviewee was given the opportunity to review the transcript to make corrections. The focus group session of educational technology leaders were recorded through Google Hangouts. I had a peer debriefer, an expert in the field of educational technology, to attend this session to take notes. A transcript of the session was developed using the recording and the debriefer's notes. Additionally, documents were reviewed to collect pertinent information to answering my research questions. Documents such as curriculum documents, technology integration matrix shared with teachers during professional development sessions, lesson plans that teachers developed that included the use of social media tools, and the school district's policies on technology use for both teachers and students. Each document were digitally stored in my school district's Google Drive account, which is password protected to maintain confidentiality of my participants.

As a follow-up recruitment plan, I had planned to contact middle school principals and instructional supervisors of the targeted school district once again to recommend more participants for this study. I also had planned to adjust the criteria of participation to include participants who used Edmodo in several charter schools within the targeted school district.

Data Analysis Plan

Instead of being confined to rules and stringent guidelines, the researcher of case study research is free to play with the data, searching for patterns and insights as one becomes deeply immersed within the data (Yin, 2018). Because of such freedom, data

analysis for case study research requires the researcher to develop his or her own unique style of rigorous empirical thinking, and presentation of evidence and interpretations (Yin, 2018). To this end, I employed my own unique style in developing a data analysis that involved both inductive and deductive coding processes (Ravitch & Carl, 2016). Yin (2018) stated that one strategy of data analysis is to rely on theoretical propositions, research questions, and literature review, which were fundamental in shaping the data collection, and therefore is beneficial to data analysis. With this said, I first began the data analysis with an initial list of codes developed from my conceptual framework, research questions, and literature review (see Table 6). This method is considered a deductive process since I began my data analysis from my theoretical propositions and research questions to establish my codes.

Table 6

Initial Code List

Framework and research questions	Initial codes
UTAUT2 Research Question 1: What factors contributed to middle school teachers' acceptance and use of social media tools in the classroom?	• Performance expectancy • Effort expectancy • Social influence • Facilitating conditions • Hedonic motivation • Price value • Experience and habit

Sociocultural development theory
Research Question 2: How are teachers using social media platform Edmodo to initiate collaboration?
	• Collaborative engagement
	  o Student–student
	  o Student–teacher
	• Semiotic mediation (tools that mediate social and individual functioning, connects external and internal, knowledge internalized through use of tools -appropriation of knowledge)
	• Scaffolding (i.e., modeling, chunking, graphic organizers, small group instruction etc. – helping to move along ZPD)
	• Connect with community and experts

Connectivism Research Question 3: How are teachers using social media platform Edmodo to sustain networked collaboration?	• Principles of connectivism • Teacher's role in a connected classroom • Blended learning (connection of both formal and informal learning) • Knowledge distributed across networks • Self-directed learning • Project-based learning • Immediate access to online resources

The next phase was the inductive process of data analysis which involved several steps. NVivo was used during this phase of data analysis. First, I read and reread the transcripts of my interviews, took notes of my first impressions. Secondly, I labeled words, phrases. or sentences that were relevant line by line in each transcript using the initial list of codes. Thirdly, I made a table listing all themes in one column per transcript with all the columns on the same table. Fourthly, I highlighted similar themes with the same color across all of the columns. I made another table to group my categories in terms of primary themes and sub-themes. Next, I created a third table that indicated the number of times themes were mentioned in the interview along with initials of the interviewee. I then created categories by combining several codes together using my initial code list, and described connections between the categories. And finally, I wrote up the results and my interpretations.

In terms of discrepant cases, each discrepant evidence were presented and discussed in light of how the participants had expressed themselves during both the interviews and focus group. As I presented the evidence, I also examined my own biases and assumptions to ensure accurate description of each, allowing the readers to evaluate and draw their own conclusions.

Issues of Trustworthiness

Trustworthiness in qualitative research is the extent to which the study's data and the interpretation of the data are credible. Ravitch and Carl (2016) espoused that trustworthiness (also referred to as validity) is an active methodological process. Systematic techniques are used throughout the research process (the research design

phase, data collection, data analysis, and the writing of the findings) to ensure its validity and trustworthiness (Ravitch & Carl, 2016). The factors relevant to trustworthiness are transferability, credibility, dependability, and confirmability.

Transferability

As previously mentioned, transferability refers to the degree to which the study's findings are applicable in other situations or settings. I provided thick descriptions of the setting and participants to ensure that my study was contextually embedded and authentic. According to Ravitch and Carl (2016), thick descriptions are a critical aspect that allows the audience to make a more contextualized meaning of my study's findings.

Credibility

Credibility refers to the researcher's ability to ensure that the results of the study are believable and accurate. Ravitch and Carl (2016) further suggested that credibility is related to the researcher's ability to accurately report the findings and patterns through the use of the research design and research instruments. The strategies that I used to support credibility are triangulation, member checks, and a peer debriefer.

To incorporate triangulation, my study included multiple sources to answer my research questions. For instance, although my primary goal was to explore the experiences of middle school classroom teachers' acceptance and use of Edmodo, I interviewed teachers of various core content areas. I also conducted a focus group of educational technology leaders of the school district to get their perspective of teachers' acceptance and use of social media. Additionally, I included and analyzed documents that were pertinent to answering the research questions, such as curriculum and lesson

plans that teachers used, a rubric used and supported by the school district to support the integration of social media tools in the classroom, and school districts' policies on the use of technology in the classroom by students and teachers. Lastly, my theoretical framework was evident of triangulation in that it was comprised of multiple theoretical perspectives in examining my research topic of social media use in the classroom: UTUAT 2 Model, Sociocultural Development Theory, and Connectivism.

Next, member check was another strategy used to ensure credibility. I asked my participants to provide feedback to ensure that I had presented an accurate account of their perspective. The questions that I asked the participants during the debriefing session were developed by Ravitch and Carl (2016) (see Table 7).

Table 7

Member Check Questions

Member check questions of interview transcript	• Does the transcript reflect and resonate with your perspective? • How might it differ and why? • Is there anything that this transcript does not capture?
Member check questions of analysis and codes	• Is there anything you think I should consider in my analysis? • Is this how you would categorize this idea or concept? • Do these codes make sense to you? • Do these code definitions resonate? Why or why not?
Member check questions of findings	• Do these findings resonate to you? • What could I change or add to make them more accurate? • Are there any assumptions or biases? • Are my descriptions appropriate and accurate?

Lastly, I used a peer debriefer, or critical friend as a strategy to ensure credibility. Ravitch and Carl (2016) argued that the purpose of this strategy is to allow others to challenge my interpretations, biases, and assumptions made throughout the entire research process. I asked two individuals to serve as critical friends to provide feedback. One individual was an educational technology leader in the targeted district and a graduate of Walden University's doctoral program in education, and the other person was a recent graduate of Walden University's doctoral program in educational technology and served as an educational leader in a large public school district.

Dependability

Dependability refers to the degree in which the study's findings are consistent and repeatable as it relates to answering my research questions. The goal in establishing dependability is to ensure that another researcher, upon review of my study, would come to the same findings, interpretations, and conclusions. Therefore, according to Ravitch and Carl (2016), dependability entails that appropriate research methods are used in answering my research questions. The strategies used to ensure dependability in my study were the use of an initial code list, data collection plan, triangulation, and encouraging honest and candid answers from my participants.

Confirmability

Confirmability refers to the degree in which the study can be corroborated by others. Ravitch and Carl (2016) suggested that one goal in establishing confirmability is to uncover and expose the researcher's biases through a structured reflexivity process. Because the researcher is considered the primary instrument in qualitative research,

biases are inevitable as well as a critical aspect of the research process (Ravitch & Carl, 2016). As a result of this, I used journaling and memos throughout the research process to record my own ideas, perceptions, and biases. In addition to reflexivity, triangulation, member checks, and a peer debriefer are also strategies that were used to establish confirmability. I compared the notes of the peer debriefer with the transcript of the focus group session to ensure similar findings, which helped improve the validity of the study.

Ethical Procedures

Following specific ethical procedures is critical to the entire research process. Prior to conducting my study, I had submitted the required application to the Institutional Review Board (IRB) to gain Walden University's permission to conduct my research. Outlined in this application were detailed descriptions of the equitable treatment of human participants, and documents that were used to gain access to participants and data. Additionally, I submitted in my application to IRB a copy of my certification from the National Institutes of Health (NIH), Office of Extramural Research that indicates that I had successfully completed the required NIH training course, "Protecting Human Research Participants." Lastly, I also submitted an application to obtain permission from CCRPS to conduct my study in the school district.

In terms of the ethical treatment of the participants of my study, I obtained signed consent forms from each participant. Prior to obtaining signatures from participants, I had explained the purpose of my study. Also, I informed them that their participation was completely voluntary, and that they may choose to withdraw their participation anytime without the threat of being penalized for any reason. For participants who wish

to withdraw from the study, I ensured their privacy and fully supported their decision. I contacted educational leaders and principals for additional participants. If there were no other participants, I continued with the data collection and analysis with the reduced sample size.

Additionally, I explained to my participants that I would use pseudonyms to protect their identity. I also asks for their permission to record during the interview. Although I was an employee of CCRPS, I had not served in a supervisory role, and I did not select participants who were teachers of my assigned schools. All data relevant to this study were stored on my private Dropbox data storage account, which is password protected and accessed only by myself, the researcher. This data will be stored for at least ten years prior to being deleted. Since all information of the participants will be kept confidential, data was only shared with participants for accuracy.

Summary

In summary, I have described in this chapter my role as the researcher in conducting my study. I further provided a detailed description of my methodological practices in terms of data collection instruments and plan, data analysis plan, and participant selection. Lastly, I discussed how issues of trustworthiness will be established throughout the research process to ensure validity as it relates to credibility, transferability, dependability, and confirmability.

In Chapter 4, the results of my study will be presented. This chapter will include a detailed description of the setting and demographics. Next, chapter 4 will delineate how data will be collected and analyzed. Finally, the chapter will conclude with evidence

of trustworthiness as it relates to credibility, transferability, dependability, and confirmability.

Chapter 4: Results

Introduction

The purpose of this study was to explore the acceptance and use of Edmodo among middle school teachers from both teachers' and educational technology leaders' perspectives. More precisely, I hoped to better understand how these teachers foster a more student-centered learning environment where students are more engaged in collaboration and knowledge sharing using a social media platform. The following three questions served as the research questions for this study:

Research Question 1: What factors contributed to middle school teachers' acceptance and use of social media tools in the classroom?

Research Question 2: How are teachers using social media platform Edmodo to initiate collaboration?

Research Question 3: How are teachers using the social media platform Edmodo to sustain networked collaboration?

This chapter includes a description of the pilot study and its impact on the main study, the setting, the participant demographics, and the data collection process. Additionally, this chapter provides a detailed description of data analysis, evidence of trustworthiness, and the presentation of the study's results. This chapter concludes with a summary of the answers to the research questions.

Pilot Study

Prior to data collection for my study, I conducted a pilot study in order to test the feasibility of the interview protocol and refine the research questions of the main study.

Prior to conducting the pilot study, I asked two peer debriefers, who were considered experts in the field of educational technology and held advanced degrees, to review my protocol and provide feedback. I made changes to my protocol based on the feedback received.

