Exploring How Online High School Instructors Foster Critical Thinking within Ninth-Grade Students through Discussion-Based Learning Forums

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Abstract

This study contains a partial evaluation of key influences associated with discussion-based learning forums located within online high school academic environments, specifically ninth grade. It also focuses on how teachers attempt to effectively use specific strategies to improve critical thinking within discussions formulated within online learning environments such as live lessons, individual assessments, and group interactions. To further the discussion, this study focuses on critical thinking skills usage within the online learning environment by discussing synchronous learning opportunities for students to engage with the content, the facilitator, and the students.

For teachers and students utilizing online learning environments, there are expectations regarding how to appropriately engage with each other as explored through the Community of Inquiry. The types of communication in an online learning environment vary from that of teacher-student communication conveyed in a brick and mortar classroom due to the limited face-to-face opportunities.

Utilizing the Interpretative Phenomenological Analysis (IPA) approach, this research uncovers some of the ways online instructors engage students in synchronous learning discussions and assessments as a means to enhance critical thinking skills. This research presents teacher modeled discussion-based strategies within the virtual environment as a means to improve student-to-student and student-to-teacher communication as recommended by the Community of Inquiry theory and states ways to enhance critical thinking via online discussion-based learning forums.

*Keywords*: online learning, discussion-based learning, collaboration, critical thinking, teaching/learning strategies, Community of Inquiry
Dedications

To God
...because
...because without you there would be no us

To Mom and Dad – Kathy and Jerry Beidler
...because
...because you always instilled in me the love of learning
...because you never stop encouraging me
...because I promised you

To Kayla Ann, Lorna Paige, and Riley Monroe Baldwin
...because
...because you have hopes and dreams
...because I know it wasn’t easy always seeing me on the computer
...because when you saw me struggling, your hugs kept me going

To Seth Mitchell Baldwin
...because
...because I could not have found the strength to finish this without you

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Knowledge is power. Information is liberating.

Education is the premise of progress, in every society, in every family. –Kofi Annan
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Chapter One: Introduction

As an academic program coordinator, the person who coordinated the admissions processes, monitored students success, assessed data, assisted with administrator development and onboarding requirements of educators, and provided ongoing teacher professional development, I was privy to the conversations of program feedback from the students, the instructors, and the learning guides: specifically, the discussion-based learning forums (live classes, group activities, and individual assessments) portion of the curriculum. Each course syllabus expressed that the discussion-based learning forums were critical to the foundation of developing critical thinking skills through the art of conversation between the instructor and the student. Discussion-based learning forums were also one of the ways instructors ensured academic integrity within e-learning; it was also used to determine if a student was improving as a critical thinker. Instructors, however, had mixed feelings about the discussion-based learning forums and whether there was learning value using them within the online curriculum.

During this study, I focused on how teachers experienced discussion-based learning forums as a means to improve critical thinking skills among ninth-grade students. Ninth-grade students were selected for the study because the ninth-grade curriculum begins to address higher level thinking skills and draws on student knowledge based on autonomous study skills (Bales, 2019). The goal of this study was to learn what teachers were implementing during their discussion-based learning forums that facilitated critical thinking skills among ninth-grade students. A secondary goal of the study was to review the community created by the teacher to improve critical thinking through social interaction. This chapter includes five major sections: an overview of the topic and research problem, the significance of the study, my positionality, the research questions, and the theoretical framework.
Stating the Educational Problem

With the growth of K-12 online education, there are significant feelings among online educators that critical thinking skills (CTS) are lacking in high school discussion-based learning forums (DBLFs) because critical thinking within online discussions is a different experience for different types of learners (Brown & Meuti, 1999). With the continued emphasis on improving standardized assessment scores, critical thinking is not always a primary focus of learning modality at many elementary, middle, or high school grade levels (Watanabe-Crockett, 2015). Currently, standardized assessments typically assess students’ abilities via multiple-choice format, so students often come into ninth-grade with limited practice in developing critical thinking skills including, but not limited to, asking critical questions, developing viable solutions, and situating their learning within previous understandings and constructs of the curriculum (Halx & Reybold, 2005). Halx and Reybold (2005) determined that learning requires effort, and critical thinking requires the maximum exertion of intellectual capabilities.

In 2000, Harasim explained that discourse “is the heart and soul” of online education (p.51). Since discussion-based learning forums are considered an essential platform that promotes discourse within online education (Garrison, 2017), the quality of the dialogue that happens within the platform can largely explain the educational success and failure of a learner’s success in an online course (Harasim, 2000; Garrison, 2017). The overarching question becomes: How are online instructors using online discussion-based learning forums as a means to enhance critical thinking skills usage among ninth-grade students?

The research suggests that helping ninth-grade students improve their critical thinking skills usage requires instructors to promote critical thinking skills through discourse opportunities that utilize higher-order thinking content as a building block for promoting and
engaging more productively in virtual discussion-based learning forums as grade-level promotion occurs. By understanding the Community of Inquiry theoretical framework (Garrison, Anderson, & Archer, 2000), online instructors will better understand the e-learning goals of discussion-based learning forums for promoting student critical thinking outcomes.

**Purpose Statement**

The purpose of this Interpretative Phenomenological Analysis (IPA) study is to examine the ways online instructors are engaging students in discussion-based learning forums as a means of increasing the students’ abilities to critically think while engaged in fully online high school academic experiences. At this stage in the research, by examining the Community of Inquiry (COI) model with seminal and modern research using discussion-based learning forums in a qualitative research topic built around constructivist theories, there may be the opportunity to uncover more research about students increasing their cognitive presence through social or teacher presence. The knowledge generated from this study is expected to inform online instructors on how to develop and format content to include discussion-based learning forums into the curriculum to improve critical thinking experiences for their online students.

**Justifying the Research Problem**

As online instructors incorporate more discussion-based learning forums into their e-learning curriculum, there is a developing debate regarding the quantity versus the quality of interactions, the amount of teacher and social presence, and the sum of specifically designed discussion-based strategies for effective critical thinking learning outcomes (Maddix, 2012). The research claims that the way instructors engage in forums may influence how students interact within the discussion-based assessments (Mazzolini & Maddison, 2007). Maddix (2012) revealed that online forums are positive contexts for practicing engaging instructor-student and
student-student interactions. Wang, Chen, and Liang (2011) provide evidence that teacher presence plays a significant role in providing students with the necessary support to critically respond (written and oral communication) within online courses.

**Deficiencies in Evidence**

Between 2009-2010 and 2013-2014, more than 315,000 students were engaged in full-time online public-school programs (Evergreen Education Group, 2015). Minimal research has focused on ninth-grade students participating in an online curriculum. Stodel, Thompson, and MacDonald (2006) inquired with students regarding perceptions of student needs in online learning, but the research, currently, remains minimal during an almost 253% increase in online high school student enrollment from 2009 to 2015 (Evergreen Education Group, 2015). As stated in Sigurosson (2017), critical thinking is an attitude, an approach, that life presents people; in other words, people must possess a logical ability to think for themselves when problems arise so that there is adequate reason for acceptance of knowledge shared among society.

Garrison, Anderson, and Archer (1999) coined the theory of Community of Inquiry, which is a framework that explores asynchronous computer-mediated communication, modernly called discussion-based learning forums (Themeli & Bougia, 2016). The Community of Inquiry framework was first presented as a guide for researching online learning during a time of newly sparking online educational institutions and programs (Garrison, Anderson, & Archer, 1999). With the significant acceptance and growth of online and blended education, Garrison (2017) stated there is a need to review the transformative and disruptive impact e-learning continues to place on education.

Within online learning environments, there is a defined need for presence from a distance that is spatial, social, and cognitive (Themeli & Bougia, 2016). The premise for this kind of
presence is the Community of Inquiry Model, which allows students to achieve high levels of student learning in online discussion (as stated in Maddix, 2012). Arbaugh, Cleveland-Innes, Garrison, Ice, Richardson, and Swan (2008) shared that the Community of Inquiry framework is a critical aspect of better understanding the effective conduct of online learning; though, there must be more research to discover ways to provide more active, engaged, and collaborative learning experiences as a means to achieve an outcome where online education produces critical and creative thinkers and learners (Garrison & Anderson, 2003; Garrison, 2017). Rovai (2007) shared that the quality of communications must be better researched to determine relevance to online discussion-based learning outcomes and if they are effective or not when used during online instruction.

**Implication Statement**

Online education continues to become more attractive to students across the grade-levels, specifically high school students. The growth of this appealing option to education is, in part, due to the flexibility of school hours due to access to content as long as there is Internet access, accessibility to a variety of content that may not be accessible at a local school, and desirability to pursue career objectives while attaining credits towards an accredited high school diploma (Evergreen Education Group, 2015). This is not a new phenomenon but rather a growing norm in global education (Evergreen Education Group, 2015). Technology is giving increased access to global teams that span many time zones, nations, and cultures. As a result, students are engaging in collaborative work that is generating more knowledge and increasing global awareness thinking that requires higher levels of critical thinking among students (National Education Association, 2012).
By examining the Community of Inquiry model, critical thinking skills, and presence tools to seminal and modern research using discussion-based learning forums in a qualitative research topic built around constructivist theories, there may be an opportunity to uncover more research about students increasing critical thinking through discussion-based learning forums found in the ninth-grade virtual classrooms. For online education programs to engage them in the learning process, institutions must find a way to engage ninth-grade students via the facilitation of the instructor to support and extend learning to allow students deep, critical thinking of the course materials (Garrison, 2017).

In a modern, online curriculum, students can engage with instructors and peers in a way that develops a community of learners who utilize lifelong communications skills as found through the art of higher-order thinking and self-reflection (National Education Association, 2012). With the development of e-learning, the global community of learners can engage in a capacity that allows for self-reflection, time, thoughtful articulation of concepts, and responsibility and accountability, which creates a more active learning experience entrenched in critical thinking (Boud, 2002; National Education Association, 2012, Garrison, 2017). The only way to effectively change the direction of the curriculum is to support instructors in a way that provides the necessary tools to engage students in finding their element of self through the freedom of voice regardless of location in the online classroom and the real world.

It is hoped that the findings of this study inspire and empower administrators to better understand how to train their online instructors to create and conduct learning through online discussion-based learning forums in a way that encourages higher-order thinking among all students, specifically ninth-grade students. In turn, the more an instructor understands how to manage online communication, the more able students will be to express critical thinking during
discussion-based learning forum experiences. Potentially, the findings of this study will allow online educators to facilitate critical thinking skills as defined by essential theorists of thinking. Ultimately, this study may help create new ways for instructors to develop better e-learning content with a critical thinking focus and educational experiences that engage their online learners.

**Positionality: Researcher Identity Influences and Potential Biases**

In 2011, while raising three children under the age of six, I had to find a way to continue teaching while ensuring my children were cared for by me. I did not want to leave my children in daycare or with a babysitter, so I started reading about online teaching and homeschooling through online providers. While I was not planning on homeschooling my children, I was interested in the flexibility of working for an educational institute that provided a curriculum for distance learning families and learning guides.

Within all research, the researcher has specific perspectives and biases. For me, pragmatic perceptions sometimes distort my thinking due to my expectation of how people should speak within a given circumstance. Pragmatics is concerned with using a language within a given situation, while perception is a belief or opinion often held by many people and based on how things seem. I was raised that there is a certain way to interact with people depending on the situation, and it was expected that I learned this pragmatic perception early to be successful. Haraway (1991) pled the case that positionality could affect the perceptions of the research, which may cause issues with situational representation. Further readings of Briscoe (2005) shared that concerns of perspective may come from speaking and observing others. The pragmatic experience may lead to a bias that disrupts true positionality.
Bias, as defined by Roulston (2015), evokes a form of subjectivity that damages the validity and credibility of the study. People create bias in both conscious and unconscious ways. In education, it is sometimes common to formulate unconscious bias via the way genders perform in the classroom. There may be a bias created when certain cultures outperform other defined cultures within a program. Instant judgements, called implicit bias, can also impact research; for example, students judged for how they talk or dress is implicit bias. Because implicit bias can lead to inequitable experiences, it is important for the researcher to understand the nature of implicit bias and not let it interfere with decision making and coding of findings or outcomes.

For me, my unconscious bias is noted in devoting extensive time to historically underrepresented students, also known as students who have hindrances that limit their abilities to excel in school because of circumstances outside of their control. This bias sometime leads me to momentarily disconnect from students that may typically fall under a majority privilege. To manage this bias, it is important for me to understand that labeling a group of students is a bias in and of itself. The educational experience cannot be marginalized because of bias, because even if the intention is viewed as positive (extra support to gain access to education), the ideas of labeling a group as marginalized is considered a bias as the person is then assuming one group is better than another: checking on and reviewing personal privilege is necessary to avoid conscious bias.

Through my professional years, I have spent much of my career attempting to gain perspective of what socioeconomic disadvantage is as compared to my own privilege, who the students are effected by the stated disadvantage, and how to work with community liaisons to reduce it within the academic environments for which I have taught. Within online schooling, it
seems the disparaging biases are reduced because there is less face-to-face contact and more focus on performance. A student bullied or more socioeconomically disadvantaged than another student does not necessarily need to fight those adverse situations in an online format because no one would know, initially, due to the asynchronous nature of online education.

While researching the idea of discussion-based learning forums and how they affect the overall student and teacher cognizance leading to academic success, it is imperative to avoid the emotional manipulation or distortions of data caused by conversation and misguided truths from the students and teachers involved (Roulston, 2015). The data collection format, as suggested by Jupp (2006), formulates a process that reduces bias by having participants engage in a variety of data point collection being very specific about the diversity of a given group. While reflective experiences may help define the structure of my research, it is important to identify the bias before beginning reflective research (Jupp, 2006).

Though not from an affluent family, I am a white female that was raised in a household that afforded me access to the educational experience offered within our middle-class community. The expectation was that you would go to college. You would receive high grades, and failure was not an option. The bias of mine is that when students make excuses for not completing work or asking questions, I hold this deep conviction that a student has not set up expectations for one’s self. This bias does not cross genders or races, but students in general.

When teaching online, I am not always given the races or ethnicities of my students, so the pragmatic aspect of this is that the truth of performance is acclimated in the proof of desire. I expect students to advocate for their own needs and wants. Within online educational programming, my bias of expectation is that students online must be willing to advocate for their needs and have better communication skills than that of brick and mortar students because the
teacher cannot see what a student is expressing with body language or facial expressions during the work time. This bias may also be perception due to my time and experience within the education field; therefore, if gender or nationality or ethnicity begin to have a role in the study, it will be important to define those realms within the position of the research. Also, once teachers disclose personal information about themselves within the interactive groups, biases and new perceptions may develop due to open exposure that is not common in the online learning environment.

Fennel (2008) formalizes this concept (bias and perceptions) through the discussion of individualizing models of education through international agendas that can aggravate or disrupt or undermine positions of women and future gender. While not explicitly reviewing how gender will change the dynamic of discussion-based learning forums, it may be a point to reference and even isolate as a factor to determine if bias exists in certain criteria of discussion-based learning experiences. It may be worth stating that a bias noted within discussion-based learning forums are accents – how people pronounce words when English is not the primary language. Accents may slant the perspectives of teachers and students, as well as how I interpret the narrative within my research as a qualitative researcher.

In conclusion, a researcher must understand the bias and perspective through deep self-reflection before committing to the study, or, otherwise risk validation and representation of those within the study as well as positioning of understanding (Briscoe, 2005). As the research of beneficial methods that may or may not improve academics continues, it must be clear what may disrupt a study. Studies and research work best when the researcher understands self, community, subject, bias, and findings of the data collected; if not, there is a risk that the research shows bias, which causes invalidation within the research community.
Research Question

This study attempts to explore the ways online instructors increase cognitive presence among online ninth-grade students by answering the following research questions:

*How are online instructors using online discussion-based learning forums as a means to enhance critical thinking skills usage among ninth-grade students?*

These sub-questions guide the central question:

1. What are the characteristics and patterns of instructors’ teacher presence to promote critical thinking skills used to enhance discussion-based learning forums?
2. How does dialog/discussion opportunities seek to achieve a deeper level of meaning among ninth-grade students learning in an online community?
3. How do teacher facilitation techniques affect students’ cognitive presence?

Theoretical Framework: Community of Inquiry

To foster critical thinking skills through discussion-based learning forums, this study will employ the Community of Inquiry theoretical framework. The Community of Inquiry framework, as conceptualized by Garrison, Anderson, and Archer in 2000, and grounded in Dewey’s (1938) understanding of reflecting inquiry, was first presented as a guide for researching online learning during a time of newly created online educational programs (Garrison, Anderson, & Archer, 2000). The Community of Inquiry was designed from socio-constructivism, reflective thinking, and inquiry (Garrison & Vaughn, 2008); therefore, researchers consider how social interaction, cognitive development, and instruction related to instructors and students within virtual courses, specifically the development of community through discourse (Palloff & Pratt, 1999).
Within the Community of Inquiry framework, three elements overlap to create the educational experience within a virtual classroom: social presence, cognitive presence, and teaching presence (Garrison et al., 2000). The overlapping elements help develop deep and meaningful online learning (Garrison & Vaughn, 2008). Research provides evidence that social presence is seen in computer-mediated communication (Richardson & Swan, 2003). When interacting online, teachers need to use certain strategies and techniques to establish and develop critical thinking skills. Design and organization happen when the instructor plans out all aspects of the course; therefore, discourse engagement and direction occur throughout the instructing of an active course (Akyol & Garrison, 2008). Each Community of Inquiry presence (social, cognitive, and teaching) aligns with the central research question, which seeks to understand the ways to promote critical thinking skills usage through online discussion-based learning forums.

Method

Interpretative Phenomenological Analysis (IPA) is a widely known qualitative approach to phenomenological psychology as it explores how people make sense of the *lived experiences* (Husserl, 1931) and is particularly concerned with “significant existential issues of considerable moment to the participants and researchers” (Smith, 2004, p. 49). IPA explores in detail how participants are making sense of their personal and social world. In the case of this research, the participants (instructors) will try to make sense of how they engage students in the discussion-based learning forums as a means to increase critical thinking skills usage.

The methodology being considered for this qualitative research study is IPA. Throughout the research, the process takes place within the online school, where I taught and managed academic programming for students ninth through twelfth grades. The participant sample for this
study is homogenous in nature as the participants were all online instructors who taught high school courses and experienced the same Learning Management System (LMS).

IPA recommends using three to six participants as a responsible sample size (Smith, Flowers, Larkin, 2009). IPA is good for a data collection approach that allows participants to engage in rich, storytelling in a first-person account of their experiences: journals, discussion boards located in the virtual environment, semi-structured interviews, and focus groups. This IPA study used traditional data collections as well as more modern options situated on the Internet.