Ravitch and Carl (2016) recommended that participants selected to participate in a pilot study meet the participant selection criteria of the main study. To this end, I asked two colleagues who had experience with using Edmodo in the classroom with their students, and who met the criteria outlined in the main study, to participate in a full-length interview as outlined in the interview protocol. Afterward, I transcribed the data and then emailed the transcriptions to the participants for feedback to ensure that I was able to capture their perspectives adequately. The following questions served as a guide as I reflected upon the interview process for the pilot study (Ravitch & Carl, 2016):

1. What patterns emerged from the participants' responses?
2. Were there any questions that were confusing?
3. Were there any issues with the flow or sequencing of the questions?
4. Were the right follow-up questions asked?

In terms of the patterns that emerged from the participants' responses, the focus of the pilot study was primarily on the feasibility of the interview protocol, and therefore, I did not conduct data analysis of the participants' responses. Also, I did not want the findings of the pilot study to potentially influence the results of the main study due to researcher biases. However, both participants were able to answer all of the interview questions and provided a substantial amount of information for each question.

In terms of confusing questions, I found that Research Question 3 needed more clarification for both participants. Once I explained "networked collaboration" and what that might look like in the classroom, participants were able to respond to the question. I gave an example of students engaged in discussions using Edmodo's platform around a specific topic, where they also used other online resources to support their learning.

The pilot study helped me to revise the flow of the interview subquestions. For instance, it was of pivotal importance that I began the interview with the questions regarding the factors that influenced participants' acceptance of Edmodo before having them share their perspectives on the benefits of using it with their students in the classroom. This, at first, seemed to be the most logical order, but during the actual interview, I was able to determine the effectiveness of this sequence. Once participants finished speaking about the factors that led to their decision to use the social media platform, they naturally began talking about its benefits. The sequence of the interview questions helped in creating an environment where participants were willing to engage in a free-flowing discussion of their use of Edmodo in the classroom with their students.

Additionally, the pilot study provided me with the opportunity to resolve any technical issues prior to the main study. During one of my interviews, I had planned to use a "snowball" microphone, but did it not work with my MacBook Pro. Having no other external mic, I was left with the decision to use the built-in mic and the audio recorder QuickTime Player. In terms of transcriptions of the interview, I used an online transcription service for the first interview and transcribed the second interview by hand. This helped me to decide which method of transcription would be better to use during the

main study. Although the online service was a great resource, I found that transcribing the interviews by hand helped me to become fully immersed in the data by forcing me to reread the transcript multiple times to ensure accurate transcription.

Setting

For this case study, I selected participants from CCRPS. Located in the southeastern region of the United States, CCRPS is considered one of the top 25 largest school districts in the nation and is the second largest district in its state. With an annual budget of $1.9 billion, CCRPS currently provides public education for over 132,000 students. Approximately 58% of the students are African American, 33% are Hispanic, and 4% are Caucasian. Among the students whom CCRPS serves, approximately 64% are eligible to receive free and reduced-priced meals, 11% are eligible to receive special education services, and 16% are identified as English language learners.

Demographics

I interviewed six middle school teachers and conducted a focus group of three educational technology leaders at CCRPS (see Tables 8 and 9). One of the teacher participants held a PhD, while four of the six participants had a master's degree. The average number of years of teaching experience between the six of them was 18. Four of the five major core content areas were represented in this study: Two participants taught social studies, two participants taught mathematics, one taught reading and language arts, and one taught science. Two of the participants were male, while four were female middle school teachers.

Among the three educational technology leaders, the average number of years of leadership within the target school district was 13. One focus group participant held a doctorate, while the other two had obtained a master's degree.

Table 8

Participant Demographics

Participant	Content area	Highest degree obtained	Years of teaching experience
Participant 1	Social studies	Master's	19
Participant 2	Mathematics	Master's	20
Participant 3	Reading/Language arts	Master's	13
Participant 4	Science	Doctorate	28
Participant 5	Social studies	Master's	20
Participant 6	Mathematics	Bachelor's	12

Table 9

Focus Group Participant Demographics

Focus group participant	Position	Highest degree obtained	Years of educational leadership experience
FG Participant 1	Media arts instructional specialist	Master's	13
FG Participant 2	Regional technology coordinator	Doctorate	14
FG Participant 3	Instructional technology specialist	Master's	12

Data Collection

Interviews

I interviewed six middle school teachers who represented four of the five core content areas. The interviews were held in their individual classrooms. Two of the interviews were held during their planning periods, while four were conducted at the end of the school day. As a result of the revisions to the protocol due to the findings from the pilot study, I had no issues that presented themselves during the interviews of the main study. I used QuickTime Player software on my MacBook Pro laptop to record the interviews and stored each of the recordings on a password-protected data storage account through Dropbox. Once the interviews had been conducted, I used Microsoft Word to transcribe each interview. The interviews lasted an average of 30 minutes. Due to time constraints for the participants, I did not conduct a debriefing session as originally planned. Instead, I emailed each participant a copy of the transcript for review to ensure that the transcripts were free of errors.

Focus Group Session

I conducted a focus group session via Google Hangouts of three educational technology leaders. I did not have a peer debriefer attend this session to take notes. However, I was able to record the session using QuickTime Player. The duration of the session was an hour. Two of the participants were in their own homes during the focus group (as I was), while the third participant was driving home from a meeting. I created a transcript of the session using Microsoft Word and then emailed each participant a copy

for feedback. Only one participant responded, indicating that only two minor corrections were needed.

Documents

I obtained four documents that were pertinent to answering my research questions. Three of the documents were the school district's policies regarding the use of technology, social media, and personal devices. The fourth document was a technology integration matrix that the educational technology leaders used during professional development sessions with their teachers. Each document has been stored in my school district's password-protected Google Drive account.

Data Analysis

For this study, I analyzed data from multiple sources: interviews of middle school teachers, a focus group session of educational technology leaders, and documents pertinent to answering my research questions. As indicated in Chapter 3, I began data analysis with a deductive process by using an initial list of codes developed from my conceptual framework, research questions, and literature review (see Table 6). To begin the inductive phase of data analysis, I then coded and categorized data from each data source using NVivo, software qualitative analysis. NVivo helped me to store, organize, and manage multiple data sources; however, it did not analyze my data for me. Instead, as the researcher, I conducted the data analysis myself through the use of the constant comparative method to generate the findings of this study (Merriam & Tisdell, 2016).

As previously mentioned in Chapter 3, I had initially planned to make a table listing all themes in one column per transcript, with all the columns on the same table,

and then highlight similar themes with the same color across all of the columns. However, the use of NVivo prevented me from having to do this step, as it allowed me to organize the data into categories across all data sources. Through the use of analytical coding, a process in which the researcher assigns codes into categories based on emerging themes, I reorganized my codes by combining several codes together to construct categories based upon themes that emerged across all data sources. Finally, I developed a summary table of constructed categories and themes (see Tables 10 and 11).

Table 10

List of Research Questions, Categories, and Definitions

Research questions	Categories	Definitions
Research Question 1: What factors contributed to middle school teachers' acceptance and use of social media tools in the classroom?	Performance expectancy	Belief that the use of Edmodo/social media enhances job performance
	Effort expectancy	The degree of ease in the use of Edmodo/social media
	Social influence	Expectations of others in using Edmodo/social media
	Facilitating conditions	Infrastructure support in use of Edmodo/social media
	Hedonic motivation	Pleasure in the use of Edmodo/social media
	Price value	Cost effectiveness of Edmodo/social media use
	Experience and habit	Prior experience and automaticity in technology use
	Barriers and challenges in Edmodo/social media use	Barriers and challenges faced in using Edmodo/ social media
Research Question 2: How are teachers using social media platform Edmodo to initiate collaboration?	Collaborative engagement	Use of Edmodo/social media for teacher-to-student and student-to-student collaborative engagement
	Semiotic mediation	Use of Edmodo/social media to mediate social and individual functioning, knowledge internalized through the use of tools
	Scaffolding	Use of Edmodo/social media to support scaffolding activities (i.e., modeling, chunking, and peer support)
	Connecting with community experts	Use of Edmodo/social media to connect students with community and experts
Research Question 3: How are teachers using social media platform Edmodo to sustain networked collaboration?	Diversity of opinions	Use of Edmodo/social media to gain diversity of opinions
	Blended learning	Use of Edmodo/social media to connect both formal and informal learning environments
	Knowledge distributed across networks	Use of Edmodo/social media to access knowledge that is distributed across various networks
	Self-directed learning	Students are free to direct their own learning experiences facilitated by the use of Edmodo/social media
	Access to online resources	Students have access to resources for knowledge construction
	Project-based learning	Students engaged in project-based learning activities facilitated by the use of Edmodo/social media
	Immediate access to online resources	Use of Edmodo/social media to access online resources
	Teacher's role	Teacher's role in a connected classroom using Edmodo/social media

Table 11

List of Research Questions, Themes, Subthemes, and Examples

Research questions	Themes	Subthemes	Examples
Research Question 1: What factors contributed to middle school teachers' acceptance and use of social media tools in the classroom?	Acceptance of Edmodo as a communication platform	Student collaboration and engagement tool	A form of communication from student to student
		Communication tool for parents	A form of communication with parents
		A safe online environment for students	Monitor and track student-to-student communication
		Easily accessible for online collaboration	Easily accessible to both students and parents
	Acceptance of Edmodo to support students' organizational skills	Supports students in organizing work, class notes, and resources	Helps students stay organized and keep track of assignments
		Tool to help meet the individual needs of students	Use of Edmodo to support a student with an IEP or 504 plan
	Acceptance of Edmodo to enhance professional practice	Helps teachers organize their work	One place to store instructional materials, resources, and students' assignments
		Tool for data collection and documentation of student growth	Use of Edmodo's Snapshot to document student growth
		Easy and simple-to-use platform	Simple to use, very user friendly
		Provide immediate feedback to students	Immediate feedback to student responses
		Colleagues as an influence for teachers' use of Edmodo	Other teachers who use Edmodo
		Administration and district-level support	Principal required use of Edmodo
		Commitment to lifelong learning and passion for technology use	Keeping current with the latest educational technology innovations
		Use of Edmodo at no cost	Use of Edmodo is free
	Barriers and challenges	Culture of compliance with state and local mandates	Too much time spent on preparing students for tests
		Teacher-centered instruction mindset	Teacher must be in control of the learning environment
		Fear of using social media tools	No evidence of student-to-student collaboration
		Need for professional development in using social media for student-centered instruction	Professional development on social media use and how to foster a student-centered learning environment

(*table continues*)

Research questions	Themes	Subthemes	Examples
		Technology issues/lack of knowledge in how to use the hardware/devices	Challenge in using mobile devices to access Edmodo
Research Question 2: How are teachers using social media platform Edmodo to initiate collaboration?	Strategies used to initiate networked collaboration	The use of question and response to initiate collaboration	Teacher poses a question for students to respond to; students respond to other students' responses
		Peer-to-peer support	Student-to-student support on mathematics homework
		Use of the polling feature	Polling students on whether they agree or disagree with a given issue
	Teachers are not using Edmodo as a collaborative tool with their students	Teachers are not using this tool to engage students in peer-to-peer collaboration	No evidence of student-to-student collaboration; Use of Edmodo to post assignments
		Teachers recognize the potential in using Edmodo to engage students in peer-to-peer collaboration	Use of Edmodo is primarily teacher-centered, but can see how it may be used to engage students
Research Question 3: How are teachers using social media platform Edmodo to sustain networked collaboration?	Strategies used to sustain networked collaboration	Provide different viewpoints and cultural perspectives	Students given opportunity to learn from viewpoints other than the teacher's
		Student choice	Students are given the opportunity to choose discussion question to respond to
		Student access to online resources	"Students share links from Khan Academy, or YouTube
		Students collaborate on projects in both informal and form settings	Students work on project while in their own homes.
		Use of Edmodo to create and share multimedia projects	Creation of a documentary on a Holocaust survivor
	Teacher's role in sustaining networked collaboration	Teacher as curator and master artist	Teacher facilitates student-to-student conversations on Edmodo
		Teachers set expectations, model, and monitor online communication	Review of district's policy on cyberbullying with students

Evidence of Trustworthiness

As previously mentioned in Chapter 3, trustworthiness in qualitative research is the extent to which the study's data and the interpretation of the data are credible. For this study, a variety of strategies were implemented to ensure relevant factors of trustworthiness: credibility, transferability, dependability, and confirmability.