**Audience/Stakeholders**

This study was designed to facilitate professional development among online instructors who are looking for ways to enhance critical thinking skills usage among their online ninth-grade learners. By examining the ways online instructors can use essential theories of thinking and tools via discussion-based learning forums within the online classroom, using a qualitative approach, involving students in ninth-grade as the primary focus, we can better understand the ways instructors can improve critical thinking via online learning for the remaining high school years. Administrators and instructors can plan interventions to increase the use of critical thinking in order to improve student critical thinking skills usage within future educational and professional experiences. With good intentions at the forefront, this study may review and present online strategies, known or unknown, for instructors to better understand how to facilitate discussion-based learning forums within their own online classroom. By focusing on the online critical thinking strategies instructors use to engage ninth-grade students in discussions, it is hoped that strategies discussed can help online learners create ways to help their critical thinking abilities move beyond recall knowledge and develop stronger cognitive presence within e-learning.
Summary

This research focuses on understanding the experiences of virtual high school teachers utilizing discussion-based learning forums that may produce better critical thinking skill usage for students taking virtual high school courses. A better understanding of how teachers engage virtual student discussion-based forum experiences may lead to students improving critical thinking skills which may assist with how curriculum developers and new virtual teachers manage discussion-based forum content as well as long-term ways to set up professional development to improve virtual students’ critical thinking skills as experienced by the Community of Inquiry frameworks. In theory, the more virtual teachers understand how their students engage and think when engaged in discussion-based learning forums, the better the overall virtual learning experiences and professional development experiences will be for all invested in online education.
Chapter Two: Literature Review

Chapter One provided an overview of the topic and research problem, the significance of the study, the positionality of the researcher, the main research question and several sub-questions, and the theoretical framework to better understand the overarching question: *How are online instructors using online discussion-based learning forums as a means to enhance critical thinking skills usage among ninth-grade students?* This research focuses on understanding the experiences of virtual high school teachers utilizing discussion-based learning forums that may generate better critical thinking skills usage for students taking virtual high school courses.

The literature was systematically reviewed and then examined relative to these variables: elements of discussion-based learning, critical thinking theories, Community of Inquiry (COI) frameworks, foundations of e-learning, and virtual communities. The breakdown of variables helps inform the development of the research hypothesis presented in this section. The overall review examines the previous research foundations necessary to understand how discussion-based learning forums improve the critical thinking abilities of those students studying in an e-learning environment.

**Definitions**

For the purpose of this study, there was a need to define the terms to provide consistency in the discussion of online learning environments as the terms were known to vary in nature from study to study (Battalio, 2007; Richardson, Arbaugh, Cleveland-Innes, Ice, Swan, & Garrison, 2012). To assist with clarity and consistency, the following operational definitions were adopted throughout the study.

*Blended learning* uses online and face-to-face methods for learning environments. Some researchers often reference it as hybrid learning (Rovai, 2008). A substantial proportion of the
content is delivered online, typically using discussions and a defined amount of face-to-face time (Allen & Seaman, 2014).

**Brick-and-mortar school (BAM)** is a traditional school setting within a physical building or classroom.

**e-Learning** is the “utilization of electronically mediated asynchronous and synchronous communication for the purpose of thinking and learning collaboratively” (Garrison, 2017). For this study, this will be the term to discuss the way individuals connecting from a distance can create virtual communities (Garrison, 2017).

**Face-to-face instruction** is referred to as traditional, in-class instruction; this format involves regular class meetings between an instructor and students according to a fixed schedule and physical location (Oram, 2006). For this study, this term may also incorporate times when student-teacher meet in a live, online classroom environment utilizing a communication tool such as Skype or Adobe Connect.

**Fully online** is where all learning activity and interactions between students, instructors, peers, and course content occurs virtually through the LMS, with typically no face-to-face instruction (Allen & Seaman, 2014). In this study, fully online is a form of distance education that requires Internet access, computer, students, and instructors.

**Learning Management System (LMS)** is a term widely used interchangeably with course management system (CMS) and virtual learning environment (VLE) in online learning. LMS is a secure, server-side software application used to deliver instruction online or hybrid (Rovai, 2008). In the context of this study, LMS is called VSchoolz. It is specifically designed and used by my current private high school for instruction. Schoology is also used concurrently with VSchoolz as a means for students to hold online discussions with instructors and peers worldwide. Generally,
VSchoolz shares common features with other LMS; however, the only notable difference is the lack of discussion-based learning forum tools, which is why the group feature of Schoology is used as a discussion-based learning forum tool.

**Online discussion** is one of the components built into many learning management systems. The term is interchangeable with discussion board, discussion-based learning forum, online discussion forum, course discussion, and threaded discussion by researchers (Benfield, 2002; Conrad & Donaldson, 2012; Lowenthal, 2012; Rovai, 2008). For this study, online discussion is an asynchronous communication tool that provides the capability to post comments, respond to comments, post questions and answers, and attach documents through Schoology. Also, it is important to understand that the students and instructors can post in real time (synchronous) or at a later time (asynchronous) to complete the expected outcome. Schoology allows students and instructors to retain the information into discussion folders so that teachers can organize all online discussions.

**Online education** has become a synonymous term with online learning, e-learning, distance education, online learning environment, and virtual classroom, which are used interchangeably depending on the learning context (Rovai, 2008) through Internet access. For the purpose of this study, online education refers to the online learning instruction that is delivered through the LMS in VSchoolz and the discussion boards located in the LMS Schoology. In this study, online education not only incorporates the focus of content delivery and autonomous approaches to learning, but it also requires a form of a collaborative approach between content, instructors, and learners (Garrison, 2017). During the process, in order to acquire knowledge, there is a construct of personal meaning that allows growth from the learning experience (Ally, 2008).
**Sense of community** is a “feeling that members have of belonging, a feeling that members matter to one another and to the group, and a shared faith that members’ needs will be met through their commitment to be together” (McMillan & Chavis, 1986, p. 9).

**Virtual versus Online** needs clarification to avoid confusion. Virtual and online education requires attendees to attend courses through a connection to the Internet. Because some research shows that the term “virtual” can communicate a connotation of gaming experiences versus educational opportunities; I, therefore, for the purpose of this study, use online education to mean distance learning where the learner and instructor do not attend lessons within a BAM building. Also, to remain consistent, the study references online education as the means to which attendees log into a learning management system that offers curriculum: assignments, discussion boards, quizzes/tests, feedback, and grades.

**Overview of Online Educational Concern**

In the United States, online schools have shown consistent growth since their origination in the late 1990s (Glander, 2016). In 2014, 33 states accounted for more than the 440 online schools in operation (Miron & Gulosino, 2016), serving more than 262,000 full-time students who attended courses fully online (Gemin, Pape, Vashaw, & Watson, 2015). Instruction is provided online via computers or other telecommunications technologies in synchronous or asynchronous format (Glander, 2016).

For online learning, asynchronous discussion-based learning forums, such as discussion boards and discussion-based learning assessments (DBAs), and synchronous communications through virtual communication tools are becoming more prevalent in online content as a means of social learning to advance critical thinking skills usage. As instructors incorporate more discussion-based learning forums into their e-learning curriculum, there is a developing debate
regarding quantity versus quality of interactions, amount of teaching presence, student social presence, and quantity of specifically designed discussion-based strategies for effective critical thinking learning outcomes. The research claims that the way instructors post to forums may influence how students interact within the discussion-based forums (Mazzolini & Maddison, 2007). Maddix (2012) shares that online forums are contexts for instructor-student and student-student interactions. While the DBLFs are creating ways for interactions, asynchronous DBLFs provide opportunity; unfortunately, the opportunity does not necessarily facilitate high-quality discussion posts and interactions (Jarosewich, Lenhart, Vargo, Vance, Salzmann, & Roskos, 2010). Furthermore, another study discussing teacher presence (Halx & Reybold, 2005) suggests that developing critical thinking requires instructors to act as facilitators to model and allow for students to freely think and share critical thoughts without the guilt of having incorrect responses. The study (Halx & Reybold, 2005) also uncovers that strong facilitators help move students from worrying about right and wrong responses and, instead, guide students/learners to realize that sometimes critical thinking leads to more questions or different evaluations of a topic. This awareness of teacher presence as a guide to improving critical thinking (cognitive presence) encourages the peer review process and helps students learn suitable responses to conflicting evaluations and opinions (Henderson-Hurley & Hurley, 2013; Tsai, Chen, & Chang, Chang 2013).

**Foundations of Critical Thinking**

The significance of online discussion-based learning forums cannot be examined without a discussion of critical thinking. Socrates (470-399 BC) rooted society in intellectual understanding that people could not merely accept knowledge; he fortified the human understanding that intellectual claims must be dissected for concrete evidence (Tam, 2015). The
Socratic Method, as named for Socrates, was designed for probing questions of claims and is still a valid pedagogic technique within online discussion-based learning forums of the 21st Century. In the classroom, when debatable topics arise, Socratic questioning is an effective way of critically breaking down a topic to better examine it (Paul, Elder, & Bartell, 1997).

According to Paul and Elder (2002), when focused questions are asked, the students within the classroom find the discussions more stimulating and engaging. This modern mindset also connects with not only Socrates, it also follows the critical thinking of Plato, Aristotle, and the Greek skeptics whom all emphasized that what you perceive is often different from how it appears and that the mind must be trained to move beyond the surface of what the eye sees through critical questioning (Paul & Elder, 2002). As stated in Sigurosson (2017), critical thinking is an attitude, an approach, that life presents people; in other words, people must possess a logical ability to think for themselves when problems arise so that there is adequate reason for acceptance of knowledge shared among society.

Socrates laid the foundation for critical thinking paradigms to come throughout history. A significant contribution to critical thinking was also made by French Enlightenment scholars: Bayle, Montesquieu, Voltaire, and Diderot. (Paul & Elder, 2002). An important aspect for these thinkers was that reason must turn inward upon itself in order to determine the weaknesses and the strengths of thought. Through the centuries, philosophers all established understandings of how to think critically and question the world as it was seen and later understood.

The use of critical thinking continued its progression into the 20th Century when the understanding of the power and nature of critical thinking emerged in increasingly more specific interpretations. In 1948 at the Convention of the American Psychological Association, Benjamin S. Bloom discussed with a group of educators the extensive ideas he had regarding critical
thinking and the concept of classifying thinking behaviors believed to be the important processes of learning (Forehand, 2005). In 1956, Bloom’s Taxonomy (Bloom, 1956) was published.

Halpern (1993) stated, “the goal of critical-thinking instruction is to produce students who have become better thinkers in the real-world contexts that extend beyond the usual in-class exam” (p.273). Therefore, it may be accepted that students in asynchronous and synchronous learning experiences will benefit from the assumption that the students and instructors have an active presence within the modern discussion-based learning forums as questioners and critical thinkers. Comer and Lenaghan (2013) reviewed the pedagogical value of instructors using Socratic questioning while embedding the higher levels of thought as noted in Bloom’s Taxonomy (Bloom, 1956) and developed recommendations for designing and managing online discussions.

For the 21st Century, online education is a rapidly growing and continuing as an ever-changing field; educators and researchers alike are focused on how to improve critical thinking among students. Important to point out is that what works once may not work again, but there seems to be one constant: Critical thinking is quintessential in education as the primary goal of learning is not completing the assignments and memorizing facts but learning how to reason and validate knowledge as it is shared within the collaborative and cooperative learning communities (Wijekumar & Spielvogel, 2006; Bertucci, Conte, Johnson, & Johnson, 2010). As asynchronous discussion-based learning forums, such as discussion boards, are becoming more prevalent in online learning so is the engagement role of the student and instructor (Wijekumar & Spielvogel, 2006). Chakraborty and Nafukho (2014) discussed that there is importance in the online course design of discussion-based learning forums in order to create attention and interest in online class
settings. Mazzolini and Maddison (2007) found that how instructors posted to discussion-based forums positively impacted student critical thinking outcomes.

Furthermore, Duderstadts, Atkins, and Houweling (2002) confirmed through their research that “when implemented through active, inquiry-based learning pedagogies, online learning can stimulate students to use high order skills such as problem-solving, collaboration, and stimulation” (p. 75). Garrison, Anderson, and Archer (2010) navigate through the theoretical framework of three areas of presence, which do not necessarily pertain specifically to online learning but connect to the elements of learning: social, cognitive, and teaching presence.

Beckmann and Weber (2016) caution that discussion-based forums can go unnoticed, unassessed, and questionable regarding its validity in critical and reflective feedback. Nevertheless, the success of online learning, including but not limited to discussion-based forums, requires an online environment that motivates the students and facilitates purposeful educational experiences; otherwise, the experience typically will not be validated as necessary (Beckmann & Weber, 2016).

**Discussion-Based Learning Forums**

For the deliberation of this study, discussion-based learning forums will be specifically defined as discussion boards, individual and group work, and live class sessions through online communication tools such as Skype or Adobe Connect to narrow down the scope of the subject matter. Also, the elements of presence will incorporate student and teacher discussions utilizing Garrison, Anderson, and Archer (1999) measures of social, cognitive, and teaching presence.

This qualitative study will explore and review the effectiveness of online discussion-based learning forums through the specific use of asynchronous online discussions and synchronous live communication using online telecommunication tools in hopes to provide
evidence that specific critical thinking strategies will improve student cognitive presence outcomes. First, I define the elements of critical thinking through the use of seminal and current research. Second, I explore the constructs of discussion-based learning forums through the explanation of asynchronous and synchronous best practices, including but not limited to presence, and curriculum design. Third, I support the specific online discussion-based learning tools that are effective for successful critical thinking outcomes in online learning as the lead focus of this study. In conclusion, the summation of the literature review includes recommendations and implications for future studies.

**Basic Critical Thinking Pedagogy**

In this section, the focus is to define critical thinking as presented by seminal and modern theorists. The intent of this section, while it could comprise an entire chapter, will only clarify the particular use of critical thinking for this study. This section breaks down into six subsections: Socratic pedagogy in the briefest form, Confucianism in contemporary education, Bloom’s Taxonomy (Bloom, 1956) as a higher-order of thinking practices, Dewey as the foundation for cognitive presence, Community of Inquiry as a foundation for e-learning, and online education as a current learning experience. Anderson and Garrison (1995) present that thinking is the internal process of uncovering information through indirect examination and observation. These subsections create the foundation for inquiry and development of the actual study. While there are many philosophers and theorists over the centuries whose work has contributed to the cognitive presence within the online educational process, this study only focuses on specific contributions that enhance the foundation of the Community of Inquiry frameworks.
Socratic Pedagogy in Brief

Instructors of brick and mortar environments are often heard sharing with students that critical thinking is essential to effective learning. Critical thinking reverts to Socrates who established the importance of not just accepting knowledge but seeking out the argument, finding the evidence to support the claim(s), examining all aspects of the support in such a matter that allowed for analyzing of all claims and reasons before concluding outcomes, and tracing out implications of actions and words (Cosgrove, 2013). Socrates developed this questioning method, which is now referred to in modern classrooms as “Socratic Questioning,” which assists instructors in the process of drawing out critical thinking responses from students (Cosgrove, 2013). Infinitely, this model of instructional thinking focuses on logical consistency within the thought process. Critical thinkers such as Plato contemplated the work of Socrates to continue the delineation of critical thinking (Cosgrove, 2013).

In more modern times, brick and mortar instructors are using Socratic Circles to provide students with an opportunity to participate in meaningful discussions with peers while encouraging discipline to ask questions (Socratic Seminar) when engagement is inquisitive (Friesen & Stephens, 2016). For Friesen and Stephens (2016), the goal of Socratic Circles is not to identify definitive answers but to challenge students to think critically about the topic through questioning and sharing of different perspectives. While he was not directly part of the advancement of education through technology, Socrates would find that his methods of questioning are deeply rooted in various education strategies. To be discussed in the later portion of this review, there is evidence that student engagement within discussion-based learning forums improves when students make a deep connection to problem-based learning via the use of thoughtfully orchestrated questions (Merrill & Gilbert, 2008). Effective curriculum design using
Socratic Circles and Seminar will be discussed in a later section. The discussion of Socrates and his initial ideas regarding critical thinking have shaped the way educators develop curriculum designs, which may connect to how a student effectively comprehends successfully within online education.

**Confucianism in Contemporary Education**

While Socrates is considered the father of critical thinking due to his incessant questions regarding reason and validity, and Plato the designer of dialectal methods, Confucian philosophy connects to a deeper element referred to by Sigurosson (2017) as “transformative self-critical attitude” (p.133). Confucian philosophy states that education defines the core of oneself. Confucianism seeks to instill in individuals a motivation to continuously improve themselves as individuals, so society can improve with the existence of an educated person (as stated in Sigurosson, 2017). Ultimately, society will only develop if the people within it develop as individuals (as stated in Sigurosson, 2017).

Though Confucianism does not offer a systematic approach to learning to that of Socrates' critical thinking methods, it does present an interesting approach to learning in online learning environments. The efforts placed on students focus on the development of a performative method, a dramatic performance through speech, where students must engage in in online learning environments through speaking or art of profound expression of words. Part of the art of this style of learning requires students to uncover hints of information within the more extensive materials; therefore, students in online learning environments benefit because the subtle cues of writing require an ability to surmise data from posts verse body language and facial expressions of those students in brick and mortar classrooms (Yearwood, Cox, and Cassidy, 2016). For Yearwood et al. (2016), empowerment through intuitive behaviors suggests
that students must accomplish tasks by applying knowledge to a problem-based experience with an opportunity to internalize student presentation of problems and solutions. While online learning environments do not always have transparency, utilizing a Confucian method may improve the effectiveness of online student critical thinking abilities.

**Bloom’s Taxonomy: Higher-Order Thinking**

Higher-order thinking skills include critical, logical, reflective, metacognitive, and creative thinking (Szabo & Schwartz, 2011). By situation, these skills are implemented in education when students are presented with problems of unfamiliar content, uncertainties, question, and/or dilemmas (Szabo & Schwartz, 2011). When a student is successfully able to meet the needs of the higher-order thinking tasks, the outcomes of success are measured by decisions, explanations, behavioral performance, articulation of ideas, and presentation of the product.