Credibility

Credibility is the researcher's ability to ensure that the results of the study are believable. The strategies that I used to ensure credibility were triangulation, member checks, and the use of peer debriefers.

To incorporate triangulation for this study, multiple sources were used to answer my research questions. I interviewed middle school teachers of various core content areas, conducted a focus group of educational technology leaders, and analyzed documents that were pertinent to answering the research questions. Also, I constructed a conceptual framework comprised of multiple theoretical perspectives to examine the study's research topic of social media use in the classroom: UTUAT 2 Model, Sociocultural Development Theory, and Connectivism.

In terms of incorporating the strategy of member check, participants were given the opportunity to provide feedback to ensure that I present an accurate account of their perspective. The participants were asked to respond to the questions developed by Ravitch and Carl (2016) (see Table 7). Lastly, I used two peer debriefers, or critical friends as a strategy to ensure credibility. I asked two individuals to serve as critical friends to provide feedback. One individual is an educational technology leader in the

target district and a graduate of Walden University's doctoral program in education, and the other person is a recent graduate of Walden University's doctoral program in educational technology and serves as an educational leader and administrator in a large public school district.

Transferability

As previously mentioned, transferability refers to the degree to which the study's findings are applicable in other situations or settings. To accomplish this construct of trustworthiness, I provided thick descriptions of the setting and participants to ensure that my study is contextually embedded and authentic. According to Ravitch and Carl (2016), thick descriptions are a critical aspect that allows the audience to make a more contextualized meaning of my study's findings.

Dependability

Dependability refers to the degree in which the study's findings are consistent and repeatable as it relates to answering my research questions. The strategies used to ensure dependability in my study were the use of an initial code list, detailed description of my data collection plan, triangulation, and encouraged honest and candid answers from my participants.

Confirmability

Confirmability refers to the degree in which the study can be corroborated by others. I used journaling and memos throughout the research process to record my own ideas, perceptions, and biases. Additionally, triangulation, member checks, and the use of a peer debriefer were strategies used to establish confirmability.

Results

In this section, the results or findings of this study are presented in relation to the themes and discrepant data that emerged from data analysis. The categories and themes are aligned with the research questions. Non-recurring themes are represented as discrepant data, and are discussed throughout this section. Also throughout this study, similarities and differences between the perceptions of middle school teachers and educational technology leaders are discussed.

Research Question 1

Both interview and focus group questions 1-4 (Appendix D and Appendix E) and three documents collected from the school district support research question 1. The questions reflected the factors that contribute to middle school teachers' acceptance and use of social media platform Edmodo. Three themes emerged from the interviews, focus group, and three documents analyzed (Figure 2).

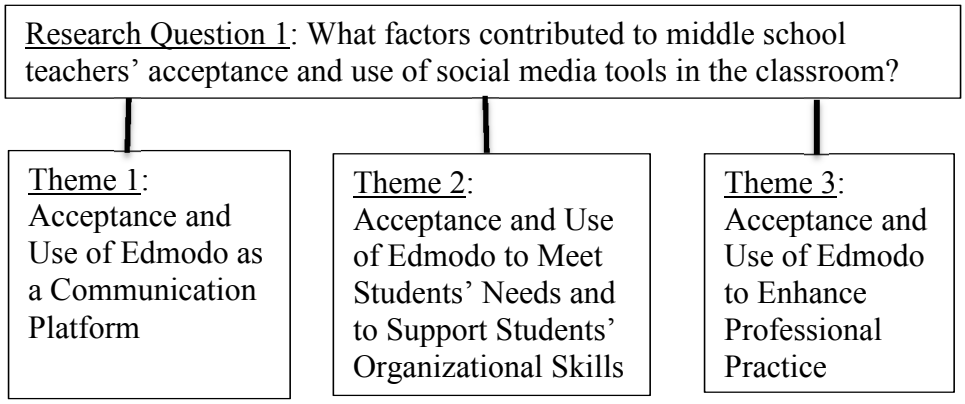

Figure 2. Themes of Research Question 1.

Theme 1: Acceptance and use of Edmodo as a communication platform.

Theme 1 consists of several sub-themes that emerged from the data to explain why

teachers accept and use Edmodo with their students: the need for a student collaborative and engagement tool, the need for a social media tool to communicate with parents, the need for a safe online environment for students to collaborate, and a need for a platform that was immediately and easily accessible.

Four of the six participants found Edmodo to be a tool to support student collaboration and engagement. Participant 1 and Participant 6 both expressed that Edmodo allowed their students to collaborate with one another on assignments in class and for homework. For instance, when asked about the factors that contributed to their acceptance and use of Edmodo, Participant 1 stated, "I needed a platform that allowed the students to be able to be interactive…. So, case in point, you have synchronous and asynchronous modes of communication." Participant 6 stated, "It's also a form of communication between student-to-student. Sometimes a student may need help with homework and post it on the general board, so other students can help."

In terms of embracing Edmodo as a social media tool to communicate with parents, five of the six participants all agreed that they used Edmodo to keep parents informed about assignments and projects; therefore, offering another form of communication. For instance, Participant 1 added, "I also needed a platform that allowed me the opportunity to be able to not only communicate with students, but also allowed me the opportunity to be able to communicate with parents as well." Likewise, Participant 3 mentioned that Edmodo not only allows students to immediately access her assignments for class, but that she gives her parents a code for them to direct message her:

> There's a way for me to communicate with parents, because there's a parent code as well. I always want them to know what is going on. So they have to have access to Edmodo…they don't have access to the students, because they're not supposed to. But it's also another way that they can direct message me… So it's another form of communication.

Like Participant 3, Participant 5 also indicated that she uses Edmodo as another form of communication with her parents:

> …the parents liked it; the parents were very active, replying back to me, they helped their child to keep up with my work, and were informed of any updates. And any questions they had, they could always inbox me. So Edmodo was definitely one that I just latched onto.

Additionally, Participant 4 indicated that she not only posts resources and assignments for her students, but that she also allows parents to access these resources so that they are able to support their child at home: "Also for parents, you can post things online so that parents are able to support their kids." Participant 6 added that Edmodo alleviated the problem of parents not being informed of homework assignments, and that it was easier for them to contact him than through email:

> So it's a form of communication between teacher and student, and it's also a form of communication between parent and teacher. Some parents find it easier and faster to contact me through Edmodo than by email.

Three of the six participants indicated that they had embraced Edmodo because it provided a safe online environment for their students. Participant 1 noted that Edmodo

allows the teacher to serve as an administrator to be informed of and to control the online communication amongst their students:

> Students cannot direct message one another. It also allows the teacher to be able to serve as the administrator of the platform, so you're able to manage what happens and what goes on as far as communication online.

Participant 6 supports Participant 1's assertion of teacher as administrator: "Every single conversation they (students) post on Edmodo I get, and I am able to track every single conversation they have."

Teachers have also noted that some students felt safer in asking questions online than in the traditional classroom setting. Participant 1 referred to students' fear of responding to questions in class as a form of communication anxiety: "it helps to alleviate a lot of pressure and anxiety on students. Edmodo allowed me the opportunity to be able to provide an avenue for students to communicate in a way they were comfortable." To this point, Participant 2 stated, "students were able to pose questions that they may not normally ask in front of their peers." Participant 6 further added:

> Most of the time, students are afraid to ask questions in front of the classroom because of them being embarrassed or they may want to say something personal and they don't want everyone to hear it. They can send me a message through Edmodo and I can send a message back.

The final sub-theme that emerged was that teachers liked that Edmodo was easily accessible for online communication. According to Participant 1, this was one of the most important factors in embracing Edmodo as a social media platform: "…but most

importantly I needed one that was easily accessible to all students." Participant 4 further illustrates this point:

> They can use it anywhere. They can use it on their cell phones. They can travel, and if they forget something they are able to ask me. It's accessible, it's easy, and it can be used on any kind of mobile device that has Internet access.

Participant 3 commented that because of this enhanced accessibility, students are able to receive current and updated information regarding her class which helps alleviate any excuses of not being informed:

> So the application is free no matter what type of phone you have. The one thing that I require is that the students set their notifications to receive text messages or emails from me. So that way there's no excuse. So, if I post something, students should know what I've posted no matter what.

Thus, the middle school teacher participants have embraced Edmodo as a communication tool to not only engage their students in collaboration, but to also offer another form of communication for parents. Students were able to use this platform to provide peer-to-peer support, and participate in class discussions in an online environment. Likewise, parents are able to be informed of what's going on in the classroom, and access instructional resources and materials to support their child at home.

Theme 2: Acceptance and use of Edmodo to meet students' needs and to support students' organizational skills. Several sub-themes of Theme 2 emerged from the data that explain why teachers accept and use Edmodo with their students: to support students' organizational skills, to connect with students of the digital age, provide

individualized support to students with Individualized Educational Plans (IEPs) and 504s, and to prepare students for distance learning experiences.

All of the interview participants and one focus group participant indicated that teachers embrace Edmodo in order to reach their students who are immersed in a culture surrounded by technology and social media. For instance, Participant 2 stated:

> At that time (referring the time when Participant 2 started using Edmodo with her students) Facebook and MySpace were out, and students were becoming more and more aware of social media. And I had to adapt to that. So, I wanted to use a platform that would be a happy medium for them, and at the time Edmodo was it.

FG Participant 1 added that our students today are constantly connected and have instant access to digital devices. Participant 1 supports this assertion of constant connectivity of his students when he stated, "Our students are connected and they're using their mobile devices almost constantly." He further maintains that our students are immersed in a culture of social media, so Edmodo allowed him to integrate a platform where students were already comfortable in using:

> There is some familiarity with the program. The students call it 'the fake Facebook', which meant that for those students who do use some form of social media, there are norms that they're familiar with, such as symbols for messaging, and sending messages back and forth.

Likewise, Participant 5 added, "Because this is a social media type atmosphere with the kids being able to go straight to technology, as teachers we had to go and reinvent ourselves and find out ways to reach them."

Participant 3 indicated that most of her students have cell phones; and therefore, she wanted to use technology to where students are able to utilize their mobile devices for academic purposes: "This is a tech age. Pretty much every student has a phone. So I wanted something that would go from the computer, an iPad, to their phone. So, I actually found Edmodo a couple of years before the County picked up on it." Participant 6 further supports this view: "Children have access to a phone; children have access to a computer; so if I say, 'Here's your homework assignment, it's on Edmodo'…The only thing they would have to remember is that they would have to check Edmodo every night."

Three of the six participants indicated that they use Edmodo to support their students' organizational skills. Participant 2 further explains: "It helps students stay organized, it helps them have it right there at their disposal, you can put due dates and check to see which students turned in their assignments." Participant 6 indicated that he has used Edmodo to substitute the use of an agenda book to help his students keep track of their homework assignments: "So instead of them saying, 'I have to write this down,' they can say, 'Oh I can check Edmodo.' So we (teachers in his school) eliminated the use of the agenda book." He further added:

> Students have access to every homework assignment throughout the year. So that means that whenever they are out sick or whenever they need to locate a missing assignment, they can look in Edmodo. Or any time they need to study, they can look on Edmodo.

Participant 3 further explains how she uses Edmodo to help her students to keep track of assignments and notes in her class:

> We don't waste class time writing down notes. I can upload all of my PowerPoints, all of the notes, and resources. I even record myself going over certain things, and uploading it. So they have full access to folders that they can even save for the future references in what Edmodo calls their backpack…. I also upload every assignment in there. I put copies of the text, including audio of the text. I pretty much put everything up there. I help students keep track of their calendar two months in advance. Because we're an arts school, a lot of events are happening all of the time. So, I put everything on the calendar so that they know what's going on at school. For instance, they know when we have days off, dance productions, drama productions, or any other events that's going on.

Other areas where participants used Edmodo to meet individual student needs are providing the accommodation of extended time in submitting assignments indicated in students' IEPs and 504s, and to prepare students for distance learning that mimic online courses taken in higher education. Participant 1 described his experience where he was able to support students with IEP and 504s:

> So case in point, this (Edmodo) allowed me to target specific students. If a student had an IEP or 504 plan that indicated students are to be provided with more time to complete assignments, then I was able to allow students this opportunity. That's not just for special education students. It also worked well with my students who were identified as English Language Learners.

Participant 3 commented on how she was able to use Edmodo to prepare her students for a distance learning course that one may take in higher education:

> I also started training students on how to take online courses so they would feel more comfortable, since a lot of schools were using BlackBoard at the time they were starting to develop online courses. So for me, it was a way to start training the students how to be more comfortable online, just to give them that option.

Therefore, middle school participants also accept and use Edmodo to connect with their students, who are deeply immersed in a digital and technological world. Additionally, middle school teacher participants embraced Edmodo to support their students with organizational skills, and keeping track of class assignments and projects.

Theme 3. Acceptance and use of Edmodo to enhance professional practice. Several sub-themes of Theme 3 emerged from the data that provide further insight into why teachers have accepted and used Edmodo: helps teachers organize their work, used as a tool for data collection and document growth, provides immediate feedback to students, easy and simple to use platform, administrative and district level support, and commitment to life-long learning and passion of technology use.

Three of the six middle school teacher participants have shared how Edmodo helps them organize their work. Participant 6 revealed how Edmodo helps him keep track of his resources and assignments used for each of his classes:

> I love it because it makes my job easier. I have a difficult time of keeping documents. It makes it easier to keep track of all of my documents in one place. So, I have access to every single homework assignment from the beginning of the

> year. It also saves time to go and find the assignments that I've assigned. Now I can say to the child, 'here's Edmodo and here's the dates of your missing assignments. Go to that homework assignment with that date.'

Participant 3 also commented on how Edmodo has helped her keep organized:

> I'm going to be honest, Edmodo started out mostly for me. It was a way to keep me organized. A place to store my documents, it has an online calendar. So, it was kind of my way of planning, and the students kind of happened to benefit from it…..It has Microsoft 360, you can incorporate your docs…..The calendar worked for me because I like to plan by the month. And it benefitted the students, because I created a calendar with all of the work we're going to do. Edmodo was a way to keep me organized, having everything in one place. So that way, if the computers crashed, or a USB broke, everything I had was there. So, it was a way for me to be more effective. Edmodo makes my life simpler. I don't have to waste my time doing other things. Edmodo keeps me on an organized path.

Lastly, Participant 2 also commented, "You can set the deadline date, you can set the time you want it done…..So everything was on Edmodo. It allowed me to keep track of my different classes."

Participant 1 described how he used Edmodo as a data collection tool to document student growth using Edmodo's Snapshot and provide individualized support based on the data collected:

> I needed a platform to be able to collect data…. Some form or fashion where evidence and data were being collected to be able to show growth or areas in need

> of improvement. It met my need for massive data collection and being able to address individual student needs. It was the only platform that allowed me to do that on a large scale. So, let's say I had 300 students. Okay. There's the Snapshot feature allows me, regardless of my content, to be able to access common core, expectations to which there are assessments for. So, if I wanted to choose a common core writing assessment, I can provide that to the students. My entire student body get their scores, find out if they're above level, below level. And then based off that information, I can begin to assign students work because there are platforms and resources that are already embedded within Edmodo.

Additionally, Participant 1 and Participant 2 commented on how Edmodo helped them provide immediate feedback to their students. Participant 1 stated, "One of the benefits of Edmodo is where individuals are getting immediate feedback." Participant 2 also stated, "I pose questions that address their needs, and give immediate feedback to their responses."

Four of the six participants agreed that they embraced because it was an easy and simple platform to use. For instance, Participant 4 said, "It's very, very simple to use. It's kid friendly, usable…. And because it's easy to use, it's not too much of a hassle." Participant 5 further comments on how simple Edmodo is to use. However, she added that it's not only teacher friendly, but also easy for students and parents to use:

> Teachers in general tend to use ones that they're most comfortable with and that's definitely teacher friendly, and goes along with what they're use to or what they're able to do that won't hurt their daily instruction….. In other words,

> something that won't interfere with what they do normally on a day to day basis. With me, I find Edmodo real easy to go every morning and check to see if I have messages, if I need to update, like I have some reminders that I have to put in this week for next week because the grading period is coming up. It's just real easy to update parents….. So I just find It friendly for all three: the teacher, the students and the parents.

In terms of administrative and district level support in using Edmodo, data was collected from all three data sources. For instance, FG Participant 2 commented on how important it is to have the principal's support in establishing a culture within the building of technology integration for teachers to successfully use social media to with their students:

> I would say that the culture in the building plays a big role. Because sometimes you (the teacher) might have the best intentions, but if your administrator says "oh no, you better do it x, y, and z way; and if you don't you'll be written up," then that can stifle a lot of creativity and a lot of outside of the box methods in teaching.

FG Participant 1 commented about the importance of having the district level's support for teachers to feel comfortable in using social media tools with their students:

> Well I think that a lot of the IT guys (referring to district level IT support) are very concerned about security and safety. So, I believe that they have, by request from district level leaders, made sure that we are keeping our kids as safe as

possible, which makes it a lot easier for teachers then to say, 'hay, I'm going to try this because our District has put in filters to make this safer for our kids.'

Three documents from the District reviewed for this study support the teachers' use of electronics, portable devices, and the Internet with their students: Document 1, entitled *Administrative Procedures: Information Technology Services, Acceptable Usage Guidelines*; Document 2, entitled *Administrative Procedures: Employees Use of Social Media and Personal Electronic Devices*; and a section of the School District's Web Page, entitled *System-wide Dess Code Including School Uniforms*.

Document 1 outlines practices and procedures for teachers and students to ensure responsible use of technology. According to this document, all District employees, students, volunteers, and contractors are encouraged to use electronic devices and the Internet responsibly, and for work related and educational purposes only. The document also gives detailed procedures of appropriate use of technology, acceptable uses of the Internet, prohibitions, and consequences. Teachers are encouraged to use this document with their students as they set norms and expectations when using social media platforms, such as Edmodo. For instance, when setting expectations, students are prohibited to engage in cyberbullying, harassment, and intimidation; respect all copyright laws; and use appropriate language.

Document 2 provides guidelines to follow for employees who use social media platforms for both professional use and non-work-related purposes. Like Document 1, Document 2 provides specific practices to ensure the development of a positive social media presence when communicating with students, parents, and local community. It

encourages teachers to use approved social media sites for educational purposes only. Teachers are also asked to protect the privacy of students, and obtain written permission from parents to participate. On the School District's website (Document 3), students are informed that the District "values the use of technology as an important tool to enhance the educational environment." It goes on to state that students are permitted to use their personal devices on school property in such a manner that will not disrupt the school environment, and for instructional purposes approved by the administrators.

The District's level and building administrator support have allowed middle school teacher participants the opportunity to use Edmodo with their students, which has been identified as one of the approved Web 2.0 tools. Three of the six participants commented on the type of support that have received from administration to be able to successfully use Edmodo with their students. For instance, Participant 5 commented on how she decided to use Edmodo as a tool to keep her parents informed of classroom activities and assignments, which had been strongly recommended by her adminsitrator:

> It's not necessarily a requirement. However, they (the administrators) strongly suggested that we either use this (Edmodo) or another avenue to make sure that we had some type of parental contact. Because that's part of our responsibilities as teachers, to make sure that we're contacting parents.

Unlike Participant 5, Participant 6 shared that his administrator required him to use Edmodo:

> Our principal said that we needed to use this app, and that it was supported by the District. Our principal explained that it was like Facebook. Our principal required us to use Edmodo.

Participant 1, however, spoke about how Edmodo was accessible and one of the approved sites from the District. He stated, "Edmodo is an approved site by our District because it can be accessed on a laptop, the desktops and mobile devices on the District's WiFi."

According to two of the focus group participants, teachers may have embraced social media platforms due to their commitment to life-long learning. For instance, FG Participant 2 stated:

> One benefit would probably be their own commitment to life-long learning, because education technology changes so frequently and so drastically that in order to integrate it you really have to have that mindset of being curious and always learning, not being afraid to learn with and from students sometimes.

In support of FG Participant 2, FG Participant 3 stated that teachers, who embrace social media platforms, may do so due to their own professional growth. Only 1 of the six middle school teachers supported this claim made by focus group participants. Participant 3 commented:

> I'm always looking and researching into the newest technology something that would, one, benefit not only me but my students…. I think that everybody should be using it. I love it. The day it's no longer here, my heart would be broken. Because I wouldn't know what to do with myself.

Participant 3 further indicated that Edmodo is free to use, which is one of the benefits to embracing this tool:

> But who knows how long that (referring to another platform that the District supports) will last before they find the next big thing, or they say that there isn't enough money to maintain it. Edmodo is 100% free.

Therefore, both middle school teachers and focus group participants have expressed that there is administrative and District level administrative support in using Edmodo with their students. Without such support, teachers would not be able to take full advantage of this social media platform to enhance the instructional environment. Additionally, middle school teachers agreed that Edmodo helps them to organize their work, making it possible in keeping their class assignments, instructional materials and resources stored in one place for immediate online access.

Research Question 2

Two themes emerged from the middle school teacher interviews that answer research question 2 (see Figure 3).

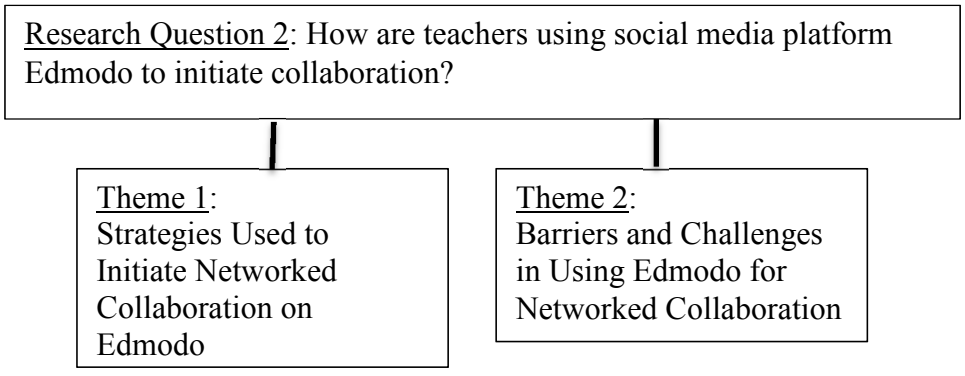

Figure 3. Themes of Research Question 2.