Bloom’s Taxonomy (Bloom, 1956) offers a primary source of modalities for which the human spirit thinks by providing differentiated thinking skills. In the original form (Bloom, Krathwohl, & Masia, 1956), six types of thinking skills emerged: knowledge, comprehension, application, analysis, synthesis, and evaluation. In 2001, Bloom’s Taxonomy (Bloom, 1956) was revised by Lorin Anderson (Anderson & Krathwohl, 2001). The revision included turning the original pyramid into a two-dimensional taxonomy that demonstrates knowledge as to what and how of thinking about knowledge (Anderson & Krathwohl, 2001). In Szabo and Schwartz (2011), there is a thorough explanation of knowledge as two-tiered and looks at knowledge levels (factual, conceptual, procedural, and metacognitive) as one tier and knowledge utilized (remembering, understanding, applying, analyzing, evaluating and creating) as the other tier.
Instructors must consider critical thinking as an essential framework as proof of understanding. When a student can think critically, and beyond the lower levels of the tiered system of the revised Bloom’s Taxonomy (Bloom, 1956), instructors can increase independent thought by exposing students to the upper levels of analysis and synthesis. When using online learning environments, instructors work with asynchronous learning styles of education, like discussion-based learning forums; in turn, instructors must create materials that are designed to engage the learner, nourish their higher-order thinking skills, and subconsciously employ metacognition, the process of thinking about one’s thinking, to have effective critical thinking outcomes. Critical thinking is reasonable, reflective thinking that is focused on deciding what to believe or do (Ennis, 1989).

**Dewey as Foundation for the Cognitive Presence of Community of Inquiry**

The collaborative constructivist perspectives of the Community of Inquiry work are associated with John Dewey’s work (Garrison, Anderson, & Archer, 2001; Garrison, 2017). The definition of cognitive presence was grounded in Dewey’s work on reflective thinking (Garrison et al., 2001). According to Garrison et al. (2001), cognitive presence refers to “the extent to which learners are able to construct and confirm meaning through sustained reflection and discourse” (p. 11). Dewey insisted that education should inspire reflective thinking, not mere memorization, and should produce citizens capable of knowledgeable participation in their democracy (Dewey, 1910). The constructs to identifying the human connection of understanding are “among the elements of an experience, between that experience and other experiences, between that experience and the knowledge that one carries, and between that knowledge and the knowledge produced by thinkers other than oneself” (Rodgers, 2002, p.848). Jonassan (1991) identified these relationships as the interpretation individuals can use to make sense of their
experience (Jonassen, 1991). Dewey (1958) suggested that the mental operation involved in recognition of the connections characterizes the key purpose of reflection. Dewey (1933) considered reflection an inquiry process in which individuals regularly generate and test their ideas and thoughts.

Dewey (1938) proposed a five-step plan for approaching a problem and forming a “completely developed thought” (p.73): 1) Directly leap to possible solutions when confronted with a disturbing situation. The ideas generated are spontaneous and automatic responses to the situation. 2) Identify and define the problems rationally and intellectually. Better ideas of the solution may be created. 4) Refine and modify solutions through reasoning. A hypothesis that directs the following actions might be produced. 5) Experiment to test the hypothesis. Adopting ideas then verifies the correctness of the hypothesis. Dewey acknowledged that these proposed steps are not fixed and do not come in any particular suggested sequence.

Through continual trial and testing, reflection is an iterated “active, persistent, and careful” cycle of these steps (Dewey, 1938, p.9). Dewey even claimed that “a man really living alone would have little or no occasion to reflect…” (Dewey, 1916, p.4). For Dewey, “society and the individual cannot exist separately, nor can one be subordinate to the other” (Garrison, 2017, p. 10). The ideas from an individual’s thinking can be developed and improved by exposing them to a community (Rodgers, 2002). Garrison (2017) utilizes the understanding of reflection and community as stated in the work of Dewey (1916) and builds the understanding of Community of Inquiry through transactional communication as a means to understand that learning is never in isolation (Garrison, 2017). This work gives the firm foundations for the Community of Inquiry framework and provides an understanding of how the educational participants can interact online.
Community of Inquiry

The Community of Inquiry framework was first presented as a guide for researching online learning during a time of newly sparking online educational institutions and programs (Garrison et al., 1999). Within online learning environments, there is a defined need for presence from a distance that is spatial, social, and cognitive (Themeli & Bougia, 2016). The premise for this kind of presence is the Community of Inquiry Model (CIM) which allows students to achieve high levels of student learning within online discussions (Maddix, 2012).

Garrison et al. (1999) coined the theory of Community of Inquiry, which is a framework that explores asynchronous computer-mediated communication (CMC), modernly called discussion-based learning forums (Themeli & Bougia, 2016). Arbaugh et al. (2008) noted, during their earlier research, that there were more than 356 citations connected to the Community of Inquiry framework since it was unveiled to the online community; the Community of Inquiry framework is a critical aspect of better understanding the effective conduct of online learning (Garrison et al., 1999). The Community of Inquiry framework links together three collaborative presences for thinking and learning: social, cognitive, and teaching presence as shared in Figure 1. These three presences create an online educational experience (Garrison et al., 1999). No one part of the model is more critical than another as the Community of Inquiry framework is “dependent upon the interaction of all presences to a greater or lesser degree depending on the subject matter, the learners and the communication technology” (Garrison et al., 2010, p. 6).

**Social Presence.** Garrison, Anderson, and Archer (2000) relate social presence to an established, supportive learning community. This community provides an opportunity to communicate within a trusted location, so all students can express individual identities while establishing social relationships (Garrison et al., 2000). Social presence is the opportunity for students to define themselves within a community as they seek the feeling of acceptance (Maddix, 2012). Interaction is the key element to establish a presence in the given learning community. Students must be allowed risk-free expression, contact other students despite the lack of visual transparency, establish instructor presence, and engage in supportive contact and interaction (Szeto & Cheng, 2016). The research discusses how Garrison and Cleveland-Innes (2005) argue that interaction alone is not enough for learning attainment (as stated in Szeto &
Cheng, 2016). Rovai (2007) asserts that online instructors must establish and maintain social presence in order for students to continue posting otherwise, the complaint is that writing in a discussion-based learning forum is like “writing a message, placing it in a bottle, and dropping the bottle into the ocean,” for without feedback, there is little to no gratification or motivation (Rovai, 2007). Dawson (2006) concluded that online learning environments should emphasize the requirement of embedding both community experiences in the curriculum to enhance student thought outcomes and learning experiences.

**Cognitive Presence.** The key elements of cognitive presence are the goals established for students and the methods used to attain the stated goals through interaction and communication (Garrison et al., 2000). Cognitive presence is a situation of higher-order thinking and learning (Maddix, 2012). As described by Maddix (2012), the focus of cognitive learning is approaching problems, seeking new knowledge, gaining new levels of understanding, and incorporating dialogue that includes learning exercises that foster critical thinking. Successful online learning environments require a motivational environment that facilitates meaningful learning with an instructor that knows how to connect ideas through the application of new ideas presented while also setting up the curriculum and learning climate to inject knowledge from diverse sources while also challenging students to integrate key concepts from their own life experiences. Cognitive presence focuses on providing students the ability, in essence, to move from the lower tiers of Bloom’s Taxonomy (Bloom, 1956) to the upper tiers through the use of newly applied concepts.

**Teaching Presence.** Teaching presence relates to the process of design, facilitation, and direction throughout the learning experience in order to realize desired learning outcomes (Garrison et al., 1999). The main goal of teaching presence is supporting students in an online
learning environment. Research shows that teaching presence corresponded to student satisfaction and perceived learning outcomes (Wang, Chen, and Liang, 2011). Three major categories provide the structure for teaching presence: instructional design and management, building understanding, and direct instruction (Wang et al., 2011). Students want instructors to participate, though the frequency is debatable (Beckmann & Weber, 2015). Instructors should actively guide the students through the material while reinforcing key points all while encouraging student engagement.

Students located in online learning environments should be presented with the opportunity to thrive from the learning materials in the same cognitive way students in brick and mortar institutions are encouraged to do so. Direct instruction, even in online learning, provides students the engagement with the curriculum and the instructor. In Wang et al. (2011), there is a progressive thought that instructors must maintain high or low presence depending on the role. For Wang et al. (2011), there is a concept that instructor presence must be redefined from the original state to incorporate curriculum designer, host, summarizer, evaluator, and counselor. It also seems there needs to be mention of the intuitive leader with the assumption that instructors have an innate ability to understand how people critically think which entails evaluating posts to determine the level of facilitation necessary for effective learning outcomes.

**Implications**

When creating an online learning environment for students, the instructor must contemplate the development of critical thinking philosophy to ensure students show effective learning outcomes via online learning. The inability to think using Socratic Circles, Socratic Seminar, Bloom’s Taxonomy (Bloom, 1956), or the Community of Inquiry framework may result in less interaction between students in online discussion-based learning forums. Dawson
(2006) states that significant relationships exist between the quantity of learner to learner contributions undertaken in the DBLFs, and students report high levels of community. Rovai (2006) shares that quality of communications must be better researched to determine relevance to online discussion-based learning outcomes and if they are effective or not using online instruction. Garrison et al. (2000) created the Community of Inquiry frameworks, which has a Community of Inquiry survey to help manage online discussion-based learning experiences. The survey, an instrument of research, is valid, reliable, and efficient for measuring the dimensions of social and cognitive presence; therefore, it offers a way to manage effective online learning outcomes (Garrison et al., 2000).

When reviewing the implications of using the Community of Inquiry framework, the research shares that high teacher presence starts with the curriculum design, well before the students actually enter the course for active participation; therefore, teacher presence is not random and requires careful consideration of implementation or risk losing student presence (Wang et al., 2011). Cosgrove (2011) states that research exposes there is a great debate over the complete definition of critical thinking; though, theoreticians do agree that critical thinking does entail analysis and evaluation of thinking and also includes the development of intellectual traits that are applied to one’s own thinking, the thinking of others, and thinking within subject disciplines.

**Online Learning Environments**

With online learning, there are two distinct categories set up to define the learning environment: synchronous and asynchronous. Understanding these two modalities should significantly improve instructor course development outcomes. The benefit of understanding these two learning approaches will help the instructor best understand if a student must
participate in an event at the same time (synchronous learning) or whether the participation happens at different times (asynchronous learning). These subsections will focus specifically on the implementation of online learning environments.

When teaching online, Ukpokodu (2010) offered the understanding that discussion is an effective strategy for promoting collective learning and fostering transformative learning. Online learning offers students the opportunity to build learning communities that allow students, globally located, to engage in learning communities that provide culturally diverse perspectives (Garrison, 2017). It is important to understand how a global perspective can develop students’ understanding of social justice and educational equality. Creating a virtual classroom that engages students from diverse populations to discuss and experience social justice topics in a non-threatening environment increases the value of connectedness and collaboration when difficult topics arise (Guthrie & McCracken, 2010).

**Synchronous Learning**

Synchronous online learning classes are those that require students and instructors to be online at the same time (Maddix, 2012). Real-time discussions, lectures, and presentations occur at a specific time and require learners and instructors to be at the same place, online or physical classroom, at the same time as usually through a link to an online classroom when held in the online format (Maddix, 2012).

**Characteristics and Benefits.** Johns Hopkins University School of Education, Center for Technology in Education (2010) defined specific characteristics and benefits to synchronous online learning. Instructors can interact directly with students in real-time, allowing the instructor to instantly gauge if students are engaged and comprehending the content. Participants are able to receive instant feedback or answers and acknowledgements for any questions without
delay. The participants may feel more connected with each other, almost as if they were in a face-to-face session. When instructors are using a microphone, participants can hear the instructor’s tone of voice. When instructors are using a webcam, the participants can see facial expressions that allow for connection or relationship building. Unique to synchronous learning experiences within online classrooms, when using a platform like Adobe Connect, breakout rooms offer ideal meeting space for instructors and students who otherwise would not be able to interact and meet simultaneously due to different locations.

**Challenges and Considerations for Implementation.** Johns Hopkins University School of Education, Center for Technology in Education (2010) also defined specific challenges and considerations for the implementation of synchronous online learning. The instructor and students within the class need to establish participation and etiquette guidelines that everyone is aware of before any synchronous sessions are held. The establishment of community guidelines will help to circumvent challenges as well as participants feeling overwhelmed due to new online experiences. To better prepare students for online synchronous learning, instructors need to consider how participants should prepare for the session and what activities might follow the session (i.e., asynchronous activity). The learning experience needs to be prepared in advance of the actual experience. A prepared instructor designs the opportunity to ensure everyone gets to voice their thoughts and opinions and that no one person dominates the conversation. As shared by Johns Hopkins University School of Education, Center for Technology in Education (2010), if it is a large class, synchronous sessions may be more challenging to manage student contributions. To ensure each participant is valued and given opportunities to participate, instructors need to coordinate participant schedules and time zones. Instructors need to be prepared for technical issues such as microphone and webcam assistance among students.
Asynchronous Learning

Asynchronous learning allows the student and instructor the opportunity to take online courses at the learner’s own pace. Instruction is through provided materials, recorded lectures, assignments, and tests that can be accessed at any time (Cox & Cox, 2008). Research suggests that asynchronous discussion groups generate student-to-student and student-to-instructor interaction (Cox & Cox, 2008). Students may have a time frame, usually a week, to post comments and respond to other students in the online course. Research states that synchronous online learning is consistent with face-to-face learning instruction found in BAM settings (as stated in Politis and Politis (2016).

**Characteristics and Benefits.** Johns Hopkins University School of Education, Center for Technology in Education (2010) defined specific characteristics and benefits to asynchronous online learning. There is tremendous value when participants can contribute to the discussion as they desire without interrupting the flow of the planned class time. The extended time allows discussions to end at their natural conclusion. Student responses should include higher-order thinking and reflection due to the extended time available for students to process peer posts. Ongoing dialogue engages participants in higher-order thinking as discussions build over time. In an online learning environment, it is ideal to believe that all students are willing to contribute to discussions, even if they are normally shy in face-to-face courses. The research shows that learning is more equitable for all learners by allowing for an extended time to reflect while decreasing pressure to perform immediately as often required in face-to-face experiences. Also, some people communicate better in writing than verbally.

**Challenges and Considerations for Implementation.** Johns Hopkins University School of Education, Center for Technology in Education (2010) also defined specific challenges and
considerations for the implementation of synchronous online learning. Online instructors need to make use of strategies to facilitate activities to guide learning and promote higher-order thinking. Instructors should have an active presence in the discussion while helping students maintain momentum in discussions through frequent feedback. When topics do not follow the instructor’s objective outcome, instructors should redirect topics of conversation back to the course content. As the research further shares, instructors should encourage learners who “disappear” or stop communicating to come back and contribute.

**Implications**

Effective online learning courses are dependent on the success of online discussions (Maddix, 2012). One of the key elements in both synchronous and asynchronous learning is that the curriculum must lend itself to independent and dependent learning. The research shows that often, a blended learning experience in online learning environments create positive effective learning outcomes; therefore, the link to the success is due to the attitude of students, particularly those students feeling a sense of challenge for content and community through the trust of a relationship (Maddix, 2012).

**Online Discussions to Improve Critical Thinking**

Effective use of online discussions to improve critical thinking comes from a balance of learning tools: live virtual discussions and social discussion board forums for students and instructors to delve deeper into topics of study. Xia and Siragusa (2013) suggest this by stating the most effective learning experience comes by way of quality student interaction and engagement. There is educational value in understanding the role of activating strategies to help students with making meaning of content materials (Yearwood et al., 2016). Furthering the idea of making meaning, students must feel a sense of empowerment via the valuable, authentic
experiences provided by the instructor (Yearwood et al., 2016). Instructors and students must have integrated experiences, so students can benefit from the experiences and show improved critical thinking within the online learning environment. As proven by Jeong and Liu (2017), online instructors can increase the depth of augmentation. Online communication is an essential part of online academic programming. Many studies suggest that there must be strong communication between instructors and students. There are advantages, disadvantages, and limitations to utilizing discussion forums in online learning environments.

**Best Practices Design for Discussion-Based Learning Forums**

Discussion-based learning forums provide learning experiences that engage learners in a way that is meaningful and allows for deeper engagement among students as well as with the instructor. The outcome is not a knowledge level understanding (Bloom, 1965) but a level of application and synthesis (Bloom, 1956) of material being discussed. Discussion-based learning forums allow students to become involved through instructor-prompted questions and student-driven participation. Students, and often instructors, must contribute to the discussion-based learning forums via a discussion board forum through comments and questions presented by students within the course. These contributions are intended to help the students think about the content and responses in a way that challenges the level of critical thinking. The learning objectives for discussion-based learners are participation, collaboration, and deeper learning through critical thinking. This deeper learning allows students to better analyze the circumstances surrounding the incidence rates of participation and differing viewpoints about participation (Tsai et al., 2013).

For instructors developing course curriculum with a participatory environment, it is important to consider the best practices for success. When developing courses with an online
component, instructors benefit from an instructional design that focuses on effective two-way communication with their classmates and the instructor (Ausburn, 2004). For instructors to set up discussion-based learning forums for students, there must be a strong understanding of netiquette (rules of engagement when learning online), teacher facilitation of social grouping of students, class time to initiate online discussion interaction in both synchronous and asynchronous experiences, questions that are open-ended which challenge topic debate and student participation, and assessment systems that reinforce production and interaction (Knutzen, & Kennedy, 2010).

**Online Discussion-Based Learning Forums**

The increasing use of online discussion-based learning forums means that discussions are the glue that binds the group of students together to become a collaborative learning community (Clegg & Heap, 2006). Before students can effectively begin working in DBLFs, netiquette must be ensured: instructor models the style of response expected for the given assignments, so students are aware on participation expectations (Knutzen, & Kennedy, 2010). Critical to the discussion of DBLFs is the balance and moderation of engagement: quality verse quantity and how this is modeled for students (Garrison, 2017).

Students sometimes move off-track when working in discussion-based learning forums. It is critical that the instructor remains visible during the discussions and bring students back on-track when needed (Kahn, Everington, Kelm, Reid, & Watkins, 2017). Open-ended questioning (Kahn et al., 2017) encourages deeper critical thinking as it provokes dialogue (Jeong & Liu, 2017). If students are aware of the discussion-based learning forums, students are more apt to read their course materials prior to the public display of thinking begins (Alghamdi, 2013). Purposeful discussions stem from instructor course design as there are course objectives that
must be met by the end of the course. The DBLFs should offer questions that guide students to reach the objectives and remain on target for effective academic success (Anderson & Garrison, 1995). The next step is for the instructor to have defined expectations and rubrics (grading devices) that state the necessary outcomes; these outcomes should be straightforward and simple to ensure learners can focus on creating thoughtful discussion responses. Instructors should encourage opinion development and higher-order thinking to all responses; critical discourse leads to deeper understanding (Anderson & Garrison, 1995).

As demonstrated by Jeong and Liu (2017), online instructors can increase the depth of argumentation by surveying students on their prior beliefs to the discussion. Anderson and Garrison (1995) shared that communities created during the learning process have a large effect on interaction within an activity. While there may be obstacles to manage through online discussion-based learning forums, instructors can facilitate effective learning outcomes through the use of best practices, as defined by the Community of Inquiry, for online discussion-based learning forums.