Theme 1: Strategies used to initiate networked collaboration on Edmodo.

Four of the six middle school teachers interviewed shared several strategies that they use with their students to initiate networked collaboration on Edmodo: the use of questioning and response, peer-to-peer support, and the use of the polling feature.

Three of the four middle school teachers who use Edmodo as a collaborative tool indicated that they use questioning and response as a strategy. For the purpose of this study, I named this strategy as questioning and response where the teacher poses a question on Edmodo, and require their students to respond to two other classmates. In using this strategy with her students, Participant 2 commented:

> It allows them to respond to each other. I will pose a question, and then say, "now respond to two of your classmates. And so, they had an opportunity to look at it again, and respond to others. They would be able to comment on what they liked or didn't like, give me feedback, or give each other feedback.

Participant 1 also described his experience on how he used this strategy with his students, which is similar to Participant 2's implementation. However, Participant 1's goal was to allow his students to take over the online discussion:

> Instead of only responding to a question that I've posed to them, they had to go back and respond to another student's question or wondering. So that allowed for the discussion to go outside of my realm. Now students are beginning to comment on other students' posts. That is the way that I kind of foster collaborative networking in the classroom.

Participant 3 added:

> Sometimes I'll put up a discussion question and tell my students to respond to me, and then respond to at least two classmates. So, it kind of turns into a collaborative conversation, where the students can have a healthy debate. I want them to be able to have their own thesis and arguments, and debate it amongst their classmates. Sometimes, I'll chime in, and we could end up having a full blown conversation outside of the classroom. It also helps students who are not comfortable in speaking in front of the class. They can still communicate on Edmodo. Students also have the capability in putting up their own discussion question.

Participant 6 shared that he does not post a question to engage students in an online collaborative discussion that is teacher driven. Instead, he indicated that students themselves initiate the conversation to help each other, providing peer-to-peer support on various math concepts that students struggle with in class:

> …It's also a form of communication between student to student. Sometimes a student may need help with homework and post it on the general board, so other students can help. Students will share links from Khan Academy, or YouTube. Students will say, "hay kids, I've found something that may help you out."

Participant 3 stated that she also uses the polling feature on Edmodo to initiate student collaboration:

> Edmodo has the capability where you can take a poll. So I may ask a question where I want to know "do you agree or disagree?" Or I may want them to vote on something because I want their perspective.

Therefore, data emerged from the middle school teacher interviews that answer the research question, "How are teachers using social media platform Edmodo to initiate collaboration?" Although questioning and response strategy appears to be the most common strategy used by the teacher participants to initiate student-to-student collaboration, but other strategies emerged from the data: allowing students the opportunity to support their fellow classmates who are struggling, and taking a poll to generate a deeper discussion of the concepts being discussed in class.

Theme 2: Barriers and challenges in using Edmodo as a tool for networked collaboration. Only three of the six participants had indicated that they do not use Edmodo to engage their students in collaboration. Therefore, they were not able to provide insight into how Edmodo is used to initiate and sustain networked collaboration with students. One of the challenges that I faced in selecting participants for this study was to find participants using Edmodo for collaboration. One reason for this may be due to the fact that the District now encourages teachers to use Google Classroom instead of Edmodo. As a result, I had to adjust my participant selection to include teachers who are currently using Edmodo regardless of how they are using it with their students.

One of the themes that had emerged during the focus group session is their belief that teachers are not using social media tools to engage students in peer-to-peer collaboration nor to support a more student-centered learning experience. The focus group participants identified several reasons that seek to explain this phenomenon: the fear of using social media tools, the need to be in control of the learning environment, the

lack of professional development, and a culture of compliance in meeting state and federal testing mandates (see Figure 4).

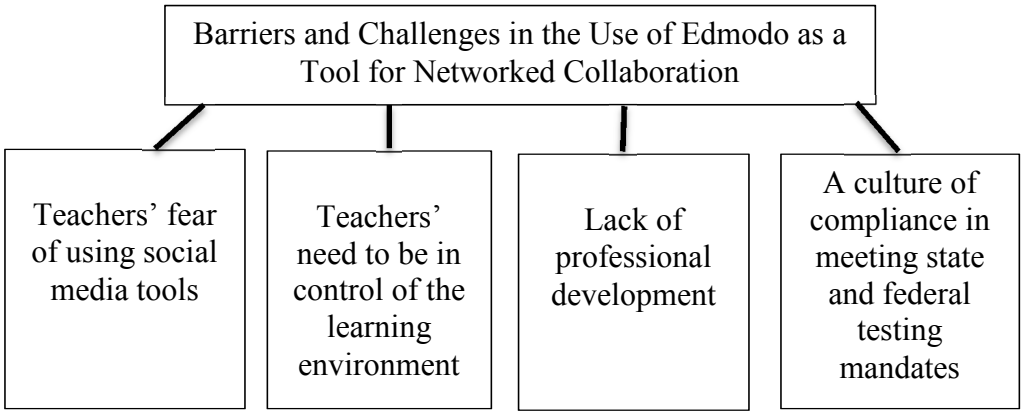

Figure 4. Barriers and challenges in the acceptance and use of Edmodo as a tool for collaboration.

In terms of teachers' fear of using social media tools, FG Participant 1 suggested that teachers are afraid to use social media due to safety issues and not being able to control it once safety concerns occur:

> Because I think that a lot of the problem with social media is the fear of, well I've said, the safety thing. But also fear of opening a Pandora's box or letting a cat out of a bag that you can't control anymore.

In agreement with FG Participant 1, FG Participant 2 further suggested:

> I don't see teachers encouraging students to collaborate peer-to-peer. But I think that goes back to what FG Participant 1 was mentioning, just the fear and not being able to control the flow of the conversation.

According to all three focus group participants, teachers are stuck in the mindset of teacher-centered instruction, and therefore a shift in their thinking about how students

learn must take place before student-centered instruction can occur District-wide. FG Participant 1 stated:

> But we're still in the midst of a paradigm shift, to use an old phrase, because I think that teachers are still feeling like they got to know it all, and then can spit out knowledge for their kids. (chuckles) You're getting my opinion about how that is. But I think that that's what's going to make it happen is if we really start to think about facilitating learning, rather than controlling learning. But being the one with the pedagogical expertise on how people learn, then you can take away some of the barriers so that students can indeed begin to construct their own knowledge together.

To further illustrate her point, FG Participant 1 uses an example of teaching students how to construct a bird house:

> I can't help but think of this concept of the bird house project. A lot of times we teach the children, "okay, we go to measure this way. If you make the bird house, you have to know, and everybody has to follow the steps of construction. And that's one of the good things of teacher directed instruction of learning, is that you are walking the kids through each step of the process. But what we're not doing after we make those bird houses, is that we put them away and grade them on how good they followed the recipe. What we haven't done is say, "Now of what you know about building a bird house, make something new using the materials from whatever the scenario may be. We just don't have time in the day to allow that artistic flow to happen because it takes time to get into that.

FG Participant 3, in agreement with FG Participant 1, adds to the conversation around the need for a shift in the teachers' mindset to occur:

> And part of it, and I'm still waiting for the shift to happen, we heard people say, some people teach the way they've been taught, but at some point we should have some teachers who coming out with, "Oh, I didn't learn this way, i.e. through lecture." The same kind of following directions approach. I feel like the millennials, or somebody should be close to that point. I don't know when it happens, if it happens during teacher education programs, or happens during pre-service teaching. I'm not sure what happens, but somewhere down the line, even. the quote unquote, and I don't want to be agist at all, but there's still a lot of young teachers that I see that are kind of still teaching "follow the directions to build the bird house". So I don't know when that happens….. I feel like we're trying to be disruptive, very nervously. But also the whole shift in mindset is so important for teachers, for administrators especially to have a shift in mindset to let it happen.

In order to get teachers to engage students in collaboration using social media tools such as Edmodo, focus group participants argued that there needs to be professional development designed that teaches educators how to leverage social media tools in fostering a student-centered learning environment, and engage students in peer-to-peer collaboration. FG Participant 1 suggested that this professional development should allow teachers to use social media tools, and model effective strategies on how to use these tools with their students:

> I think for professional development for teachers, I think what's really important is to help them see the potential and then to know that it takes practice. And so, being in a professional development, I think it's important for them to actually use social media in a session so they can try it out and see how it works for them, and how they might use it with their students. And then to model how it is used.

Another barrier or challenge in teachers' embracing social media tools with their students to engage in collaboration, creating a more student-centered learning environment is the culture of compliance to meeting state and federal testing mandates. From their perspective, teachers are spending too much time on preparing students for state and local assessments, which seems to be driving instruction. FG Participant 2 commented:

> The curriculum is not the problem, it's the mandates that are the problem. You can always embed and integrate the technology into the curriculum. The time spent on testing is an impediment to the process, in my opinion.

In agreement with FG Participant 2, FG Participant 1 added, "Well yeah, it's like you have to stop learning in order to test. And it's just a bunch of wasted time." FG Participant 3 also added:

> I think that sometimes our compliance culture is an impediment because you have to give some space to make a mistake, give space for teachers to fail, "Okay, how can I now do this differently?" But if you're constantly being pushed to the next thing, whatever the next thing is, you're afraid almost to fail. So, as a teacher, you're in that head space, and as a student, you're in that head space too. So,

> you're not really learning from that failure….. I've had curriculum people tell me that too. We got so much stuff to do, we don't have time to go around and around in circles.

Two of the six participants commented that they currently do not use Edmodo to engage in student-to-student collaboration. When asked, Participant 4 commented that even though she had not allowed her students to collaborate with one another using Edmodo, she has participated in collaborating with other teachers:

> No. I may be doing that later this year. But I have been able to collaborate with other teachers. If they (the students) have questions they want to ask, I've done that. Other than individual questioning, I have not.

Participant 5 added that her parents are using Edmodo as a collaborative tool more than her students. She stated, "But normally, I get more collaboration with parents then I do with students….. No. I haven't used it that way."

Therefore, data emerged from the focus group of educational technology leaders that explain the challenges and barriers of teachers who do not employ social media platforms to engage students in student-to-student collaboration fostering a more student-centered learning environment. Three of the six middle school teacher participants stated that they do not use Edmodo to initiate and sustain student-to-student collaborative experiences. Th focus group participants' explanation offers some insight into why teachers are not using the platform to its fullest potential.

Research Question 3

Two themes emerged from the middle school teacher interviews and one document that answer research question 3: strategies used to sustain networked collaboration on Edmodo, and teachers' role in sustaining networked collaboration (see Figure 5).

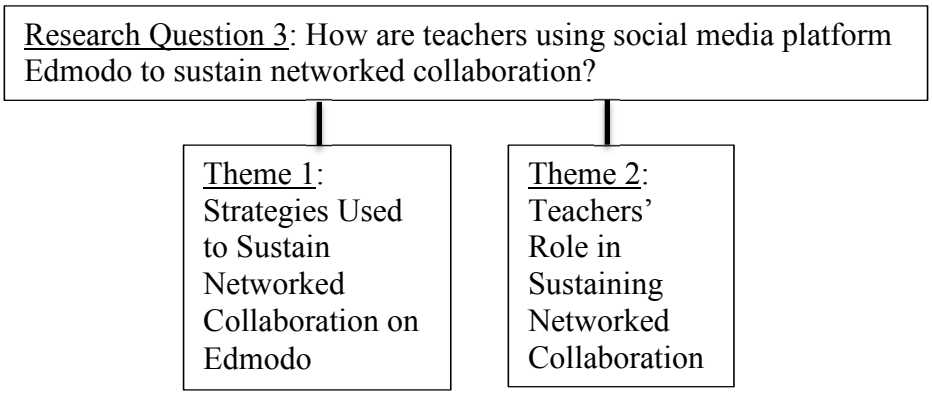

Figure 5. Themes of Research Question 3.