**Implications**

When instructional design conditions are met, student engagement increases and discourse production dramatically improves (Knutzen, & Kennedy, 2010). Research demonstrates that educational technology can benefit online learners and their ability to effectively communicate within a community of learners working on inquiry (Garrison, 2017; Kahn et al., 2017). In order to provide effective online learning, instructors must understand instructional design for online discussion-based learning forums. Critical thinking is an internal process that produces discourse and reflection that constructs meaning within validation (Anderson & Garrison, 1995). This internal process is optimal when students are engaged in the
discussion-based learning forums and lead towards purposeful discussion through objectives that keep the conversations together. Students and instructors who engage in online discussion-based learning change learning perceptions within the learning process due to the success of the facilitation and connectedness of community.

For successful, positive effective educational experiences that utilize the Community of Inquiry framework, instructors must have training on how to implement this kind of education. Skilled facilitation comes from educators who recognize when and how to respond to students and their presentations of ideas need and how to shape, promote, and respond to group interaction (Clegg & Heap, 2006). When instructors implement a carefully constructed online discussion-based learning curriculum, remote students find that blended synchronous learning design in an asynchronous learning environment results in more active learning.

Currently, virtual education is a rapidly growing educational choice for schooling that may have a facilitation opportunity for critical thinking via the use of discussion-based learning forums between students and instructors; therefore, it is critical to analyze how Guthrie and McCracken (2010) effectively implement social justice practice pedagogies into virtual curriculum while also embedding service-learning. It is important to research current theory verses the Community of Inquiry when looking to better understand pedagogies that improve virtual student learning. The impact of learning resides in the discussion of how volunteerism developed the students’ understanding of social justice. Service learning is a course or competency-based, credit-bearing educational experience in which students use academic knowledge and skills to address genuine community needs (Sigmon, 1979).

Administrators at the national, state, and local levels can benefit from understanding how virtual pedagogies improve teacher engagement with students within a global, virtual setting as
well as how utilizing service-learning in the virtual classroom experience to enhance engagement among students in a social justice course. Caruthers and Friend (2014) confirm this pedagogical perspective by claiming that critical pedagogy must evolve as a way to link learning to social change.

**Critical Focus for Instructors**

There is a critical focus of instructors finding ways to help virtual students understand how students from different countries, with different learning experiences, may respond through discussion. As part of Guthrie and McCracken’s (2010) work, they utilized the integration of experientially based learning situated within the virtual classroom environment but applying it to local communities. To effectively implement social justice pedagogies, instructors in Guthrie and McCracken’s (2010) did the following: 1) create virtual environments that enable ongoing communication, interaction, and relationship building; 2) develop a teaching approach that fosters student autonomy and collaboration; 3) design and implement methodologies that afford opportunities for critical reflection and inquiry; and 4) deliver curricula universally accessible technologies which support primary learning goals and develop technology skills as part of a secondary understanding (Guthrie & McCracken, 2010).

To validate the pedagogies listed, Guthrie and McCracken (2010) draw on the theoretical perspectives of social justice, civic engagement, and leadership. The seminal work of Sigmon (1979), the first advocate for service learning in the school setting, breaks down the understanding of compassion for others through service-learning education. Guthrie and McCracken (2010) also reference Ayers (1998), the popular social justice advocate of teacher leadership education, to support how educational pedagogies will allow for service-learning engagement to enhance social justice within a community. Later in the research, Sanford (1967)
is referenced for his advocacy of defining instructional environments that are supportive and challenging for college students. Guthrie and McCracken (2010) reference the pedagogical theorists to support claims and statements throughout the research.

**Summary**

The purpose of this research was to explore how instructors were using online discussion-based learning forums as a way to improve critical thinking skills usage among ninth-grade students. For online education programs to engage students in the learning process, institutions must find a way to engage the students via the facilitation of the instructor to support and extend learning to allow students deep, critical thinking of the course materials. Institutions that fail to develop a thoughtful instructional design for online education will fail students. In a modern online curriculum, students can engage with instructors and peers in a way that develops lifelong communication skills, as found through the art of higher-order thinking and self-reflection.

Students are being asked to discuss topics in a critical manner with peers who are globally located and log into online learning forums with different educational experiences and cultural expectations. The online curriculum is no longer designed to ask knowledge-based questions only; instead, the focus is on creating global communities for continual learning through discussion. Global, virtual communities are participating more in learning communities that allow for self-reflection, thoughtful articulation of concepts that go beyond rote memory. Overall, the virtual classroom instructors are developing responsibility and accountability of individual thought through discussion-based learning forums, even when not in a face-to-face learning environment.
Chapter Three: Methodology

This chapter presents the Interpretative Phenomenological Analysis (IPA) methodology used in this study to address the research question, *how are online instructors using online discussion-based learning forums as a means to enhance critical thinking skills usage among ninth-grade students?* This is followed by a discussion of philosophical underpinnings and key scholars of IPA. The chapter will conclude with an explanation of the timeline of the study and address issues associated with the protection of human subjects.

**Problem of Practice**

Online education continues to become more attractive to students across the grade-levels, specifically high school students. The growth of this appealing option to education is, in part, due to the flexibility of school hours due to access to content as long as there is Internet access, accessibility to a variety of content that may not be accessible at a local school, and desirability to pursue career objectives while attaining credits towards an accredited high school diploma (Evergreen Education Group, 2015). This is not a new phenomenon but rather a growing norm in global education (Evergreen Education Group, 2015).

There is a continuing concern, however, that students are utilizing a significant amount of asynchronous content, specifically discussion boards, which is no longer facilitating critical thinking skills as defined by Bloom’s Taxonomy (Bloom, 1956). Beckmann and Weber (2016) caution that discussion-based learning forums can go unnoticed, unassessed, and questionable regarding its validity in critical and reflective discussion and feedback. Nevertheless, the success of online learning, including but not limited to discussion-based learning forums, requires an online environment that motivates the students and facilitates purposeful educational experiences; otherwise, the experience typically will not be validated as necessary and limiting.
the participant to underutilize critical thinking skills necessary to advance learning (Beckmann & Weber, 2016).

From my online teaching experiences, students are utilizing the content; unfortunately, there appears to be an underutilization of discussion-based learning tools to develop and facilitate necessary critical thinking skills for lifelong interactions. Jarosewich, Lenhart, Vargo, Vance, Salzmann, and Roskos (2010) support this claim by explaining that while the discussion-based learning forums are creating ways for interactions, asynchronous discussion-based learning forums only provide opportunity; unfortunately, the opportunity does not necessarily facilitate high-quality discussion posts and interactions (Jarosewich et al., 2010). The purpose of this research is to explore the ways instructors are attempting to increase their ninth-grade students’ critical thinking skills usage through discussion-based learning forums located in the virtual classroom.

Research Question

The focus of this research is specific to a ninth-grade team of online instructors working at the same online high school. The study concerns virtual high school staff by focusing on this overarching question: How are online instructors using online discussion-based learning forums as a means to enhance critical thinking skills usage among ninth-grade students?

These sub-questions will guide the central question:

(1) What are the characteristics and patterns of instructors’ teacher presence to promote critical thinking skills used to enhance discussion-based learning forums?

(2) How does dialog/discussion opportunities seek to achieve a deeper level of meaning among ninth-grade students learning in a virtual community?

(3) How do teacher facilitation techniques affect students’ cognitive presence?
Overview and Philosophical Underpinnings

The methodology considered for this qualitative research study was the Interpretative Phenomenological Analysis (IPA). Since its emergence in 1996 (Smith, 1996) for health psychology, IPA has grown rapidly and has spread out as a methodology for many other areas of research, including the field of education. IPA is devoted to the exploration of personal experiences in a systemic way (Tomkins, 2017). The objective of IPA is to understand lived experiences and explore how individuals make sense of their personal and social environments (Smith & Osborn, 2008). Smith and Osborn (2008) describe the meanings participants attach to particular experiences as the ‘main currency’ of an IPA study. Also important to IPA, as shared by Smith (1996), the approach emphasizes that the exercise of research is also valuable for the active role of the researcher. The goal of IPA is to get as close to the participant(s) life (world) as possible to gain as much perspective as able (Smith & Osborn, 2008). IPA is a participant-driven approach that allows the researcher to hear the voice of the participants while trying to make sense of the perspectives as lived and explained by the participant. In order to attain the latter, IPA utilizes the three theoretical influences: phenomenology, hermeneutics, and idiography (Larkin, Watts, & Clifton, 2006, Reid, Flowers, & Larkin, 2005, Shinebourne, 2011, Smith, 2007).

Key Scholars: Interpretative Phenomenological Analysis

IPA is a widely known qualitative approach to phenomenological psychology as it explores how people make sense of the ‘lived experiences’ (Husserl, 1931) and is particularly concerned with “significant existential issues of a considerable moment to the participants and researchers” (Smith, 2004, p. 49). This study used the Interpretative Phenomenological Analysis, which allowed for the interpretation of the collected research based on the researcher’s personal
knowledge and experiences (Ajjaw & Higgs 2007). To ensure comprehension of the researcher’s
decision to choose IPA, it is important to understand the foundations that lead to IPA as it is used
today.

**Phenomenology**

First conceptualized and theorized by Husserl (1931), this qualitative research approach
addressed an understanding of the context of the ‘lived experiences’ of people and the meaning
of their shared experiences. Phenomenology is a term that refers to both a philosophical
positioning and a range of research methods (Finley, 2008). Langdrige (2007) states
phenomenology is the “study of human experience and the way in which things are perceived as
they appear to consciousness.” The goal of phenomenology is to reveal meaning by focusing on
participants’ thoughts, feelings, and memories. IPA is positioned in phenomenology, which
allows for description in one area and interpretation in another area to understand the meanings
individuals attach to human experiences and is concerned with exploring experiences in its own
terms (Smith, Flowers, & Larkin, 2009).

**Hermeneutics**

One of the first expansions of Hesserl’s phenomenology methodology came from Martin
Heidegger (1962), a German philosopher and a seminal thinker, who argued that phenomenon
appears through clues in the text which are connected in a way that would not normally be latent
or not overtly present in the text (van Manen, 1990). The expansion of Husserl’s approach was
due to the need to expand its application as well as its day-to-day usability by researchers of
different educational disciplines. Hermeneutics is “the practice or art of interpretation”
(Dallmayr, 2009, p. 23) and involves “the restoration of meaning” (Ricoeur, 1970, p. 8). In
1990, van Manen wrote in-depth about hermeneutical phenomenology. According to van Manen
(1990), hermeneutical phenomenology is the “lived experiences” of research participants (phenomenology) and the “interpretation (text) of the life” the participants “lived and experienced” (hermeneutics) (van Manen, 1990, p.4).

Also involved with expanding phenomenology was theorist Moustakas (1994). Moustakas (1994) discussed the psychological phenomenology, which was more concerned with describing the lived experiences of the participants involved in the research and less interested in the interpretation of personal experiences. Through this description, Moustakas (1994) advocated for “bracketing” of the researcher’s personal experience from that of the participants' lived experiences. The important piece of Moustakas’s work was the added value of bracketing.

Bracketing is not only important for researchers, it is an important concept now part of IPA as it refers to the process where the person analyzing attempts to put aside, temporarily, preconceived understandings (theoretical, cultural, historical, contextual, privileged knowledge) in order to better understand the phenomenon (Brocki & Wearden, 2006).

Idiography

The idiographic focus of IPA explores how a stated person, in a context, makes sense of a given phenomenon (Biggerstaff & Thompson, 2008). Idiography is a concern for individuality and a commitment to a rigorous analysis of contingent, unique, and subjective phenomena (Moses & Knutsen, 2012). IPA is idiographic because it emphasizes the detailed and in-depth review of how individuals in their own situations make sense of a given phenomenon; it seeks to learn from each participant’s individual story through a rigorous and deep analysis individual to that participant. Therefore, idiography allows the researcher to gain informative material to comprehend in a way that allows for a deeper understanding of thoughts, beliefs, and behaviors in an attainable way (Moses & Knutsen, 2012).
Interpretative Phenomenological Analysis (IPA)

IPA draws upon the fundamentals of phenomenology, hermeneutics, and idiography. Because of Smith et al. (2009), the history of phenomenology as a qualitative approach was revolutionized for today’s researchers. Smith et al. (2009) conceptualized and reorganized phenomenological research into what is now called Interpretative Phenomenological Analysis or IPA.

According to Smith et al. (2009), “the publication of Johnathan Smith’s (1996) research paper in Psychology and Health argued for an approach to psychology which was able to capture the experiential and qualitative, and which could still dialogue with mainstream psychology” (p. 4). IPA was to “stake a claim for a qualitative approach” rather than borrow approaches from other disciplines (Smith et al., 2009). Throughout the debate and development of IPA, Smith et al. (2009) emphasized that they “prefer to…think of IPA’s core interest group as people concerned with the human predicament” (p.5). According to Smith et al. (2009),

IPA is concerned with the detailed examination of human lived experience. And it aims to conduct this examination in a way which, as far as possible enables that experience to be expressed in its own terms rather than according to predefined category systems. This is what makes IPA phenomenological and connect it to the core ideas unifying the phenomenological philosophers. (p. 32)

Furthermore, Smith et al. (2009) stated that their “aim overall has been to show the developmental process of doing experiential qualitative psychology” (p. 5). IPA reaffirmed the essence of what is an interpretative and navigating research approach (Smith et al., 2009). Smith et al. (2009) stated, “The underlying philosophy of IPA is just as important as matters of procedure. Researchers who familiarize themselves with it will be able to produce more
consistent, sophisticated, and nuanced analyses” (Smith et al., 2009, p. 5). They argued that researchers who adhere to the underlying principles and philosophy of the tradition as they had articulated it “also be able to draw on understandings of the underlying philosophy to help them to solve unanticipated problems, and as their confidence and experience grow, to develop their IPA work in ways which extend beyond the procedures described above” (Smith et al., 2009, p. 5-6).

As a qualitative research approach, IPA allows for participants who experience similar events to tell their stories without any alterations and/or examinations. Creswell (2012, p. 76) detailed that “a phenomenological study describes the common meaning for several individuals of their lived experiences of a concept or phenomenon.” Creswell (2012) also stated, “Phenomenologists focus on describing what all participants have in common as they experience a phenomenon” (p. 76). The most important aspect of IPA is its ability to make sense of the ‘lived experiences’ of the research participants and truly allow the research study to explore the phenomenon that the research is investigating.

Figure 2. The three influences of IPA (adapted from Smith et al., 2009)
Alignment

The goal of the research was to better understand the experiences of teachers of virtual high school courses and how they foster critical thinking skills through discussion-based learning forums. IPA explores in detail how participants are making sense of their personal and social world. In the case of this research, the participants (teachers) will try to make sense of how they engage students in the discussion-based learning forums as a means to increase critical thinking. With IPA, the research can focus on the meanings of the virtual classroom experiences and the experiences of the teachers. As the researcher, the goal was to gain the insider’s perspective using interviews using semi-structured questioning. Through the two-stage interpretation process, double hermeneutic, I can utilize not only the data of the participants trying to make sense of their world, but I can also make sense of the participants trying to make sense of their world due to my own conceptions. IPA is rich in interpretative, interpersonal, and interactive in nature; therefore, this qualitative research approach (IPA) is packed with a lot of features that can help equip its researchers with a plethora of data insight and holistic nature to the stories that are being explored. IPA is equipped with all the research tools and processes needed to conduct a rich and dense, yet rich, descriptive research study.

Data Collection

IPA is good for a data collection approach that allows participants to engage in rich, storytelling in a first-person account of their experiences (Smith et al., 2009). The information needs to be discussions that allow for participants “to think and be heard” through the use of small, homogenous samples (Reid, Flowers, & Larkin, 2005). However, ethically, no research can be started without ethical permission. According to Creswell (2013), in a phenomenological research study where all participants have experienced a similar phenomenon, it is “important to
obtain participants’ written permission to be studied” (p. 154). The process of collecting and analyzing data for a qualitative research study can be monotonous and unwieldy, hence the reason why a thorough and detailed informational background needs to be provided to the Institutional Review Board (IRB) before the research can begin.

**Sample Size**

The participant sample for this study is homogenous in nature as the participants were all virtual teachers who teach ninth-grade high school courses. The desire of participants will be that they are all from the same school and experiencing the same learning management systems and even the same students. Due to the size of the sample group, the group of participants will be small as there are only thirteen teachers, of which six are ninth-grade teachers. The IPA sample size allows for participants to give an in-depth account of the phenomenon in question. Hefferon and Gil-Rodriquez (2011) suggest that when a researcher uses IPA, he or she should aim for an expert sample of participants that is small in number. The intention is to recruit four virtual teachers who teach core subjects (math, English, science, and history) to ninth-grade students in the virtual education platform.

**Data Collection**

There is a consideration to have teachers virtually journal, through discussion boards, their experiences with the research, or check in with small focus groups; however, there is a strong consideration to use semi-structured interviews (Smith & Osborn, 2008). A set of open-ended questions on an interview schedule (Smith & Osborn, 2008) was set up prior to the meeting with participants. The interview was guided by a schedule because 1) there is an attempt to establish rapport with the participant, 2) the ordering of questions is less important, 3) the interviewer is able to ask more probing and/or interesting questions in specific areas that arise,
and 4) the interview can follow the participant’s interests or concerns (Smith & Osborn, 2008). IPA interviews generally last an hour. All interviews were held in a virtual environment (due to the location of the researcher to the virtual teachers) via an Adobe Connect Classroom or Skype using a recording feature.

How the researcher navigates through the questions for the interview is important as to not restrict the lines of communication. Smith and Osborn (2008) suggest that the absence of a strict structure allows participants to better control the nature of the conversation, which allows for free speech and full immersion in the faith of the interview process. This allows for a more holistic understanding of the social nature of the interview process while trying to collect experience information in a very deep capacity.

IPA studies can use traditional data collections as well as more modern options like utilizing the Internet. Creswell (2013) emphasized that data gathered through the “Internet has the advantages of cost/time efficiency in terms of reduced cost for travel and data transcription. It also provides participants with time and space flexibility that allows them more time to consider and respond to requests for information” (p. 159). Creswell (2013) also detailed that “online data collection helps create a non-threatening and comfortable environment and provides greater ease for participants discussing sensitive issues” (Nicholas, Lach, King, Scott, Boydell, Swaatzky, Reismann, Shippel, & Young, 2010, p. 159). As stated in another section, the reason for bracketing one’s preconception is important during interviews (Smith et al., 2009). Bracketing, part of the IPA method, helps “enable participants to express their concerns and make their claims on their own terms” (p. 42). In describing the process of data collection, Creswell (2012) noted that the process involves more than just simple data gathering, “It involves the steps of determining the participants to study, obtaining permission needed from several individuals and
organizations, considering what types of information to collect from several sources available to the (qualitative) research” (p. 140-141).