Theme 1: Strategies used to sustain networked collaboration on Edmodo. Three of the six middle school teachers described the strategies that they use to sustain networked collaboration on Edmodo: self-directed learning activities, use of Edmodo's small group feature for discussion groups, opportunity to share online resources to extend learning, and project-based learning activities and multimedia projects.

Participant 2 indicated that she posts projects for students on Edmodo. During class, she gives students the opportunity to work independently on them at the computer station set up in her classroom. Participant 2 stated, "Projects were posted on there (Edmodo), and during their independent time they had the opportunity to work on their

Edmodo assignment. And I built it into my lesson a couple of times during the week where students could work on their projects using the class computers.

Likewise, Participant 3 also posts projects on Edmodo for her students to work on independently:

> I have an arts integrated passion project, where it's in a tic tac toe menu. So, there're nine options. Students pick whatever three they want to do, as long as it forms a tic tac toe. And it's spread out throughout the whole school year. So, the first one, I assigned it last week. It's not due until December. To give them plenty of time to do their research….

Participant 3 describes how she allows students the opportunity to choose a discussion question based on their current reading. Then, using Edmodo's small group feature, she assigns students to a small group based on the discussion question that the students select:

> For example, we're reading Flowers for Algernon. I'm going to post four different discussion questions, and let them pick the one that they want to respond to. So it will allow for small group instruction as well.

Participant 2 describes how she also uses Edmodo as a platform to share with students online resources that related to the content that they were working on in class:

> Those students who had iPads, were given the opportunity to use them in class. They knew it was going to be a textbook free classroom, and that everything was going to be on Edmodo. And the resources I had, links were provided.

Participant 2 also stated that she posts questions on Edmodo, and allows her students to find resources online to answer the questions:

> I would always pose a question. They would randomly get a question, and I would ask them what were their thoughts and back it up with cited information. They would have to Google it and find at least one interesting fact about it and post it in Edmodo. So they would kind of learn from that. So we would have a learning dialogue like that.

Participant 3 described several multimedia projects she assigned to her students, and required them to share them on Edmodo to be evaluated by other students in the class:

> We're going to the Holocaust Museum. One of their projects is to create a three part documentary on YouTube about a Holocaust survivor on their identification card. For those students who don't go or they may feel that they can't handle it, pick any author that we've read in class. To prepare for their documentary, students are required to do research on this person's childhood, teenage/young adult years, and then old age. Another project that they are working on is a podcast. Students had to learn how to create a podcast. So, one of the assignments was for them to find me a podcast and share the link onto Edmodo, and explain to me the format of the podcast. Another project was using Story Board That. Instead of writing a summary, they produced a comic strip type story board. Students will share their projects on Edmodo for other students to evaluate them.

Thus, data emerged from the middle school teacher interviews that answers research question 3, "How are teachers using social media platform Edmodo to sustain networked collaboration?" The strategies identified by teacher participants appear to be student-centered, allowing students some level of control of the instructional environment: self-directed learning activities, use of Edmodo's small group feature for discussion groups, opportunity to share online resources to extend learning, and project-based learning activities and multimedia projects.

Theme 2: Teachers' role in sustaining networked collaboration. Two sub-themes emerged from all three data sources: the middle school teachers' interviews, FG participants and the PICRAT Matrix (Kimmons, 2012), Document 4 that depict teachers' role in sustaining networked collaboration.

Four of the six participants shared their perceptions about the teacher's role as students are engaged in online collaboration in Edmodo. All four participants agreed that teachers must constantly monitor their students' activities online, and not be "hands-off". For instance, Participant 3 commented, "I will not be totally hands-off because they're still kids. If they were seniors or adults, then I probably would be more hands off." In agreement with Participant 3, Participant 1 added, "These are minors in my classroom using a device, which means that there's a social responsibility, but there's also professional responsibility for me as well."

One of the professional responsibilities that the participants shared is that the teacher must set norms and expectations with their students in how to communicate on Edmodo. This must be followed-up with modeling positive behaviors so that students

understand how to communicate online. Participant 6 further elaborates on his experience of setting expectations and monitoring students' conversations on Edmodo:

> We have conversations about social media bullying and how you appropriately ask questions, what's the purpose of Edmodo, stuff like that. So, we always have a conversation about what is a good conversation and what is a bad conversation. I also demonstrate everyday of a good conversation…. Every single conversation they post on Edmodo I get, and I am able to track every single conversation they have.

The four participants also have indicated that the teachers' role is to serve as a facilitator to keep students engaged in the discussions. Participant 3 provides a description of how she actively facilitates students' online discussions:

> I normally join in every Wednesday, and I'm on Edmodo until about 7:00 pm. I normally post their discussion questions on Tuesday. So, I'm normally on, and the first couple of people who respond, I respond to them as well. "Why don't you elaborate on that?" In the instructions, I let them know the superficial words and phrases that I don't want them to use. I don't want to see short and unsupported responses like, "I agree," "I disagree," "I concur." I don't want them to ask too many questions unless they want to elaborate. And I don't want them to judge other students' responses with "oh, that was a good post" "it seems like you read and understood it" that do not expand the conversation. So right now, I have to monitor for them to avoid that. Unfortunately, I sometimes have to threaten with, "Every time I see this, that's minus 5, that's minus 10." After first quarter, they

> are able to engage in collaborative conversations that meet my expectations, and that's when I start letting up a little.

Participant 6 shared that he has developed a rubric using mathematical discourse sentence starters that students are expected to use as they engage in online conversations. He added:

> Since it's a social media tool, you have to develop a rubric. I a rubric that includes mathematical discourse sentence starters. You have to monitor each conversation, and if any conversation is inappropriate then the students will lose their conversation status.

In terms of teachers serving as a facilitator, FG Participant 1 added:

> But I think that that's what's going to make it happen (student-centered instruction) is if we really start to think about facilitating learning, rather than controlling learning. But being the one with the pedagogical expertise (referring to teachers) on how people learn, then you can take away some of the barriers so that students can indeed begin to construct their own knowledge together.

In support of this, Participant 4 further explained her role as a facilitator:

> Because you want students to learn. You must be more of a facilitator. Definitely, when they study it's going to be a bit difficult. But as soon as they get through with what you want them to do, just comment in between from time to time. Not have a hands-off approach, but must use it as a formative assessment where you ask questions.

Participant 2 explained:

> I was a facilitator. I may initially pose a question, but it got to the point where the kids were running the discussion themselves. Then I would facilitate. If the discussions got a little out of hand, then I would say, "ok, let's get back to what we are supposed to be doing."

Although Participant 5 had not engaged her students in online collaboration, as a result of this interview, she began to speak about how she could begin to use Edmodo to allow students the opportunity to engage in online discourse. When asked what would her role be as the teacher, she responded:

> As a facilitator, I would start off with a discussion question or a discussion statement. And then have some of the students respond, and then respond to some of their responses to get them thinking, and to get more collaboration and more responses. More thinking, especially in this class because we do lots of historical thinking. Just to get them into that frame of mind. "This question was given, what's your response, how can you dig deeper; instead of superficial responses. Like, "oh I think it was good." "no, no, no… what do you mean by that? Give me an example of what you took away from the overall main idea of the entire section. I can see me using that.

None of the participants had any lesson plans to share. However, FG Participant 3 indicated that the District adopted the PICRAT Matrix (Kimmons, 2012) as a framework used to assist teachers as they plan to include technology in their lessons. The PICRAT model poses two questions for teachers to consider as they think about integrating technology into their instruction. These include:

1. What is the students' relationship to the technology? (Passive, Interactive, or Creative)
2. How is the teacher's use of the technology influencing traditional practice? (Replace, Amplify, or Transform) (Kimmons, 2012).

Using the two-dimensional grid, teachers are able to determine where their integration of technology falls. Although Kimmons considers all areas on the grid effective practices of technology integration, he suggests that teachers should aim to integrate technology in the upper right corner where students employ technology in creative ways, while teachers employ the use of technology to transform the learning experience where it would be impossible to achieve without the use of the technology. None of the participants indicated that they have used this matrix as they planned for instruction.

Therefore, data emerged from all three data sources (the interviews, focus group, and documents) that explain teachers' role in sustaining networked collaboration with their students. From the perspective of both middle school teachers and educational technology leaders, teacher presence is critical when allowing students to engage in online collaborative learning activities through the use of social media. While none of the teachers mentioned using a technology integration matrix to help plan for social media use, focus group participants shared that teachers should consider using the PICRAT matrix to get them thinking about how they will integrate technology into the lesson to enhance learning and support students in achieving learning outcomes.

Summary

In summary, this study provides a deeper understanding of how middle school teachers of CCRPS accept and use social media platform Edmodo. Additionally, it provides insight into how teachers use this digital tool to initiate and sustain networked collaboration with their students. Teachers indicated that they have accepted and use Edmodo to meet their students' needs and enhance their students' organizational skills, provide a communication platform for both students and parents, and to enhance their own professional practice. Those teachers, who use Edmodo to engage their students in student-to-student collaboration, have shared various strategies that they use to initiate networked collaboration: the use of questioning and response, peer-to-peer support, and the use of the polling feature. For teachers who do not use Edmodo to engage their students in networked collaboration, barriers and challenges have been revealed: the fear of using social media tools, the need to be in control of the learning environment, the lack of professional development, and a culture of compliance in meeting state and federal testing mandates. Lastly, this study provides strategies that teachers use to sustain networked collaboration with their students, and their perception of teachers' role in an online learning environment.

Chapter 5 includes an interpretation of the findings and limitations of the study. It presents recommendations for further research, and implications related to positive social change, . Lastly, Chapter 5 ends with a conclusion that captures the key essence of the study.

Chapter 5: Summary, Conclusions, and Recommendations

The purpose of this research was to explore middle school teachers' acceptance and use of social media platform Edmodo and to understand how they use Edmodo to initiate and sustain networked collaboration. Although several studies have been conducted on social media use in the educational setting, the majority of these studies have been conducted in higher education. Therefore, this study contributes to the body of knowledge on how middle school teachers can embrace today's social media tools to transition from a traditional teacher-centered model of instruction to a more student-centered learning environment by engaging their students in networked collaborative learning experiences.

To answer my research questions, a single case study design was used to collect and analyze data from multiple sources: interviews of middle school teachers, a focus group of educational technology leaders, and supporting documents. The key findings of this study were as follows:

1. Middle school teachers adopt Edmodo as a communication platform for both students and parents.
2. Middle school teachers adopt Edmodo to meet students' needs and to support students' organizational skills.
3. Middle school teachers adopt Edmodo to enhance professional practice.
4. Middle school teachers use a variety of strategies to initiate networked collaboration: the use of questioning and response strategy, peer-to-peer support, and the use of polling.

5. There are several barriers and challenges that may prevent teachers from initiating networked collaboration with their students: teachers' fear of using social media tools, teachers' need to be in control of the learning environment, lack of professional development, and a culture of compliance in meeting state and federal testing mandates.
6. Middle school teachers employ a variety of strategies to sustain networked collaboration: self-selected learning activities, online small group discussions, sharing of resources and instructional materials to support learning, and project-based learning activities that include the creation of multimedia projects.
7. Middle school teachers fulfill various roles to effectively sustain networked collaboration: They monitor, facilitate, and set and model expectations for student online collaboration.
8. Middle school teachers should consider using a technology integration matrix as they plan for the integration of social media platforms into their instruction.

In this chapter, the interpretation of findings is presented, followed by the limitations of the study. Additionally, recommendations for future research and implications for social change are discussed.

Interpretation of Findings

My interpretation of the findings is informed by the conceptual framework and the literature review. In this section, I describe ways in which the findings of this study confirm, disconfirm, or extend knowledge in the field of educational technology as it

relates to middle school teachers' adoption of social media tools in the classroom to engage their students in online collaboration. To accomplish this, I compare the findings with what has been found in the peer-reviewed literature presented in Chapter 2. Additionally, I analyzed and interpreted the findings in the context of this study's conceptual framework, which was composed of the UTAUT2 model, Vygotsky's sociocultural development theory, and Siemen's connectivism.

Factors That Contributed to Middle School Teachers' Acceptance and Use of Edmodo

Findings 1-3 provide answers to Research Question 1, "What factors contributed to middle school teachers' acceptance and use of social media tools in the classroom?" The factors that emerged from the data sources of this study were consistent and aligned with the core constructs of the UTAUT2 model, which provides a theoretical explanation of teachers' adoption of emerging technology and digital tools (see Table 1).

The teacher participants in this study indicated that their primary reason for the adoption of Edmodo was that it enhanced their job performance in several areas: communicating with students and parents, engaging students in online collaboration, supporting their students with organizational skills, and helping teachers organize and keep track of their instructional resources and materials. This is consistent with Venkatesh et al.'s (2012) core construct of *performance expectancy*, which is the belief that technology will enhance job performance. According to Venkatesh et al., this is the strongest indicator of technology adoption by teachers.

The other core constructs of the UTAUT2 model were also represented in the findings of my study. For instance, in terms of the model's *effort expectancy* construct, which is the degree of ease in the use of the technology, several teacher participants expressed that Edmodo was very easy and simple to use. In terms of the *social influence* construct, which involves the expectations of others as an influence toward adopting the use of technology, most of the teacher participants indicated that they embraced Edmodo in order to connect with their students, whom they believed were engaged daily with digital tools and media in their personal lives. Several studies support the middle school teacher participants' belief that today's students are surrounded by emerging technology in their personal lives, and that teachers should therefore allow students to use digital tools in the classroom so that they can learn how to use these technological tools for academic purposes (Chandler, 2013; Gu et al., 2013; Lovin & Lambeth, 2015; Phillips & Trainor, 2014).

In terms of *facilitating conditions* construct, which involves infrastructural support that allows teachers to use the technology, all of the teacher participants found that both the school district and their building administrator supported their use of Edmodo with their students. This level of support was also confirmed by the data that emerged from both the focus group with educational technology leaders and three CCRPS documents on policies concerning technology and social media use by staff and students. Without this infrastructure, the use of Edmodo would be impossible. For one, the district controls which sites teachers and students can access on its network. Even though the UTAUT2 model includes *hedonic motivation*, which is defined as an

individual's pleasure in the use of technology, only one participant confirmed this as one of the factors that contributed to her adoption of Edmodo. Likewise, only one participant confirmed *price value*, referring to cost effectiveness of the use of technology, as being a factor that contributed to her adoption of Edmodo. No evidence emerged from the three data sources that confirmed that *experience and habit*, defined as prior experience and automaticity in technology use, was a factor that contributed to their use of Edmodo. As a result, three primary core constructs identified by Venkatesh et al. (2012) emerged in my study to explain middle school teachers' adoption of social media platform Edmodo: *performance expectancy*, *social influence*, and *facilitating conditions*.

While performance expectancy was one of the major constructs in my study that explains middle school teachers' adoption of Edmodo, this is not consistent with Ifenthaler and Schweinbenz's (2016) findings. With regard to performance expectancy of Tablet-PC for learning and instruction, only four out of 18 respondents believed that Tablet-PC would improve learning and instruction. However, the core construct of facilitating conditions was consistent with Ifenthaler and Schweinbenz's findings. Both studies confirmed that building-level and district-level infrastructural support is critical and may be considered a prerequisite for technology use.

Unlike Ifenthaler and Schweinbenz's (2016) findings regarding performance expectancy, the findings of this study are consistent with the findings of Brown et al. (2016). All of the 20 preservice teacher participants in Brown et al.'s study indicated that the iPad and its applications were useful in documenting student learning, thus improving their job performance. Likewise, in terms of facilitating conditions, all 20 preservice

teachers in this study believed that the infrastructure supported their integration of iPads and applications in their teaching.

Strategies Used to Initiate Networked Collaboration With Students

Findings 4 and 5 provide answers to Research Question 2, "How are teachers using social media platform Edmodo to initiate collaboration?" Vygotsky's (1978) sociocultural development theory was the theoretical lens used to explore this particular phenomenon.

Vygotsky (1978) believed that learning takes place on two levels: First, it occurs through students' social interactions, and then it is internalized by the individual learner. Thus, he claimed that the child plays an active role in constructing his or her own knowledge as he or she engages in social interactions. He also added that social interactions are critical to a child's cognitive development and knowledge acquisition. That being said, specific strategies emerged from the data that middle school teachers used to initiate and engage their students in online social interactions, supporting Vygotsky's sociocultural development theory: the use of questioning and response, peer-to-peer support, and the use of polling to initiate deeper discussion of the content among students.

Churcher et al. (2014) found that social media technologies can be used to support social learning in virtual communities, and that students were actively engaged in collaborative knowledge construction. Likewise, Ma and Chan (2014) noted that students' online social interactions play a critical role in converting social knowledge into individual knowledge through the process of socialization. In conjunction with what

Churcher et al. and Ma and Chan found, the middle school teacher participants in this study indicated that the use of a question-and-response strategy on Edmodo allowed students the opportunity to engage in online social interactions, thus allowing for shared knowledge construction that led to a deeper understanding of the course content.

Another critical component of Vygotsky's sociocultural development theory is that students should be supported in their acquisition of knowledge by the assistance of an individual who is considered more knowledgeable, such as a more knowledgeable peer, teacher, parent, or tutor. As supported by Vygotsky's claim, one of the teacher participants indicated that his math students initiated discussions on Edmodo themselves to provide support to other students who were struggling with understanding concepts. Thus, the findings from this study suggest that social media platform Edmodo is an effective platform that can be used to initiate student collaboration for the construction of shared knowledge in a virtual learning environment. However, the teachers' use of strategies with the aim of supporting this level of online engagement must occur before effective online collaboration can take place.

There are challenges and barriers that many teachers face that prevent them from using social media tools like Edmodo for online student collaboration. Consistent with the findings of Ifenthaler and Schweinbenz (2016), Sobaih et al. (2016), and Wang et al. (2014), the findings of my study identified several of these challenges. For instance, the educational technology leaders of the focus group indicated that teachers lacked knowledge and skills in using social media tools for academic purposes, feared losing

control of the learning environment, had concerns about the safety of students, and lacked knowledge in monitoring students' online behaviors.

However, in addition to these findings consistent with other studies, my study identified two barriers that may prevent the use of social media technologies in the classroom: the fixed mindset of teachers, and the culture of compliance in meeting state and federal testing mandates. In terms of teachers having a fixed mindset, the educational technology leaders suggested that teachers need to fully understand how students learn and therefore embrace strategies that support a more student-centered learning environment. Instead, the focus group participants expressed that most teachers embrace the traditional teacher-centered learning culture, which prevents students from actively participating in social interactions and having the freedom to control their own learning experiences.

Additionally, the focus group participants suggested that the current culture of testing prevents teachers from using social media tools with their students. Meeting state and federal testing mandates appears to be the priority and focus of most teachers. Therefore, teachers are not willing or lack the time needed to fully implement social media technologies into instruction. Consistent with the findings of Jones and Dexter's (2014) study, the educational technology leaders suggested that district leaders should provide teachers with professional development about how to integrate social media tools and foster more student-centered instruction.

Strategies Used to Sustain Networked Collaboration With Students

Findings 6-8 provide answers to Research Question 3, "How are teachers using social media platform Edmodo to sustain networked collaboration?" The findings of this study support the core constructs of Siemens's (2006) connectivism. For instance, consistent with Siemens's (2008) idea that learning is a process in connecting with various nodes of information sources and obtaining current information, interview participants expressed that they used Edmodo as a platform where teachers and their students have shared resources from other online sources to extend the learning of various content areas. Students were engaged in Google searches to find information and shared resources with other students from YouTube, Khan Academy, and other digital sources. As a result, students were able to access current and up-to-date information, which, according to Siemens, is the intent of all connectivist learning.

Another core construct of connectivism is the idea that decision making, choosing what to learn and the meaning of the information, is also a critical part of the learning process (Siemens, 2008). In support of this idea, the middle school teacher participants in this study stated that they used Edmodo to assign multimedia projects and self-directed learning activities where students themselves would have to make decisions about the content found on the Internet to complete activities. Also consistent with my findings, Conradie's (2014) study found that students engaged in self-directed learning activities shifted the control of learning from teacher to student, thus enhancing their self-efficacy and autonomy. Similar to what Trnova and Trna (2015) found in their study, my research findings indicated that effective use of social media technology challenges traditional

methods of teaching and increases online social interactions where students are involved in conducting research.

Another key finding of my study that is consistent with Siemens's views involves teachers' roles in a connected learning environment. As noted in Chapter 2, Siemens identified four roles: teacher as a master artist, teacher as a network administrator, teacher as a concierge, and teacher as a curator (see Table 2). The middle school teacher participants indicated that monitoring the online activities of their students was critical, as opposed to having a hands-off approach. This role of teachers monitoring student online activities is consistent with Siemens's roles of a master artist and concierge, where students are free to access online resources and actively engage in collaboration with other students while the teacher monitors the online activities of students to meet their individual needs. Additionally, the teacher participants indicated that they viewed themselves as facilitators as they not only monitored the online activities of their students, but also facilitated discussions. Consistent with Siemens's roles of teacher as network administrator and teacher as curator, one teacher participant indicated that she implemented a *textbook-free* learning environment, which allowed her students to access online resources aligned to the learning outcomes and encouraged her students to participate in self-directed learning activities.

To support teachers as they plan for technology integration, Focus Group Participant 3 indicated that the district adopted Kimmons's (2012) PICRAT. This model helps teachers to think about how they plan to integrate technology into their instruction where the use of technology enhances traditional approaches. In other words, it allows

teachers to think about whether they are using technology to mimic traditional teaching methods, or whether they are using it to allow students to be creative as they engage with technology. The use of this matrix supports teachers in leveraging technology to foster a more student-centered learning environment. This is consistent with Phillips and Trainor's (2014) findings that today's digital learners prefer interactive and experiential learning experiences. The use of this model helps teachers in creating such an interactive learning environment.

Limitations of the Study

There were two limitations that arose from the execution of my study. The first limitation was the selection of the middle school teacher participants. Purposeful sampling was used to select a small group of six middle school teacher participants. At first, I had planned to only select participants who used Edmodo as a collaborative tool with their students. However, since the District changed platforms from Edmodo to Google Classroom, it was challenging to find teachers who were still using the Edmodo platform. As such, I had to revise my participant selection to include participants who also used Edmodo in the classroom with their students as a communication tool that mimics a learning management system (LMS). Two of the six participants indicated that they have not used Edmodo to engage their students in online collaboration; but instead, they use it as an LMS to post assignments and communicate with parents.