**Transcription**

The research study should utilize different technological devices to collect necessary data (i.e., virtual recording applications, electronic voice recording devices, and video recording devices, if need be). The traditional pen and paper option should be used for jotting down important observations as the interviews progress. Though, when the IPA process fully allows for participants to properly engage, the focus is on the dialogue being shared and should not focus on note-taking. It is advised, for IPA studies, to have everything recorded then transcribed (both verbal and non-verbal content) for review before, during, and after different stages of analysis. In a qualitative research analysis, the interview transcript should be transcribed verbatim into a hard copy and then analyzed by utilizing the color-coded (or any other practical methods such as software designed for analysis) and categorization for analyzes (i.e., common themes).

**Data Storage**

Digital files of audio recordings, transcripts, field notes, and any other data were stored in a password-protected Google drive on a password-protected computer. All identifiable data, with the exception of the informed consent forms, will be shredded or destroyed within one year of the study. Consent forms will be retained for three years after the completion of the study password-protected Google drive on a password-protected computer. Three years after the completion of the research study, all copies of consent forms will be destroyed.

**Analytic Methods**

To analyze qualitative data, IPA researchers are encouraged to observe the guidelines defined by Moustakas. Moustakas (1994) advanced a series of methods that phenomenological
researchers were advised to utilize in analyzing their studies. As a tradition that encourages researchers to “bracket” themselves away from the ‘lived experiences’ of the research participants: Creswell (2013) advised researchers to “First describe [their own] personal experience with the phenomenon under study. The researcher [should] begin with a full description of his or her own experience of the phenomenon” (p. 193). In this way, the researcher should avoid interjecting his/her personal experiences into the ‘lived experience’ stories of the research participants. Additionally, Creswell (2013) advised that researchers should “Develop a list of significant statements” as a foundation for understanding the phenomenon (p. 193). These statements can come from interviews and other relevant research sources that speak to the experience that’s being studied; Creswell (2013) suggested that researchers should “treat each statement as having equal worth and works to develop a list of non-repetitive non-overlapping statements” (p. 193).

According to Creswell (2013), after the development of these statements, researchers should “take the significant statements and then group them into larger units of information, called “meaning units” or themes” (p. 193). Researchers are encouraged to be creative in their thinking during analysis (Smith, 2007). The next step, after grouping the significant statements to form a large unit of information, Creswell (2013, p. 193) suggested that researchers should “write a description of “what” the participants in the study experienced with the phenomenon.” According to Creswell (2013), this is known as the “textural description” of the participants’ experiences, and the written descriptions of what happened to the research participants must include verbatim examples.

At this stage of the phenomenological method of analysis, Creswell (2013, p. 194) suggested that researchers should write a “description of “how” the experience happened.”
Creswell (2013) calls this the “structural description,” so reflection from the researcher can take place. Creswell (2013, p. 194) counseled researchers to “write a composite description of the phenomenon incorporating both the textural and structural descriptions.” Creswell (2013) contended that “This passage is the “essence” of the experience and represents the culminating aspect of a phenomenological study” (p. 194). Smith et al. (2009) argued that the IPA research approach has the ability to explore, in a deep way, the ‘lived experiences’ of research participants and help to understand the phenomenological significance of this experience and how it impacts the participant.

Presentation of Findings

Qualitative data analysis is often constructed around themes and so is the reporting. When getting ready to present the findings, the first thing to do is think about how to organize the findings. The findings are the story the researcher wishes to present as per the data discovered while researching the research question. The researcher’s findings should provide
sufficient evidence from the data to support the conclusions you have made. Evidence takes the form of quotations from interviews and excerpts from observations and documents. Ethically, the researcher must make sure there is confidence in the findings and account for counterevidence (evidence that contradicts your primary finding) and not report something that does not have sufficient evidence to back it up. The findings should be related to the researcher’s conceptual framework. Also, the findings should be in response to the problem presented (as defined by the research questions) and should be the “solution” or “answer” to those questions. A focus on data should enable the researcher to answer the research questions and not just present raw data. Qualitative research presents “best examples” of raw data to demonstrate an analytic point, not simply to display data. Numbers are helpful and should not be avoided simply because this is a qualitative dissertation. Also, the presentation of themes is important as a visual aid. The appendix is designed to share the visual experiences (charts, tables, utilized or discovered during the research process. The individual concepts and themes that are found should be put together to build a cohesive explanation. Then it should be interpreted with connection to the literature and the theories presented in the theoretical framework. Rubin and Rubin (1995) share that this process will allow the researcher to emerge with some over-arching themes that can be helpful in tying the individual pieces of the research data together.

**Limitations**

It is understood that this qualitative research design was limited in scope to the specific research questions, the limited sample size, and the virtual school program in this study. The results cannot be generalized to fit the same research questions in other virtual school programs due to a lack of access to the staff and programming non-compete rules. Based on the deep understandings that have been gained through data collection, analysis, writing, and publishing
of the qualitative research report that may be shared with other virtual school programs, the strengths of this research outweigh the limitations.

**Protection of Human Subjects.**

A professional relationship existed with participants prior to the study. I worked professionally with the selected teachers on curriculum preparation, on professional development, and on student success committees. They were enthusiastic about being a part of this research and exhibited complete trust regarding the process. Each signed an informed consent form that has been stored in a password-protected Google account and will remain there for three years after the completion of the study. Also, in accordance with the policy of Northeastern University, an application was submitted to Northeastern University’s Institutional Review Board (IRB) and approved. The primary study was a confidential qualitative analysis of data collected via the IPA research methods prior to analysis. Participants were treated with dignity and respect as required by both the protocol and requirements as outlined by the IRB. This protocol also includes the understanding and assurance that participants’ information is kept safe in a password-protected database, which reduced social, emotional, and professional issues. Permission to interview and survey was approved, and protocol followed as stated by the IRB requirements.
Chapter Four: Report of Research Findings

The focus of this study was to better understand the overarching question: *How are online instructors using online discussion-based learning forums as a means to enhance critical thinking skills usage among ninth-grade students?* This research focused on understanding the experiences of virtual high school teachers utilizing discussion-based learning forums that may generate better critical thinking skills usage for students taking virtual high school courses.

Chapter Four is organized into three parts. The first part serves as an introduction, restating the research questions and data collection methods. The second part presents an overview of the research participants, specifying their professional background as educators. The third part offers an analysis of the interviews using Smith et al.’s (2009) recommended process of contextualization in which the superordinate (general) and subordinate (most specific) themes discovered in the transcripts are presented.

**Introduction**

Using general inductive methodology, the purpose of this study was to examine the ways online instructors are engaging students in discussion-based learning forums (DBLFS) as a means of increasing the students’ cognitive presence while engaged in fully online high school academic experiences. This study was conducted through the Interpretative Phenomenological Analysis (IPA) that was designed as a qualitative research approach specifically organized to examine how people make sense of their major live experiences (Smith et al., 2009).

The data collection was assembled around the following central research question: “*How are online instructors using online DBLFS as a means to enhance critical thinking skills within ninth-grade students?*” These sub-questions guided the central question: (1) What are the characteristics and patterns of instructors’ teaching presence to promote critical thinking skills
used to enhance DBLF? (2) How does dialog/discussion opportunities seek to achieve a deeper level of meaning among ninth-grade students learning in an online community? (3) How do teacher facilitation techniques affect students’ cognitive presence? The research was analyzed through the lens of the community of inquiry theoretical framework as defined by Garrison et al. (2000).

**Data collection methods.** This research collected data from five participants using a two-part, semi-structured, in-depth interview process per participant. All interviews took place between March and April of 2019. With two of the participants, the use of follow-up questions was used as necessary. The first part of the interview process lasted approximately 10 minutes and discussed the interviewee’s background as an educator using discussion-based learning forums in the online classroom experience. The second part of the interview process lasted 21 to 75 minutes, depending on the interviewee, and delved into each participant’s experiences and perceptions as a ninth-grade high school teacher teaching critical thinking through discussion-based learning forums in their online classroom. All interviews were conducted over the phone due to the distance of each remote teacher; though, each teacher worked for the same online academic institution. The interview times and way of communicating was selected by the interviewee to ensure a time that was conducive to the teacher’s workday and did not interrupt the requirements of the institution. All calls were recording through Rev, a voice recording, dictation, and transcribing application. The entire data collection and interviewing process was conducted in compliance with Northeastern University’s Institutional Review Board.

**Participants**

Five staff members from the same virtual high school participated in this study, and they shared their experiences and perceptions of their experiences with online education and
discussion-based learning within their virtual classroom. These staff members were all certified high school teachers within the same private online high school and had experience teaching both brick and mortar classes as well as online classes in certified core subject areas. One of the teachers was also teaching for a brick and mortar school while also teaching online for the virtual high school that was recruited for this research. Only one virtual high school was represented in this study. All participants had experience teaching in brick and mortar school environments before teaching in an exclusively online only capacity. Pseudonyms were selected for both the school name and the participants. Table 1 summarizes the participant data.

**School Site**

All five participants were employed by Hunt Academy, a private 9-12 online high school located in Maryland. This private high school offered core and elective curriculum for students wishing to learn at home and attain a state-approved high school diploma.

**Table 1**

<table>
<thead>
<tr>
<th>Participant</th>
<th>Subject Area</th>
<th>Years in Current Position</th>
<th>Total Years Online Teaching</th>
<th>Total Years Brick and Mortar (BAM) Environment</th>
<th>Working Online and BAM Concurrently</th>
<th>Total Years of Teaching</th>
<th>Teacher/Administrator BAM and Online Concurrently</th>
<th>Highest Degree Earned</th>
<th>Gender</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aubrey</td>
<td>Science</td>
<td>3</td>
<td>10</td>
<td>9</td>
<td>n</td>
<td>19</td>
<td>n</td>
<td>Masters</td>
<td>F</td>
</tr>
<tr>
<td>Cathy</td>
<td>English</td>
<td>3</td>
<td>7</td>
<td>13</td>
<td>n</td>
<td>20</td>
<td>n</td>
<td>Masters</td>
<td>F</td>
</tr>
<tr>
<td>Mary</td>
<td>History</td>
<td>3</td>
<td>16</td>
<td>33</td>
<td>y</td>
<td>33</td>
<td>y</td>
<td>Doctorate</td>
<td>F</td>
</tr>
<tr>
<td>Megan</td>
<td>Science</td>
<td>1</td>
<td>1</td>
<td>5</td>
<td>y</td>
<td>5</td>
<td>y</td>
<td>Masters</td>
<td>F</td>
</tr>
<tr>
<td>Tracy</td>
<td>Math</td>
<td>3</td>
<td>16</td>
<td>15</td>
<td>y</td>
<td>16</td>
<td>n</td>
<td>Masters</td>
<td>F</td>
</tr>
</tbody>
</table>

**Participant Profiles**

For this study, as discussed in the criteria selection, five online, core subject high school teachers were purposely chosen from the same virtual high school. Initially, six core subject
teachers were asked to participate; however, only five teachers committed to the interview process. The five teachers that interviewed also responded to the initial all-call for volunteers and progressed forward with the interview process. The five teachers who committed to the interviews were all experienced teachers in online education and brick and mortar classrooms and taught one of the following core subjects: English, history, math, or science.

**Aubrey.** Aubrey was an experienced science teacher and newly appointed department chair, and she was tenured in the virtual classroom. Aubrey was responsible for ensuring the science courses for the school were prepared for student use before the start of the school year. As a department chair, she needed to discuss major milestone steps for students with each teacher as part of the onboarding process: course preparation, team discussion-based assessment questions streamlined among courses, passwords enabled, Schoology discussion groups set up, and content answer keys updated. To continue teaching while her husband was in the military, Aubrey transitioned into online education because the Internet was reliable and available in all of her traveled locations.

**Cathy.** Cathy was an experienced English teacher who has experienced a variety of teaching settings over the past twenty years. She originally transitioned from brick and mortar classroom to online education due to a friend’s positive experience. For Cathy, the idea of being at home for her young children gave her greater flexibility with balancing family and teaching responsibilities. When Cathy started online teaching, the large, for-profit corporations were dominating the field, and families were embracing online education as a new way to homeschool their children. The technology was relatively new to classrooms, and blending learning experiences were becoming popular due to the marketing campaigns of the large corporations. The idea that curriculum from the brick and mortar classroom experience could not just be cut
and pasted into virtual learning management systems, Cathy took a defined interest in learning more about creating virtual learning experiences that engaged her students while also finding communication opportunities that were so valuable in her former brick and mortar classroom.

**Mary.** With more than thirty years of teaching experience, Mary was the most experienced participant regarding the field of education, both brick and mortar and online. Before her professional move into online education in 2003, Mary taught history to students in grades 9-12 located in the brick and mortar classroom. Similar to the other participants, Mary needed flexibility with a career after having children. She also found that the topic of online education was considered cutting edge when she entered into online education, so it was the thrill of a professional challenge.

Where Mary’s experience differs from the other participants is through opportunity. The state where Mary resides started opening online schools as a way for rural districts to continue educating students when severe weather conditions made roads impassable. The timing of the opening coincided with her need for professional flexibility to raise a family without daycare. Mary had a tenure of teaching experience in brick and mortar, so she was hired to work for the first online school founded in her state. With limited teachers wanting to explore online teaching, Mary was promoted to assistant director of the secondary school and later director of online literacy. As she continued to delve into helping students, families, and teachers better manage online school programming, Mary was approached by her state’s charter school institution to become a founding principal of an online charter school. Due to her desire to explore what was then cutting-edge education, Mary quickly became a visionary of online education for state charter school programming. Now, Mary is an administrator for a thriving brick and mortar charter school which is developing a multi-million dollar facility for high school blended
learning education. She also remains humble with teaching at Hunt Academy as a way to keep connected to the student needs and curriculum development of the ever-changing field of virtual education. Unique to all of the participants, Mary has both administrative and teaching experience in both brick and mortar and online education programs. Mary is also a mentor to teachers working towards leadership roles within virtual education schools.

Megan. Megan started working at the online school from the recommendation of a friend who worked there. The opportunity presented itself to Megan as a suggestion to gain online experience as an educator since she was already teaching for five years in a brick and mortar classroom. Unlike the other participants, Megan only had one year of online teaching experience. Though unique to Megan was her enrollment, currently, to attain her online teaching certification – a program specific to her public-school district. Unfortunately, Megan did not wish to continue working for the online private high school because of the company’s decision to partner with international schools that required unique expectations that were not specific to homeschooling which the private school initially founded upon. Her discontent with having to manage a variety of international school standards, homeschooling family expectations, and school standards caused her great difficulty and did not meet her desire to teach online for a district with a set expectation. The certification program developed by her current school district will allow Megan to streamline district policies, standards, and expectations with both her online and brick and mortar students. Megan did feel thankful for the opportunity to have the online experience, but she was not content with the format the online program managed.

Tracy. Tracy was an experienced math teacher at Hunt Academy. For ten years, Tracy taught adult education in a variety of subject areas. During her time working with adults, the district promoted her to head of the credit diploma and online program. This promotion is where
her transition took place from brick and mortar education to online programming. While developing the online program for her district, Tracy took on a consulting position to develop online content for Hunt Academy, which was approximately ten years ago. Within online education, Tracy shared that she held the following online positions: administrator, mentor to new teachers, curriculum developer specifically for online learning platforms, and teacher.

Unique to her formal education, Tracy explained that her master’s thesis focused on integrating technology into the classroom; subsequently, her sixth-year degree was in educational technology. For approximately sixteen years, Tracy has taught online for grades six through post-secondary. Compared to the other participants, Tracy has the most experience with developing and executing an online curriculum. For this study, Tracy offered a unique perspective because of her diverse experience with developing material that was tied into the Community of Inquiry framework, as discussed by Randy Garrison. She also remembers when online education was in the form of asynchronous delivery and email conversations for instruction. Similar to the other participants, Tracy has both brick and mortar and online teaching experience.

**Overview of Emergent Themes**

For the Interpretative Phenomenological Analysis study, the interview data were analyzed using a double hermeneutic (Smith & Osborn, 2008). The analysis of the data collected led to three super-ordinate themes and nine sub-ordinate themes that directly connected to the COI framework (cognitive presence, social presence, and teaching presence) that Garrison et al. (2000) offer as necessary for successful educational experiences.

The double hermeneutic analysis is a two-stage interpretation process. Stage 1, the interviews, allows the participants to try and make sense of their experiences. Stage 2, the coding and analysis stage, follows stage 1 and is designed to uncover the essential meaning of the
participants trying to explain their personal experiences. As a result, the three super-ordinate themes and nine subordinate themes emerged among the participant responses. These themes represent findings for online instructors using DBLFs as a means to enhance critical thinking skills within ninth-grade students. Table 1 lists the emergent super-ordinate themes and their respective sub-ordinate themes.

Table 1.

Super-ordinate and Sub-ordinate Themes

<table>
<thead>
<tr>
<th>Super-ordinate Themes</th>
<th>Sub-ordinate Themes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design of DBLF Matters</td>
<td>1.1 Use of Bloom’s Taxonomy</td>
</tr>
<tr>
<td></td>
<td>1.2 Synchronous Discussion Opportunities</td>
</tr>
<tr>
<td></td>
<td>1.3 Assessing progress towards successful educational outcomes</td>
</tr>
<tr>
<td>Managing and Monitoring Discourse is Necessary</td>
<td>2.1 Modeling behaviors to develop student outcomes</td>
</tr>
<tr>
<td></td>
<td>2.2 Facilitate the conversation forward</td>
</tr>
<tr>
<td>Relationships in DBLFs</td>
<td>3.1 Trust provides an opportunity for open communication</td>
</tr>
<tr>
<td></td>
<td>3.2 Educational risks occur when students feel supported</td>
</tr>
</tbody>
</table>

The following section presents the conclusive statements and support for each super-ordinate and each sub-ordinate theme. Super-ordinate themes and their corresponding themes were acknowledged in at least four of the five participant interviews. Table 2 provides a list of the sub-ordinate themes that became apparent through the data analysis and how each of the participants agreed or disagreed with the findings. The value of this table is to show how the reoccurrence of each theme happened across each of the participants. What was interesting to this data was that the participants unanimously shared a common thread of understanding for the
identified sub-ordinate themes without having shared this information before the study took place. The participants have a common understanding of online learning based on Table 2.

Table 2.