The second limitation of this study is the limited number of middle schools represented. CCRPS has over 24 middle schools, which does not include public charter schools and specialized programs within the District. Thus, a lack of respondents from

other middle schools within the District limited this study to only 17% (four middle schools). Thus, to gain a deeper understanding of how social media platform Edmodo is being utilized by middle school teachers to initiate and sustain collaboration with their students, this study would have benefited from having a larger representation of middle schools.

Recommendations for Future Research

Recommendations for future research are based on the strengths and limitations of this study, and the literature review in chapter 2. The first recommendation is to replicate this study to only include participants who use Edmodo as a collaborative tool with their students. In the current study, only four of the two participants interviewed engaged their students in peer-to-peer collaboration. Capturing the experiences of teachers that use Edmodo to engage students in collaboration may be beneficial in identifying more student-centered strategies that can be effective in a connected learning environment.

The second recommendation is to conduct a study of how teachers use Google Classroom and Google Applications for Education (GAFE) to support student-centered instruction and engage students in collaborative learning experiences. Since the targeted school district and other districts across the nation have adopted Google Classroom and GAFE, educators need to know how to embrace these tools to allow students to play an active role in their own learning.

The third recommendation is to conduct a study of how middle school students are leveraging social media technologies for academic purposes. This current study explores the perceptions of middle school teachers' use of social media platform

Edmodo; however, to gain a deeper understanding of student collaboration in a networked environment, students' perceptions of these tools and how they are using them in the classroom will be beneficial to educators and administration. Even though there are a number of studies that exist on the use of social media tools for teaching and learning, most of these studies were conducted within high school and higher educational settings (Agosto, Copeland, & Zach, 2013; Manca & Ranieri, 2016; Mao, 2014; Matzat & Vrieling, 2016; Mbati, 2013; Northey, Bucic, Chylinski & Govind, 2015; Thompson, Gray & Kim, 2014).

Implications for Social Change

The findings of this research study contributes to advancing knowledge in the field of educational technology on the use of social media tools for teaching and learning. This study may help educators with leveraging social media tools to initiate and sustain networked collaboration, while implementing basic principles of constructivism and connectivism. Consequently, teachers, who use social media tools like Edmodo, may find this study helpful as they attempt to shift from a teacher-centered model of instruction to a more student-centered learning environment that allows students to become more actively engaged in their own learning. Innovative instructional tools, like Edmodo, help make this transition possible, which would be challenging to do so without them.

Additionally, the findings of this study may help educational technology leaders to design professional development programs on how to leverage these innovative tools to enhance instruction, and to actively engage students in a networked learning

environment. This study will help provide insight into the phenomenon of the use of social networking in the classroom to enhance collaboration for the development of shared knowledge to enhance learning.

Lastly, this study has the potential to inform administration and instructional leaders in instructional practices within CCRPS's middle school classrooms. As outlined in CCRPS's 2016-2020 strategic plan, this district is committed to academic excellence and achievement amongst all students. Also, noted in the Coherence Framework of the strategic plan, CCRPS hopes to improve the quality of instructional practices. Thus, the findings of this study may inform administrators, instructional leaders, and teachers of CCRPS best practices in leveraging today's emerging technologies and social networking tools to support student collaboration and engagement.

Conclusion

The purpose of this qualitative case study was to explore middle school teachers' adoption and use of social media platform Edmodo to initiate and sustain networked collaboration with their students. The findings of this study add to the body of literature about the acceptance and use of innovative social media technologies, like Edmodo. Social media tools have the capability to support a networked learning environment that enhance student collaboration and engagement. However due to such a small sample population of middle school teachers and small representation of middle schools within the District, the findings may be only transferable to similar populations and settings.

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Appendix A: Theoretical Alignment

Theoretical Conjectures	Research Questions	Data needs	Data sources	Data analysis
1. Unified Theory of Acceptance and Use of Technology 2 (UTAUT2)	1. What factors contribute to middle school teachers' acceptance and use of social media tools in the classroom?	1. Teachers' and educational technology leaders' experiences	1. Interviews of six to eight middle school teachers. Focus group of four educational technology leaders. Archival data: District and school technology integration plan and policies.	1. A priori code list, code, cross coding, and triangulate
2. Vygotsky's Sociocultural Development Theory	2. How are teachers using social media platform Edmodo to initiate collaboration?	2. Teachers' experiences of using Edmodo with their students, and educational technology leaders' perspective of social media use to initiate collaboration.	2. Interviews of six to eight middle school teachers who use Edmodo with their students. Focus group of four educational technology leaders. Archival data: Lesson Plans, Curricular Materials and Resources, and Technology Integration Matrix	2. A priori code list, code, cross coding, and triangulate
3. Connectivism	3. How are teachers using social media platform Edmodo to sustain networked collaboration?	3. Teachers' experiences and educational technology leaders' perspectives of using social media in the classroom to sustain networked collaboration	3. Interviews of six to eight middle school teachers who use Edmodo with their students. Focus group of four educational technology leaders. Archival data: Lesson Plans, Curricular Materials and Resources, and Technology Integration Matrix	3. A priori code list, code, cross coding, and triangulate

Appendix B: Study Impact Alignment

Problem	Purpose	Gap in the Literature	Social Change	Conceptual Framework	Research Questions
Emerging technology tools are still being adopted and used to support and mimic traditional teacher-centered strategies and instructional practices. Teachers in the K-12 educational setting lack the knowledge and adequate professional development in leveraging social media tools to improve student-teacher, and student-student collaboration.	To explore acceptance and use of social media tools among middle school teachers from teachers' and educational technology leaders' perspectives. To explore the experiences of middle school teachers and the perspectives of educational technology leaders on the use of Edmodo to initiate and sustain networked collaboration.	Few studies exist about the use of social networking emerging technologies in the K-12 classrooms. A significant gap exists in research that examines the use of social media platforms in the middle school classroom to support networked collaboration.	Findings from this study might inform educational technology leaders an approach to professional development of social media platforms used as instructional tools to engage students in networked collaboration. Findings may help teachers and educational technology leaders to identify strategies and best practices in integrating social media into the classroom.	UTAUT2 Sociocultural Development Theory Connectivism	1. What factors contribute to middle school teachers' acceptance and use of social media tools in the classroom? 2. How are teachers using social media platform Edmodo to initiate collaboration? 3. How are teachers using social media platform Edmodo to sustain networked collaboration?

Appendix C: Letter of Invitation

Dear [Potential Participant],

I would like to invite you to participate in my research study about teachers' acceptance and use of social media platform Edmodo in the middle school classroom. More specifically, I want to investigate how Edmodo can be used to initiate and sustain networked collaboration fostering a more student-centered instructional environment. Overall, I am interested in learning about your experiences and perceptions of the integration and use of Edmodo in the classroom, which may, consequently, have a positive impact on teaching and learning.

If you are interested in learning more about my research and how you can help, please reply to this invitation with a couple of dates and times that you are available to meet. We will meet briefly to further discuss my research and to answer any questions that you may have.

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

Warm regards,

Appendix D: Interview Protocol for Middle School Teachers

Before the interview begins:

- Explain the purpose of the interview.
- Review the consent form with participant. (Consent form must be signed by the participant before the interview can take place.)
- Address terms of confidentiality.
- Explain the format, structure, and process of the interview.
- Ask if the participant feels comfortable.
- Ask if the participant has any questions about any of the discussed items thus far.
- Request consent to record the interview.
- Turn on the recorder if the participant consents.

Interview questions aligned with research questions:

Research Question 1: What factors contributed to middle school teachers' acceptance and use of social media tools in the classroom?

1. What factors influenced you to use Edmodo in the classroom with your students?
2. What benefits do you see in using Edmodo with your students?
3. What is your attitude towards the use of Edmodo?
4. What would you consider as obstacles in using Edmodo with your students?

Research Question 2: How are teachers using social media platform Edmodo to initiate collaboration?

1. What is your attitude towards the use of Edmodo as a social media tool to support collaboration with your students?
2. How do you use Edmodo with your students to initiate and support collaboration?

Research Question 3: How are teachers using social media platform Edmodo to sustain networked collaboration?

1. How do you use Edmodo to support networked peer interaction and collaboration with your students?
2. How do you use Edmodo for students to co-construct new knowledge?
3. What is your role as students co-construct new knowledge through networked collaboration on Edmodo?

After the interview:

- Thank the participant for his/her participation.
- Explain that participant will be contacted in a follow-up email.
- Ask if the participant has any questions.

Appendix E: Focus Group Protocol for Educational Technology Leaders

Before the interview begins:

- Explain the purpose of the focus group.
- Review the informed consent form.
- Address terms of confidentiality.
- Explain the format, structure, and process of the focus group.
- Set group norms and expectations.
- Explain that you want to hear from everyone. People should respect each other's opinions but encourage generative and respectful disagreement.
- Ask if the participants feel comfortable.
- Ask if the participants have any questions about any of the discussed items thus far.
- Remind participants that the focus group session will be recorded.

Focus group questions aligned with research questions:

Research Question 1: What factors contributed to middle school teachers' acceptance and use of social media tools in the classroom?

- What factors influence the use of Edmodo by teachers in the classroom?
- What benefits do you see in using Edmodo with students?
- What is your attitude towards the use of Edmodo?
- What would you consider as obstacles in using Edmodo with students?

Research Question 2: How are teachers using social media platform Edmodo to initiate collaboration?

- What is your attitude towards the use of Edmodo as a social media tool to support collaboration with students?
- How does a teacher use Edmodo with his or her students to initiate and support collaboration?

Research Question 3: How are teachers using social media platform Edmodo to sustain networked collaboration?

- How can teachers use Edmodo to support networked peer interaction and collaboration with their students?
- How can students use Edmodo to co-construct new knowledge?
- What is the teachers' role to support students as they co-construct new knowledge through networked collaboration on Edmodo?

After the interview:

- Thank the participants for their participation.
- Explain that participant will be contacted in a follow-up email about debriefing session.
- Ask if the participants have any questions.

Appendix F: Document Review Protocol

Potential List of Documents for Review:

Documents for Review	Relevance to Study
School district's Acceptable Use Policy (AUP), and policies regarding technology use among teachers and students	Policies may provide insight into how CCRPS supports teachers who wish to use social media platforms in learning environment (Research Question 1; facilitating conditions of the UTAUT 2 Model)
Lesson plans, and curricular materials and resources used by teachers (i.e. teacher created plans, technology integration matrix, and National and State Standards of technology integration)	These documents may provide additional information regarding how teachers can effectively use Edmodo in the instructional environment (Research Questions 2 and 3)
Rubrics and/or assessment documentation that teachers use to assess students' collaboration via Edmodo	These documents may provide additional information regarding how teachers can effectively use Edmodo in the instructional environment (Research Questions 2 and 3)
Teacher posts on Edmodo	Teacher posts in Edmodo may provide additional information regarding how teachers facilitate networked collaboration in this platform with their students. (Research Questions 2 and 3)

Steps for Document Review

1. Obtain the identified documents in the above list from participants. To protect the participants' anonymity, documents will not be connected to the participants.
2. Secure copyright from organizations whose documents are copyright protected.
3. Review each document and determine how they provide context for this study and contribute to answering the research questions.
4. Documents will be stored in a password protected Dropbox account, and destroyed after five years.