*Participant Reoccurrence of Subordinate Theme*

<table>
<thead>
<tr>
<th>Sub-ordinate Themes</th>
<th>Aubrey</th>
<th>Cathy</th>
<th>Mary</th>
<th>Megan</th>
<th>Tracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1 Use of Bloom’s Taxonomy</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>1.2 Synchronous Discussion Opportunities</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>1.3 Assessing progress towards successful educational outcomes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>2.1 Modeling behaviors to develop student outcomes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>2.2 Facilitate the conversation forward</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>3.1 Trust provides an opportunity for open communication</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>3.2 Educational risks occur when students feel supported</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

**Theme 1: Design of DBLF Matters**

The first super-ordinate theme that emerged from the data analysis related to how the participants designed the curriculum for use within the DBLFs for student use. To varying degrees, each participant discussed the use of DBLFs and how setting up a specific format for discussion-based learning forum planning that included how students would think about the discussion-based activities within the DBLFs. All the participants identified the specific use of Bloom’s Taxonomy (Bloom, 1956) as the primary classification for structuring and designing discussion-based work. The five participants discussed how the different objectives and skills the classification offered educators as a means for creating learning objectives towards critical thinking advancement was a design tool that allowed for students to achieve at higher levels of
thinking. There was also a defined thread of how each participant designed both asynchronous and synchronous discussion opportunities as a way to engage students in DBLFs; though, the clear growth of discussion participation came from designing synchronous opportunities. As a result of using Bloom’s Taxonomy (Bloom, 1956) and synchronous discussions to communicate learning objectives, each participant discussed the value of also having assessments that were designed to happen three times a semester as a means of working one-on-one with students to hone in on critical thinking skills and ensure educational outcomes were evident and successful.

1.1 Use of Bloom’s Taxonomy. All of the participants shared that when planning for higher-order learning within their discussion-based learning forums, they used Bloom’s Taxonomy (Bloom, 1956) because it aligned format and content to critical thinking pedagogy utilized for student success. In general, the participants expressed that their discussion-based activities were set up to help students reach different levels of critical thinking. They did not just want their students to recall topics but strive to create accurate conclusions based on topics discussed within different subject areas.

All five participants held live lessons for their virtual classes, and when asked about designing lessons for students to enhance their critical thinking skills, they all shared some experience related to Bloom’s Taxonomy (Bloom, 1956). There was a strong belief among the participants that students will most likely develop critical thinking if the student has a foundation of knowledge for the topic. Each participant also explained how Bloom’s Taxonomy (Bloom, 1956) developed within their virtual classrooms. Megan shared her perception of how she sets up discussion-based learning activities and assessments:

The way that I like to design discussion-based questions is that I want them[students] to build their confidence throughout the discussions. … at first, I'm gonna wanna judge,
"What is their foundation?" So, I want students for the first step … recalling information from what they learned. And then, I want to scaffold that, and take it that one step further with the questions to understanding then applying knowledge and on to evaluating the value of the material. How I set up these questions is really important for how I help a student move from recall to higher-order thinking levels.

Megan concluded that “Bloom’s Taxonomy helps me plan out my lessons for discussion-based work.” She also concluded that “after hearing about Bloom’s Taxonomy, it allows the students to understand better the path to being able to critically think and answer questions beyond recall [knowledge].”

Mary, the participant with the longest tenure in education, shared that she felt that students were, in her professional experience, “not being taught how to think critically consistently from teacher to teacher.” As she shared how she designs her discussion-based activities located in her DBLFs, she shared:

I want my students to be able to closely read or understand a set of facts, and then I want them to be able to build from those facts and create an opinion or make a judgment call to understand bias, to evaluate those facts and where they came from … typically they [students] are not taught how to break things apart and to understand how to relate it to each other. They have a very difficult time understanding that just because it's on the internet does not mean that it is true. … I have students who read history right now, and they can only read it with the point of view of a 14-year-old in the 21st-century. And what they don't understand is that they're reading a primary source document that was written in the 6th century in China. And so they're reading it through that very western, 21st-century lens and then passing judgment on it. … So when I think about critical thinking
skills, I draw upon Bloom’s Taxonomy… I think about the ability [of a student] to listen carefully, to analyze the information, to interpret it inside a context, to reflect upon when it was written, to evaluate it based upon the context in which it was written and then to use it to solve problems, to make decisions, to come to conclusions. Those are invaluable skills that I think that we have to teach our kids and to do that, I scaffold discussion-based learning experiences in such a manner that students will learn how to critically think using higher-order thinking skills.

Mary finalized this section of our interview by sharing that course discussion-based learning experiences are all “developed with Bloom’s Taxonomy, Socratic Seminar, and the How-tos of critical thinking in mind,” and “…no lesson is developed without keeping the ultimate goal of helping students think critically about the world around them.”

Tracy developed curriculum for many online programs and focused on how Bloom’s Taxonomy helps develop the learning objectives for the discussion-based learning experiences her students were having in the math courses she was teaching. Within the discussion of Bloom’s Taxonomy, Tracy recognized that she focuses on how the action words of the classification help guide her discussion-based learning forum design:

For my math course discussions, I create lesson level objectives that correspond with course-level objectives. Because the discussion lesson objectives are leveled, and directly connect to the course objective, I use Bloom’s Taxonomy to develop the levels and build all activities around the ladder of Bloom’s Taxonomy. Students have to know how to move from just rote memorization of facts to recall to going beyond solving a math program. They [the students] need to take their knowledge and apply it to different
experiences in real-life situations. Lots of why questions almost force students to think beyond the answer to a problem.

Tracy was clear to point out that she develops courses that “strived to keep the learning objectives based on critical thinking levels that are clear for students as well as measurable.” This kind of thinking creates a course design that is student-success focused and strives to achieve measurable learning outcomes in her virtual classroom.

Overall, each participant spent time discussing how Bloom’s Taxonomy was an “essential part of the discussion-based learning experience planning” located in their individual virtual classroom. While each participant taught in different subject areas, the analysis of the interview questions focusing on DBLF design proved that Bloom’s Taxonomy is used in lesson planning as a guide for teachers to help students critically think and measure higher-order thinking abilities based on a set of learning objectives. All five participants were able to articulate that Bloom’s Taxonomy consisted of remembering, understanding, applying, analyzing, evaluating, and creating within specific subjects.

1.2 Synchronous Discussion Opportunities. When asked to talk about the best ways for students to show their ability to think critically, all five participants spoke to how online, synchronous discussion-based learning forums were the most supportive for students engaging in critical thinking opportunities with their peers and teacher. More students were willing, based on the participant responses, to engage in “active discussion beyond recalling facts” with their peers. All five participants agreed, to varying degrees, that “students arrive to virtual courses with the idea that “participation with others is not necessary” to grow as a thinker. Students, as Aubrey stated, “have different ideas of what a discussion is and how to participate in a critical thinking-based discussion.” Tracy supported this statement with her conclusions about DBLFs
by stating, “Students are much more willing to question and dig deeper with their thoughts and questions when they are in live, synchronous classes.”

Cathy focused on the value of providing synchronous DBLFs so that students can engage each other in a way that helps students draw higher-order thinking from different shared perspectives:

I think that any opportunity that they [students] have to discuss the material … does increase their higher-order thinking. If we [teacher and students] are doing a lesson on analyzing a poem, one student will give a comment, then another student will build on it, and another student will say, “Whoa, I never thought of it that way. Well, then how about this?” And their [student] ideas are allowed to build on each other’s thoughts, and they deepen each other's knowledge because they are kind of stacking building blocks on top of each other instead of just going with their own interpretation.

Aubrey describes the value of synchronous DBLFs by discussing how students interact in live discussion-based classes versus watching the video in an asynchronous setting:

I believe synchronous, live lessons get them [students] involved, gets them [students] interactive with each other, and can help move them [students] in new areas of critical thinking. You can see a difference between students who attend them [synchronous live sessions] to those who don't, or even those [students] that watch recordings to those who don't.

Aubrey further described the value of synchronous live lessons for her online classroom, and alluding to the need for all teachers to use it, by stating:

They [students] need to be a part of a synchronous time so the teacher can model and monitor how students engage, and they can’t do that in a recording or asynchronous
session because there’s no interaction or ability to practice the questions they are thinking [critical thinking skills].

Mary shared a deep concern about “isolated online learning” and when kids are “cloistered away, doing it on their own.” She further explains that “the byproduct of isolation is that the student[s] are never really challenged to think beyond the material read.” The example Mary articulated, during the interview, detailed the important need for synchronous DBLFs:

When students are involved in a discussion – a real authentic discussion, their minds begin to think of all kinds of questions that related to the material as well as the world around them. ... For example, I was in a class this morning teaching U.S. government and we were talking about social movements and social change and I was trying to get students to see that the American Revolution really began as an effort at social change between 13 colonies that didn't share an awful lot in common besides a language and the fact that they were all subject to a king across the ocean in Britain. And I wanted students to see that what had happened before the American Revolution and the leading up to that was not dissimilar than what happens in any period of social change, and so we drew parallels to the Civil Rights Movement and to the Women's Movement and to the experience of Native Americans and other first people's groups. These kiddos all understood the format of our discussions and were able to engage in some real critical thinking.

Mary, while on the surface, seemed to be only discussing the value of synchronous discussion-based learning experiences, she indirectly focused on the need for Bloom’s Taxonomy as stated in subtheme 1.1. She points out in her dialogue with me that there is a need for students to engage together:
The students drew comparisons to the immigration conversation that this country is involved in today. When students have to draw a comparison or back up an argument, and they know that there are other students in the classroom who are all but too willing to say, "Yeah, but were they really the same or were they the same in this way but not in that way? How were they different?" they [students] are more likely to come prepared to share and think about the perspectives of others.

The point that Mary streamed through her example concluded with this point:

In synchronous DBLFs, kids are being challenged by each other, and they're being challenged by the text, which may or may not say what they think it says, and they've all read it closely - now they have to come together [in a synchronous DBLF], to really discuss it [content and opinions] in an intelligent way, the students have a growth-mindset change and experience critical thinking, teamwork, and connection. Students do not get that in an asynchronous environment; it’s just not possible.

By the end of the individual discussions with all five participants, the analysis shared that synchronous DBLFs were important experiences for virtual discussions. The five participants also connected that more learning takes place when students are actively attending the online live session weekly, as Tracy summed up the need for synchronous DBLFs by expressing, “consistency with students in live situations is why I have reworked my live classroom lesson plans to encourage synchronous situations.”

1.3 Assessing progress towards successful educational outcomes. While discussing discussion-based learning forums as a way to assess students, the five participants all mentioned the use of discussion-based assessments (DBAs) as something their specific school used “three times a semester to ensure students understanding.” At first, two of the five participants struggled
to acknowledge that the DBA fell under the researcher’s category of a forum. Aubrey and Tracy asked for a definition, so it was restated directly quoting the online Merriam-Webster dictionary that “a forum is a “public meeting place for open discussion.” When the definition was clarified to incorporate online learning classrooms or applications that allow for communication, the two participants, during individual discussions, agreed that the definition fits their understanding of a forum.

Each of the participants started their employment at different times for the online school that employs them all. However, each participant discussed the challenges of initially using the DBA as an assessment for student learning. While all five participants shared the use of DBAs was part of the curriculum, each participant had a different experience reaching a comfortable level of usage within their curriculum.

Eventually, the use of DBAs in their virtual classrooms changed, as Tracy shared, “The academic coach helped the staff by setting up a time to discuss the expectations of the DBA.” In another interview, while discussing DBAs, Mary defined the need for DBAs as “DBAs are an assessment piece that’s part of the course design that supports student learning of the content.” Megan explained how the teacher before her shared a “rubric to help assess the DBA as the student was answering my questions and asking their own.” All of the participants confirmed, though their interview, that the school provided the DBA rationale, sample questions for teachers to use as a guide which presented Bloom’s Taxonomy (Bloom, 1956) verbs for action under each of the categories or help develop meaningful questions for the course taught, and a rubric for grading the discussion-based assessment.

To help me understand her teacher position regarding DBAs, Aubrey read a portion of what she termed the “teacher handbook” to better explain the DBA:
The DBA is a discussion-based assessment that teachers have integrated into all of their courses to ensure mastery of content and integrity of written work. These mandatory assessments allow students to respond orally to questions using the verbiage of Bloom’s Taxonomy. They are provided to the student by the teacher during a telephone or Skype conversion and audio is mandatory. Students may remediate and re-attempt unsuccessful DBAs at the discretion of their instructor.

Tracy shared her point-of-view for having the DBA embedded in her course design, which was streamlined to that of the online high school expectations and that of her colleagues:

Different from the live lesson discussion-based learning forum we talked about, a DBA is a one-on-one discussion that occurs between myself and the student. It [DBA] can be held in a live classroom, via Skype, or via the phone where students and I can discuss concepts from the modules. As part of the curriculum design, I ask them [student] some questions based off of Bloom’s [Taxonomy]. … The expectations, in theory, are that students are providing an answer to probs [problems], and then they need to respond to me in the form of a conversation, and kind of build on whatever comes from the Q and A time during this assessment.

Mary was the only participant that discussed some conflict with the discussion-based assessment:

Discussion-based assessments [long pause] I think are very interesting, I think they have a lot of promise. I think that depends on how they're presented to the students; they can be more productive than not; however, they're not my favorite because many students who do online [learning] really struggle with one-on-one with a teacher. They don't like being put on the spot; they really struggle with the idea that this is an assessment
Mary did provide a strong statement regarding DBAs that she shared she “remembered reading in one of the training guides” before starting with the school:

The DBA is a discussion-based assessment where the teacher is able to have a verbal discussion with the student, one-on-one, to ensure the student proves mastery of the given topics located within the course. There are eighteen weeks in each course to make up a semester. Every semester there are three DBAs that cover the modules. These verbal discussions are required for course completion.

The DBA was also defined by Cathy, Tracy, and Megan during the individual interviews. The definitions were all similar to the formal one read by Aubrey. The participants, while they all agreed there was a formal explanation of DBAs provided, and the tools explained, they all did not have the same understanding of how to develop questions. The participants represented one person from each of the major subjects: math, English, history, and science. To finalize the details of the DBA analysis, the participants did confirm in similar language that after guidance from the academic coach, they developed streamlined department questions that teachers used among the same subject sharing, “This allowed for students to be assessed in a similar and consistent way.”

**Theme 1 summary.** The participants all expressed the need to design discussion-based learning forums that incorporated Bloom’s Taxonomy as the primary classification for question and curriculum development. Each of the participants did vary regarding the extent to which they used the taxonomy in synchronous discussion opportunities versus one-on-one discussion assessments. Within all of the participant discussions, the participants all agreed that some element of synchronous learning was needed to encourage students to engage. The participants genuinely agreed that the discussion-based assessments were valuable components to the
curriculum. However, there were some variations between how the teacher developed the overall curriculum. The ultimate understanding from the conversations shared among the participants when discussing curriculum design was that the educator must create a curriculum that draws the community of learners into the discussion-based learning forums. Overall, the participants expressed a sense of responsibility to create and streamline collaborative learning in a way that encouraged students to think critically and modeled cross-curricular cohesiveness.

**Theme 2: Managing and Monitoring Discourse is Necessary**

The second theme focused on the need for the participants to manage and monitor how students speak and write (discourse) about topics presented to them, specifically the topics developed for discussion-based learning forums. During the interviews, the participants were asked questions regarding their experiences with online discussion-based learning forums as well as how they use them within their virtual classroom. The participants were also asked to discuss their ideal synchronous learning expectations for their students, goals to reach those expectations, and how they encourage student participation. The analysis of the data uncovered two subordinate themes: modeling behaviors to develop student outcomes and facilitate the conversation forward.

**2.1 Modeling behaviors to develop student outcomes.** Each of the participants expressed that for their students to be able to advance their critical thinking, they had to model the expected outcomes. Among all of the participants, the discussion of modeling was perceived as a benefit to the students as it is was best summarized by Mary, “It’s never clear whether or not a student has been exposed to higher-order thinking skills by the time they reach my class.” The participants all shared an underlying connection in that they all felt their learners understood how to think about topics in a layered way and that the students could “construct knowledge and
make meaning” among different subject areas. There was also an understanding among this team of participants, because they all taught the same students, that Tracy expressed which summed it up, “if we all model how students can think about the topics, the more they can consistently see the process,” among the different subject areas.

Mary spoke about the importance of modeling while discussing Bloom’s Taxonomy. She focused on a point that’s critical with modeling:

The only way for students to successfully understand what to do when it comes to anything in the classroom is how the teacher effectively models the expectation. I’ve been in education for a really long time, and while observing classrooms, I see teachers model. Unfortunately, sometimes teachers are upset at the outcome, but the fact is, the teacher modeled behavior, and the student copied it. The teacher, including myself as an online educator, must be very cognizant of the way that you are modeling for your students. If your students can understand and perform the task in the way that you can see the growth mindset, then you know you’ve modeled well.

There was a moment where Aubrey connected to the point that, before she shared, it was more of an idea just not verbalized. She shared that “different teachers expect different expectations, but we do a lot of department or grade level work together as a staff.” When asked to explain that point that seemed like a thread among all of the participants, Tracy shared, “We, as a staff, provide the opportunity to our students that we find will be best modeled over the grade level.” Mary also discussed the department professional communications stating, “We [grade level team] agreed that streamlining how students will learn from us is necessary for consistency.”
None of the participants outlined a specific modeling method, but all participants discussed different ways they modeled to improve by discussing the need to set up time during “live classes and discussion-based learning assessments” to create “learning outcomes that will improve the thinking process and model the way it fits into the subject matter,” as shared by Mary. Cathy discussed:

If you want to make sure your students understand your modeling, you must give them a specific language or details then be aware of how much you say and how much you show. You’ve got to show them [students] how to do it. Most online students will not be able to do something because you told them, you must show and guide and redirect until they start doing it as part of their experience.

Cathy also provided an insight into her process for modeling that most of the participants engaged in at some point in the modeling experience:

I think for me, modeling happens at a different level with students. And again, some of that comes from just gauging the student's comfort level with how to engage in the discussion. For example, if I get a student who is either very unsure of how to answer or just very anxious about the discussion, anything like that, I may give them an example question. This helps the student focus. Other students just jump right in and give very complete responses and don't need that kind of scaffolding under them. The goal is to model when needed.

Megan also focused on the modeling by sharing that “you have to model over and over again until you see your students getting it.” The participants also had a connective thread that shared that students need to see the model then “model it back” to the “class, one-on-one with
the teacher, or with other students” to prove that the modeling is working. Tracy summarized this theme well by expressing:

The more practice a student has modeling what you [teacher] did to help them think about a topic, the more likely the chances of them understanding how to think critically during the discussions and live classes. We have to give them time to practice what we model, or they will never have it engrained in their learning process.

The ability to create activities that allow the teacher to model within the discussion-based learning forums, as Cathy shared, “helps guide us [teachers] to follow the Bloom’s [taxonomy] with ways to help students critically think with their peers and me.”

2.2 Facilitating the conversation forward. When asked about how they draw out critical thinking discussions within their various discussion-based learning forums, the participants each expressed how there is deep value in facilitating the conversation forward because students, inevitably, will have a moment of not knowing how to progress. Mary came full circle with the dynamic of modeling and how it connects to facilitating conversations towards critical thinking by sharing that, “facilitating a conversation requires understanding how a conversation actually grows,” because there is a moment where “conversations will peter off, and students don’t know where to go when there’s a moment of silence.” The point Mary drew upon was that

I [the teacher] model then when students start to do it [discussions] for themselves, I get the ball rolling, and then I let students take over, and then I will redirect if they start to get way off base. Students want to learn. They genuinely want to understand my [teacher] expectations and be able to impress me with their ideas and abilities to share with their peers and me. When I ask them to critically think on their own, after modeling along the
way, I want their first response to be their uncluttered, uninfluenced response to the discussion question that I ask because I actually assess the student’s learning growth through that very first response each time we discuss or when they discuss with peers. I can hear their words and process how they understand how to critically think based on the experiences over the course of the semester or year.

Aubrey shared that there are several ways she facilitates discussions that brought the student to a more critical way of thinking. She shared that “one way to get that knowledge drawn out is to find a relatable example in their lives then use the keywords from Bloom’s as ways to think about the topic from recall to synthesis.” Mary also provided the idea that it’s important to provide an opportunity to process through the model:

I will ask a question that helps students redirect or ask a clarifying question, the way our interview is going here for your work. I’ll ask the student to clarify or dig a bit deeper or consider questions that primarily see if the student can work through the models I’ve provided for higher-order thinking.

Megan, who is currently part of an online teacher training program through her district, shared that “it’s really important for a teacher to be monitoring the discussion” because as a “natural tendency, students kind of get off track” and they will become “fixated on a certain topic and lose sight of the whole goal or objective of the discussion.”

There is an underlying thread that teachers can model the desired outcome then allow students to thrive with the modeled expectation, but teachers need to have a strong cognizant presence to ensure the facilitation is a tool to keep students striving to be critical thinkers that do not hit barriers; the teacher is still the facilitator of the learning outcomes. This element is supported through a statement made by Mary, “Because I know where I want my students to go,
and I know what I want them to be grappling with, … when they get too far off track, then I kind of tug them back.”

Although not all of the participants focused on the curriculum foundations, Mary shared that “redirecting and facilitating a discussion with the expectation of critical thinking outcomes is probably easier for a teacher who is super, super familiar with their subject matter than it would be for a teacher, who perhaps, isn’t.” Aubrey connected with the points drawn out by Mary sharing:

I need to know my content to ensure I can help students when they are in a discussion and begin to navigate away from the point of the discussion. When the students hit a point in a discussion that causes them to stop talking, I [the teacher] give them a boost by throwing out a question to bring the discussion to the next level of thinking. What I want to do is take the student to the next level by giving some thought-provoking questions. Sometimes to have to start with, “Well, why did you find that or think this,” then just moderate how the students move into the higher-order thinking. My job is to help the students get the words to articulate beyond a basic understanding of a topic, but I have to know my subject too, or it [discussion] won’t get anywhere.

While there were some differences regarding how to facilitate a discussion among the different core subjects, the teachers all agreed that their discussion-based assessments and live sessions were used to improve critical thinking. Cathy shared, “Students need to know we are there to help them when they get stuck in a thought or how to stop circling around a fact and move into analyzing a topic or idea.”

Several participants shared that while they use the discussions as a way to ask students to share their ideas about the course, Tracy shared that “sometimes students don’t know the answer
and that’s different from being unable to continue a conversation.” The participants all discussed the importance of knowing when to help a student because they have the knowledge base, and when a student did not learn the material. Tracy focused on some key questions:

I have to try to figure it out [pause] Is this student not answering questions because they’re nervous…on the spot and having a delay to speak, not sure how to answer, or is this student not answering and conversing because the student really does not have any idea what the answer is or what their peers or I am talking about. Because I try to build relationships with my students, I know how to facilitate the conversation so that the student can move forward.

Mary concluded that when facilitating conversations in discussion-based learning experiences, “teachers must create effective questions that facilitate discussion and allow a student to think and respond critically.” All of the participants shared in different capacities that “I must be thoughtful in my preparation” before conducting and facilitating discussion-based learning opportunities for the students.

Theme 2 summary. The participants all discussed the value of helping students through modeling expected behaviors and outcomes. As the depth of the interview questions increased, the participants discussed the importance of encouraging students when they were unable to engage in a discussion-based learning forum. While the forums varied among the participants, it was clear that each participant made a priority to allow students to think about the questions asked before feeling obligated to engage in the student discussions. For all of the participants, there was a desire to help students make important higher-order thinking connections from questions asked and what students could not do that for themselves, the participants articulated questions to bring the communication back on point. Some of the participants exposed their
understanding of specifically designed approaches to engage cognitive development or growth-mindset. Unified though through separate responses, the participants shared it was critical to “listen to students” before feeling a need to react. Ultimately, the participants expressed a need to deepen the questions to move beyond cursory responses and that modeling the expectations helped students engage in developing self-awareness for improving critical thinking skills.

**Theme 3. Relationships in Discussion-Based Learning Forums**

The third super-ordinate theme developed around the participants’ perceptions of relationships driving critical thinking growth during discussion-based learning forums. The participants all drew on how relationships helped support the students’ desires to perform well in discussion-based learning forum experiences. As the questions drew out answers for this study, the participants all spoke upon the ideas of trust, taking risks, and support as the success elements for students participating in the discussion-based learning experiences. An interesting perception all of the participants expressed was that they felt that online students will have a better ability to speak upon a topic, beyond recall of facts, when the student feels like what is being said matters. This theme directly circled back to the initial research question. Within the super-ordinate theme, the two subthemes emerged: trust provides the opportunity for open communication, and educational risks occur when students feel supported.

**3.1 Trust provides the opportunity for open communication.** During a conversation with Mary, she made a specific point that seemed to weave through all of the participant interviews; she shared that, “Learning happens through discussion, working as a team, sharing, taking responsibility of the learning, … however, none of this can happen for a student if the student does not trust the environment.” Once this statement unveiled itself, the same idea was discovered many times in the other participant discourse. All of the participants shared the
elements of relationship building as a necessary component during the question that asked about using discussion opportunities to seek a deeper level of meaning among ninth-grade students.

For Aubrey, the element of relationship building and trust were evident when she disclosed that to increase critical thinking among her students, she shared:

Well, you got to go with the student first; they're young. They're now in high school, and they’re not in a traditional high school. As a teacher, you’ve got be able to get that deeper knowledge and get the student talking, but they can’t see you, and they can only hear you. A lot of them [students] are very shy in the beginning because they’ve most likely never had discussion-based anything, then I ask them to engage in a discussion that requires them to teach other students or me.

Aubrey continued by sharing some of the ways she engages in trust and relationship building among her students:

To build that relationship, you have to share and find ways to relate with the student. When you're able to have a face-to-face via webcams during the one-to-one [meeting] or a live class, … they're able to answer you instead of through an email and wait for an answer or a text or something else. The students can open up a little bit more because they're realizing that you're also a person, and you're there to assist and help. The live sessions build relationships and start to open the doors to further discussions and conversations… which you can use to further learning … furthering their critical thinking in later discussions.

Aubrey connected well with her students in live sessions. She shared a recording of her live session from the beginning of the semester to later in the semester, and it was evident that by the end of the semester, students arrived in her courses more engaged and socializing before the
actual lessons began. The first-week lesson showed Aubrey building relationships through questions that helped her and the classmates better understand each other. She even played general knowledge science-based games. By the mid-semester point, students gathered early to talk and even question topics from the readings, not with the teacher but with each other.

Mary had similar experiences as she expressed that her Saturday live class was well-attended though no being on a traditional school weekday. “My students realized that Saturday lessons were discussions of topics that really challenged their modern-day thinking as connected to the past.” There was a moment when Mary reminded me, “Students don’t just show up to Saturday class and just start talking, you have to create a culture of trust. You have to give them a reason to talk about their thoughts.” Mary also shared this point that is poignant to trust:

Without a relationship, there really is no learning. Education is fundamentally about the relationships that are involved. And I think you see that more and more today being trumpeted by critics of online education, that the teachers don't know the kids, the kids don't know the teachers, there's no connection. … I think that effective online teachers actually create trusting kinds of relationships; they manufactured them by creating things like a face-to-face field trip or having open office hours in Skype or Adobe Connect so that webcams can be used, and voices can be heard. … There is a robust growth of technology. With my students today, I find myself heavily depending on technology tools and applications that allow my students to see me, laugh with me, talk with me, and do the same with their peers. They are much more likely to talk to each other than me once they figure out who’s behind the keyboard.

All of the participants shared that they engage in using communication tools that allow real-time interaction such as voice and face-to-face video chats as a means to connect with their
students. Slightly different than the other participants, Tracy shared that her students have discussion boards that are only monitored by her and the academic coach. The discussion boards are set up to allow the students to “talk with each other about the course content. I monitor it to ensure the students are not misguiding each other.” She also shared that “Seeing students build relationships through content question support helps me develop discussion-based questions during my live sessions that will engage them.” When asked to clarify the point, Tracy explained that “Building strong, supportive relationships with even just a few students shows other students that we are all humans working together to learn and think beyond one plus one – that math has a beyond the textbook meaning.”

During the discussion of relationship building in her virtual classroom to improve the discussion-based assessments, Megan shared details of the first assigned discussion she had with students:

I think it was really obvious which students were doing the learning [before the discussion-based assessment], and which ones were doing the process. By that I mean, when you get to the opportunity of having a discussion with your student, you can truly understand which kids are partaking in the online class with the scholarship and the rigor that they should be dedicated to it, versus just going through the motions of learning facts. It was very frustrating for me when students were going through the motions of a discussion because it was obvious that they weren’t dealing with anxiety … they just actually had no idea what I was talking about. And it was painful to get through this kind of a discussion because I felt like I was trying to pull information from them that never existed in the first place. It almost made me wonder if they were even doing the online class or if someone was doing it in their place.
Furthermore, Megan expressed that when her students took time to engage in the process of using the discussion boards to develop relationships and reached out to talk with her on a regular basis, she shared, “I do think the discussion-based forums are a really critical component not only to hold the students accountable for their own learning, but you build relationships with the students that seem to give them reason to talk more about the subject matter I’m teaching.” This sentiment was professed in similar ways among the participants.

3.2 **Educational risks occur when students feel supported.** Findings throughout the interviews all lead back to the idea that if the participants wanted their students to critically think during discussion-based learning experiences, the students needed to feel supported by their teachers and their peers. The participants all shared that they could provide tools, rubrics, and models along with using best practices for the subject matter, but if they did not have students that felt connected to the culture of the classroom environment, the student would not take risks with critical thinking or even participating.

While each of the participants discussed the value of supporting students, I believe Mary’s comments summarize the points of the theme when she profoundly stated, “Teachers must guide their students to understand growth mindset and help them [students] not to take constructive criticism personally but as a learning experience.” Something else that revealed itself during the interview process when Mary discussed a moment of connection and relationship building that established because of student support:

Student support must be daily and maintain a growth mindset, and constructive criticism must not be taken personally. Criticism is a way for us to all grow and think and communicate. I've had students actually say, "You know, I don't think that that is the big question here," after I ask what I thought was the big question. Or, I remember a student
saying, "Yeah, I don't think that that's the biggest question you could have asked." And to me, that's a great relationship moment for us both. One, it means they really understand what Socratic thinking is all about and that I’ve modeled the way to challenge questions and engage in critical thinking. And two, because I’m not ego-driven, I don’t just mute that student because my little academic ego got damaged because some student questioned it, I engage the student to go further and give me the big question that we can all discuss.

Mary’s years of experience within education helped guide this conversation as she also mentioned the need to “give the students who challenge the teacher a moment to shine because more often than not, the student doesn’t get the opportunity to engage at home and does this kind of challenge to gain an opportunity to be heard… teachers have to recognize the opportunity to build trust, support, and engage.” Cathy also made a connection to the relationship piece of the learning process by expressing, “If I am more willing to converse through the critical thinking questions as a relationship and not a series of questions, the more I was able to draw out the higher-order levels of thinking within my students.”

Many of the participants shared examples of their discussion-based learning forum relationships and how the more they engaged with their student, the more risk the student was willing to take with exploring the higher-order thinking expectations of the school’s discussion-based learning forums and assessments. For Tracy, she brought to light that …students can feel like they're overly assessed, so when they are asked to talk about what they know or how they know something or even apply it to the real world, students feel weird or hesitant. If I want my students to truly talk to me about math concepts
beyond facts, I really need to create a relationship that reduces the anxiety about this kind of learning.

For all of the participants, they have brick-and-mortar teaching experience. Each of the participants shared examples of how there is a big difference in creating relationships in virtual education than in brick-and-mortar classrooms. For several of the participants, they expressed their own need to have to reach out more to their virtual students. Aubrey summarized the participants’ general disposition when she pointed out that, “Online students build their relationship with their peers and teachers when they can rely on them to be there when they have questions.” Also building on Tracy’s reflection of student connection, Aubrey shared that “to be able to get that deeper knowledge and get students talking, because many of my online students have anxiety and shyness, I work hard to develop discussion activities that build relationships.”

Cathy, Mary, and Tracy both discussed how building a safe and trusting learning environment for students requires “open communication” with a “shared purpose” in mind when creating live discussions. To further enhance the need to develop the experiences among the students, Mary mentioned the idea that “because all of us are in one team working with all of the ninth grade students, the students see our overall purpose among all of the core classes.” Cathy also expressed that “there is value in having a team environment where we create a consistent process that’s modeled.” Megan shared that while she’s new to online learning, she did find that her students “commented on how everyone showed the students how to grow as critical thinkers by being a team of teachers sharing a common expectation.” Through these examples, the participants showed that, as Mary explained, “When failure is an option, and students know that making mistakes in my live lesson is okay, they come back to the next interaction with students or myself in a stronger and more engaging way.” The overall understanding among the
participants was that setting a climate and an expectation within the virtual discussion-based learning forums was not easy, but once they did, the students connected and took more educational risks.

Cathy shared a perspective that was not directly stated, but rather implied, by the other participants when she was asked what advice she gives her virtual students:

Students must be comfortable establishing that open communication relationship with the teacher so that the student doesn’t feel nervous about expressing personal and critical opinions in the classroom, and teachers must develop a culture where students feel like all opinions are valuable. And that if there's anything that happens in that live setting that you're [the student] unsure about, or if something happens that makes you [the student] uncomfortable, or not feel like you're [the student] valuable, that you [the student] needs to let me [the teacher] know.

Cathy continued this advice by sharing that students need to feel engaged in that discussion rather than feeling like giving up. She expressed a deep concern that students do not realize the full value of trying and that “learning how to engage with a discussion is something that you have to practice and learn and gain confidence in (pause) it’s something that comes with growth and understanding of how to do it.” Then Aubrey connected on that same thread that “giving up is easy, but I don’t let them give up; I keep working with them even if it’s a phone call to share successes and growth points.”

While none of the teachers spoke at length to their growth as a teacher within the virtual environment, the participants had a consensus attitude that being an online teacher was much harder and required a strong understanding of child development as well as curriculum development that interacted with students. Tracy, a curriculum developer for several online
programs through the years, explained that curriculum companies are working hard to “develop online experiences that create interaction and group-based experiences that remove the asynchronous aspect of former virtual programming.” She also discussed the idea that “project-based learning is also being added to require learning guides helping the student at home to engage in conversation about a topic and not just give answers.”

**Theme 3 summary.** While there is much discussion still needed regarding the relationship component of this study, it was evident among all of the participants that students who feel more connected to the teacher and the culture of the classroom developed by the teacher noticed a significant willingness from their students to participate and take risks with critical thinking. Unfortunately, there was not much discussion surrounding students taking control of the discussion-based learning forums once the teacher set the culture, but the thread that weaved through the discussions had with all of the participants was that with time, students were able to lead and manage discussions both on-on-one and with peer groups.

In general, all of the participants felt that students need to communicate honestly with the teacher and peers while attending live lessons and discussion-based assessments and peer discussion groups. Finally, for all of the participants, there was a consensus that teachers must create a culture that embraces the foundational growth of the mind as well as the human spirit to risk beyond boundaries to manage the next level of critical thinking. Overall, the spirit of a student is challenged and motivated to grow as a learner, but it requires a balance of direction with focus and an element of personal connection from the teacher to take risks that lead to higher-order thinking and direct participation output. The participants shared that they know there is great value in relationship building and development of a culture that drives students to participate in synchronous learning experiences.
Summary of Research Findings

Chapter Four offered findings for the focus research question and three sub-questions used to guide this interpretative phenomenological analysis. This study was completed to explore the ways online instructors were using online discussion-based learning forums as a means to enhance critical thinking skills among ninth-grade students. Data was collected and analyzed in this qualitative study resulting in findings that coded questionnaires and interviews into summaries of three major themes, each having correlating subthemes. Although each participant interviewed summarized their own experiences, perceptions, and opinions of their online experiences with students in discussion-based learning forums, three major themes were discovered and threaded among the five participants. To clarify the themes, presented here are the super-ordinate themes:

1. Design of DBLFs matters

2. Managing and monitoring discourse

3. Relationships in DBLFs

Within the three super-ordinate themes were seven subordinate themes: (1.1) use of Bloom’s Taxonomy, (1.2) synchronous discussion opportunities, (1.3) assessing progress towards successful educational outcomes; (2.1) modeling behaviors to develop student outcomes, (2.2) facilitate the conversation forward; (3.1) trust provides opportunity for open communication, and (3.2) educational risks occur when students feel supported.

These themes represent how teachers perceive how best to engage students to improve critical thinking when participating in online discussion-based learning forums, as discussed throughout their respective school and core courses. While these themes may change from school-to-school and teacher-to-teacher, the experiences among these five participants from the
same school and teaching the same grade-level to expose how teachers who team their understanding of teaching methods, classroom management, and child development to better their students’ understanding of content will improve students’ critical thinking. Unfortunately, the themes discovered did not provide a list of specific tools or create a particular educational theory; however, it did provide a strength to the Community of Inquiry framework that continues the roadmap to better understanding how students function and advance within the virtual classroom.

Chapter Five of this study ties together the research findings and how they relate to the respective research question and sub-questions. The discussion of the research findings further establishes connections between the research findings and published literature regarding the Community of Inquiry framework and critical thinking theory. Also, the limitations of the study, its significance to educational practice as needed for future programming for virtual education, as well as recommendations for future research, are discussed. Finally, the conclusions found within this study, as shared in the final chapter, expresses how to directly apply knowledge for stakeholders interested in utilizing discussion-based learning forums into, currently, asynchronous classrooms as a way to create a synchronous learning environment.
Chapter Five: Discussion of the Research Findings

Chapter Four provided the data of the study through the presentation of themes and descriptive quotations from participants. This chapter focuses on the key findings, interpretation of the findings in relation to the literature review, connections to the Community of Inquiry framework, implications, limitations, and potential support and modifications for future studies. This chapter restates the problem of practice and methodology for this study. The themes are presented as interpretations and further engages the relevance to the literature review and the theoretical framework. Once the work is connected back to the literature review, there is an evaluation of the suggestions for further practice and research. The limitations provide an opportunity to disclose the challenges incurred by the researcher. Finally, the chapter concludes with a summary of future study opportunities and significance for future stakeholders.

Revisiting the Problem of Practice

With the growth of K-12 online education programs, the purpose of this study was to examine the ways online instructors are engaging students in discussion-based learning forums as a means to increase their ninth-grade students’ abilities to critically think while engaged in fully online high school academic experiences. This research was important because there is an increasing concern among virtual educators that ninth-grade students are lacking the ability to critically think among their virtual learning peers due to a construct of curriculum that is designed differently in elementary and middle school programs causing ninth-grade students to struggle with online discourse (Garrison, 2017; Harasim, 2000; Halx & Rebold, 2005).

The knowledge generated from this study is expected to inform online instructors on how to develop and format content to include discussion-based learning forums into the curriculum to improve critical thinking experiences for their online ninth-grade students. While this research
focused on how online instructors are using discussion-based learning forums in their specific virtual school’s environment, the articulations of outcomes, feelings, and practices are relevant to the variety of education programs utilizing or looking to implement discussion-based learning forums into the curriculum.

**Review of Methodology**

This qualitative study was specifically designed to answer the following primary research question: *How are online instructors using online discussion-based learning forums as a means to enhance critical thinking skills usage among ninth-grade students?* The following three sub-questions served to guide the researcher to develop a conclusion to the central question:

1. What are the characteristics and patterns of instructors’ teacher presence to promote critical thinking skills used to enhance DBLF?

2. How does dialog/discussion opportunities seek to achieve a deeper level of meaning among ninth-grade students learning in an online community?

3. How do teacher facilitation techniques affect students’ cognitive presence?

To answer these questions, an Interpretive Phenomenological Analysis (IPA) was conducted to explore the common phenomenon and make sense of the five participants’ experiences utilizing online discussion-based learning forums as a means to enhance the critical thinking skills of their ninth-grade students. Their experiences were explored through individual, in-depth, and semi-structured interviews. Participants’ responses were recorded, transcribed, listened to and reviewed multiple times as to not miss nuances important to the experiences, and coded to identify emerging common themes among the individual experiences. Elaborate probes were used and recoded when the findings were not clear for the researcher to clearly identify key findings.
Presentation of Key Findings

The key findings supported the notion that online instructors are using discussion-based learning forums to enhance critical thinking within ninth-grade students. The key findings were categorized into three super-ordinate themes with associated subordinate related themes to support the characteristics and patterns of instructors. Five participants were interviewed, which resulted in the emergence of three major themes and seven nestled subordinate themes. The theory for how online instructors are using online discussion-based learning forums as a means to enhance critical thinking is multi-dimensional and comprised of three super-ordinate themes: (1) Design of Discussion-Based Learning Forums Matter, (2) Managing and Monitoring Discourse, and (3) Relationships in Discussion-Based Learning Forums. Some of the factors relate primarily to the individual, some to the curriculum, and some to the nature of others within the virtual environment. All of these factors contribute to an environment where teaching, cognitive, and social presence are proving to help teachers increase the critical thinking skills applied by ninth-grade students utilizing discussion-based learning forums within virtual education. The thorough analysis of the participants’ stories and experiences lead to the overall conclusion of the study. To conclude the study, the next step is to interpret the themes as relevant to the study. Table 1 and Table 2, located in Chapter 4, detail the specifics of themes and participant agreement among themes.

Interpretation and Relevance of the Key Findings

While designing the discussion-based learning forums, managing and monitoring discourse, and building relationships may vary among the participants, each of the three prominent themes were major factors in enhancing critical thinking among the ninth-grade students. These themes have a dynamic element to them because they contribute to the on-going
confirmation that the Community of Inquiry framework (Garrison et al., 1999) is necessary to the facilitation of techniques that affect students’ cognitive presence. The following section describes each super-ordinate theme in detail and how it connects to the literature.

**Key Finding 1: Design of the Discussion-Based Learning Forums Matters**

When reviewed for the overall aim of determining characteristics and patterns of teaching presence among participants, all five participants perceived that the way the course discussion-based learning forums were designed was critical to enhancing students’ critical thinking ability. The participants, all located at the same school site, found that using Bloom’s Taxonomy (Bloom, 1956) to develop questioning techniques within synchronous discussion opportunities was valuable because it offered students a familiarity among teacher expectations. As expressed by the participants, before there was a unity among departments to create questions and practices for discussion-based learning forums, using Bloom’s Taxonomy, the students noticed a variety of styles which lead to confusion among students. Teachers noticed more participation when there was consistency among teachers across the subjects. These findings support the work of Ma, Han, Yang, and Cheng (2015) that the way instructors prepare course work and design overall curriculum guidance significantly increases the participation of tasks within the curriculum.

Research also shows that the course design requires a strong understanding of the constructivist approach to learning and the importance of building curriculum in a systematic way that builds learning experiences to achieve intended higher-order thinking abilities (Szeto, 2015).

Running parallel to the discussion of curriculum design was the consistent use of synchronous discussion opportunities. All of the participants agreed that some element of synchronous learning was needed to encourage students to engage in discussion requiring critical thinking. Martin, Parker, and Deale (2012) presented findings that synchronous courses had
increased the opportunities for dialogue and, in turn, increased the way a student thinks about learning experiences. Synchronous courses provide student-to-teacher and student-to-student interaction in a real-time discussion that allows for feedback that guides the student to think in a new-found way (Martin, Parker, & Deale, 2012). The findings of this study also validate the work of Chakraborty and Nafukho (2014) and Duderstadt et al. (2002, p. 75) who state that the online course design and implementation for discussion-based learning forums are important when wanting to create connection and interest between participants as a means to stimulate higher-order thinking skills.

Within this key finding, the participants felt that the discussion-based assessments were a valuable component to the discussion-based learning forum curriculum; though, there was a variation regarding how to implement the questions built from Bloom’s Taxonomy and Socratic Seminar. Though this key finding did not completely answer the question regarding how teachers facilitate learning, these findings are consistent with Dewey’s work (1938) that focuses on the pedagogical perspective that uncertainty as a natural dynamic of understanding sometimes implies that experiences cannot be perfectly designed or planned. Based on Garrison’s Community of Inquiry work (2017) and presentation of teaching presence, educators and participants must “not lose the educational and intellectual climate when direct instruction is limited.” In other words, educators and those they teach should not stop thinking intellectually or not challenge difficult topics when the instructor is not teaching in a straightforward, standing in the front of the class kind of way directly presenting the information. All the participants agreed that the assessment development should maintain validity among teachers, particularly for ninth-grade teachers, to ensure consistent programming to maintain successful transitions among students. This finding is confirmed by the research of Tsai et al. (2013) that states students
become better critical thinkers when they are provided with content that is designed to allow students more experimental and questioning design.

**Key Finding 2: Managing and Monitoring Discourse**

The participants all discussed the value modeling as a means to help ninth-grade students better understand the expectations of discussion-based learning forums. Among the participants, for this particular key finding, there was an overarching question of trying to find ways to help students move from the process of inquiry to the action that leads to their resolution of actually critically thinking among peers and teachers. After the transcription of participant interviews, the subordinate themes emerged: (2.1) Modeling behaviors to develop student outcomes, and (2.2) Facilitate the conversation forward. These findings are consistent with previous research from Garrison (2016, p. 77) that “students must be supported to develop metacognitive awareness” that will help students take more responsibility to manage and monitor their learning.

Reviewing the previous research of Beckmann and Weber (2016), who caution how discussion-based learning forums are monitored, it was clear that all of the participants felt it a necessary part of the content implementation to have time for the teacher to model outcomes and then have students take risks. Beckmann and Weber (2016), Garrison et al. (1999) and Gasevic, Adesope, Joksimovic, and Kovanovic (2015) present the value in ensuring online learning environments and course design motivates students through the facilitation of purposeful work that offers guidance and engagement that will lead to high levels of cognitive presence.

The participants shared the idea of modeling and how that would occur in each of the core content areas. They also expressed that creating a list of what critical thinking skills are and how their students would use the listed skills was valuable. My findings did not generate a list of specific critical thinking skills; though, the participants referred to Bloom’s Taxonomy and the
way the school asked for it to be modeled to the student when using discussion-based learning assessments within the forums set up by each teacher. This statement of finding connects with Rowles, Morgan, Burns, and Merchant’s (2013) research that while teachers believe they are teaching critical thinking skills, having a definition of critical thinking skills among the team would allow instructors to design curriculum that incorporates the defined critical thinking skills which in turn would better develop student critical thinking.

**Key Finding 3: Relationships in Discussion-Based Learning Forums**

All of the participants shared the perception that active relationship development is driving critical thinking growth during discussion-based learning forums. Yearwood et al. (2016), Garrison et al. (2001), and Dewey (1910) presented within their work that students benefit when they feel supported, understood, and prepared to take risks within learning that requires critical thinking. The participants all drew on how relationships helped support the students’ desires to perform well in discussion-based learning forum experiences. Rodgers (2002) makes a point in the research discussion to state that the ability to develop critical thinking comes from exposure to communities of learners and facilitators willing to create a safe opportunity to take risks.

In a virtual environment, where instructors do not have the ability to meet face-to-face, unless through webcam, students may never have the opportunity to meet their peers or educators. The findings of this study indicate that developing a sense of community can be particularly challenging, but all of the participants shared that they created ways to purposefully engage students in synchronous group and individual discussion-based learning forums. The participants created live lessons to facilitate student interaction that was cooperative, thought-driven, and positive. The research shares that interpersonal and open communication directly impact group cohesion which also contributes to students increasing their desire to collaborate
(Garrison, 2017). My findings connect with the notion that deep and meaningful learning experiences and not just social interaction will help teachers facilitate communities that advance cognitive interactions (Garrison, 2017). This study did not incorporate more information about social-emotional issues that may or may not impact cognitive presence as discussed in the Community of Inquiry framework.

Based on the study, teachers facilitate ways of challenging each student and motivating them to grow as a learner, but it requires a balance of direction with focus and an element of personal connection from the teacher to help students bond within a community that allows for failure that leads to higher-order thinking and direct participation output. The study findings are similar to that of Dawson (2006), which determined that significant relationships exist among a community of learners when students have a high level of engagement and support. The research from Johns Hopkins University School of Education, Center for Technology in Education (2010) confirms relationships within a community of learners will create participation and cohesion in synchronous learning environments when instant feedback and acknowledgment of questions is not delayed. Jeong and Liu (2017) and Xia and Siragusa (2013) confirm this finding as they present the effective use of online discussions to improve critical thinking comes from a balance of tools such as quality of relationships that show value in educational experiences and depth of augmentation in community building within the online classroom. Although these findings are generally compatible with the Community of Inquiry framework (Garrison et al., 1999), the original construct of Community of Inquiry grew in popularity with a better understanding of the asynchronous, online learning environments within higher education; though, there is a significant parallel within K-12 online education.
Interpretation and Relevance to the Theoretical Framework

This research was grounded in the Community of Inquiry theoretical framework because it establishes the foundational work for critical inquiry and collaborative construction of personally meaningful and shared understanding as needed in all education programming (Garrison et al., 2000). Garrison, Anderson, and Archer (1999) designed the COI as an understanding that provides a guide to e-learning practice for purposes of facilitating higher-order learning. The COI framework guides the facilitator to better understand the transformation of how to approach thinking and learning in virtual classrooms (Garrison, 2017).

The Community of Inquiry (COI) framework was utilized within this study as a foundation for the understanding of online education functionalities (Garrison & Arbaugh, 2007). The COI provides strategies and depth to better understanding the paradigm shift in teaching and learning through online education (Garrison, 2017). The rationale for using the COI framework was aligned with the goals of the study due to the transformational and collaborative constructivist nature of the work. The COI focuses on deep and meaningful learning opportunities and enriching experiences for online learning and is developed around three interdependent elements – social presence, cognitive presence, and teaching presence. Because all three elements are necessary to create a positive sense of identity in online learning, the study matched well with the framework. Due to the research focusing on the characteristics and patterns of instructors’ teaching presence to promote critical thinking and how the teachers are facilitating critical thinking advancement among students, the COI framework seemed a natural choice.

The participants in this study, based on key findings, are utilizing portions of the COI without necessarily understanding the foundations of COI. According to all of the participants,
they were not aware of the COI framework before the study. Based on their formal education experiences and what was unanimously discovered through transcription, the participants have an organic understanding of COI despite not understanding the entire framework. The following breakdown of the COI through individual presences summarized how it organically embedded in the study.

**Teaching Presence**

Teaching presence relates to the process of design, facilitation, and direction throughout the learning experience to realize desired learning outcomes (Garrison et al., 1999). All of the participants discussed levels of the teaching presence of the COI. This was reflected in two of the three super-ordinate themes and specifically within the subordinate themes nestled within those super-ordinate themes. Each of the participants expressed varying levels of importance to design, facilitation, and direction of the curriculum when creating discussion-based learning forums within their online classrooms. The opportunities and tools used, and expounded upon, by each participant showed that their informed leadership allowed for educational opportunities that are purposeful and developmentally appropriate for students learning how to engage in a curriculum designed for discussion (Garrison, 2017). The models shared by the participants implied, to a surface extent, that within their school environment that the collaborative constructivist approaches are creating a learnING-centered approach rather than a learnER-centered approach (Garrison, 2017).

The Community of Inquiry framework focuses on education being a collaborative process that requires teachers to have the responsibility to prepare and design ways for students to engage (Garrison, 2017). The student must take responsibility to focus on what the constructivist model of learning intends as a way to engage learners not only in student desired
topics. Unanimously, the participants, through their discussions throughout the study, provided
great support for Garrison et al. (1999) that it is the teacher who balances the conditions for
higher-level learning. Each participant also discussed the value in creating the necessary balance
between the cognitive and social presences to ensure a foundational learning opportunity
(Garrison et al., 1999). Also, important to note is that the current study participants and the COI
framework connect with Dewey’s (1938) work that addressed the need for curriculum and
programming that provides purpose, structure, and educational leadership. For these
participants, they understood that facilitating student-to-student and student-to-teacher
interaction within discussion-based learning forums was challenging, so they discussed the
significant importance in developing settings that were collaborative and used cognitive presence
as a foundation for curriculum design and discourse management.

Social Presence

Collectively, the participants expressed the need for a connected community. Garrison et
al. (2000) related social presence to an established, supportive learning community. The
participants all discussed best practices that helped them provide students to communicate within
a trusted location: a discussion-based learning forum with live, synchronous teacher and student
interaction. Garrison et al. (2000) expressed that students can develop a unique individual
identity while establishing social relationships within virtual education if they felt safe to speak.
Maddix (2012) also focused on how social presence, as defined by COI, is the opportunity for
students to define themselves within a community as they seek the feeling of acceptance among
peers and instructors. For this study, the participants gave a few examples of their structures for
supporting social presence. They encouraged peer responses, structured opportunities for
personal interaction, and set-up partner or small group discussions during live classroom
experiences. According to the participants, social presence was completely designed into all discussion-based learning forums, although several of the participants shared that the first few weeks of the course required extensive modeling (teaching presence) to explain to students the art of conversation. As a whole, the participants reflected that when the students were allowed for written and oral communication and reflection there was a greater opportunity for students to show higher-order levels of knowledge. Though, the participants also discussed that students would worry more about the overall grade instead of how they are presenting themselves as critical learners. Garrison's (2017) study reported that “a sense of belonging, open communication, and cohesion are important conditions for a community of learners.”

**Cognitive Presence**

Within the goals of the COI framework, cognitive presence is explained as a practical way to observe and assess critical reflection and discourse within a community of inquiry (Garrison, 2017). Although the participants discussed the elements that lead to the improved cognitive presence among the student community, this study did not disclose specific techniques (as hoped) to specifically draw out student higher-order thinking abilities. What the study did accomplish was sharing ways teachers are designing and facilitating curriculum elements to try, with their best practices understanding, to help students reflect and internalize communication within discussion-based learning forums located in online classrooms. The COI framework goal for cognitive presence is to facilitate dialogue to achieve the greater purpose of achieving higher-order learning outcomes and to use the outcomes as a means to assess critical thinking concerning specific developmental phases of practical inquiry (Garrison, 2017).

For this study, the participants expressed how they inadvertently follow the Community of Inquiry cognitive presence steps for critical thinking to occur. The participants discussed how,
during the design (teaching presence) of curriculum, they all thought about activities that conceptualize problems or issues that students can discuss as a community of inquiry (Garrison et al., 1999). The participants also focused on how the discussion-based assessments used within their discussion-based learning forums helped students think about a problem, explore ways to present relevant information, and create new ideas around the topics within each subject. For the final element within the discussion-based assessments, the participants all discussed, at varying levels, developing ways for students to construct meaningful explanations to their curiosities within the subject. The discussions had with the participants regarding the process of how they draw on student knowledge stemmed from an understanding of the Community of Inquiry without actually having heard of the Community of Inquiry. Only one participant shared she knew about the work Garrison et al. (1999) did with Community of Inquiry, but it was not clear that she knew each of the steps in-depth. Based on the Community of Inquiry framework, the participants felt they were supporting and sustaining purposeful opportunities for students to show cognitive presence within the learning community.

**Summary**

The Community of Inquiry theoretical framework represents an approach to critical thinking and learning that expresses the ongoing need for e-learning experiences to reflect a collaborative constructivist approach. For the modern online classroom expectations, students are being asked to approach learning using a practical inquiry method that requires engagement among peers and facilitators. The study appears to support the need for the balance of the social, teaching, and cognitive presences; though, there is limited conclusion due to the limited participant number and qualitative nature of the study.
Based on the shared experiences of the participants, the Community of Inquiry does exist in the school site for which all of the participants were associated and instructing; though, the participants were not aware of the Community of Inquiry framework prior to the study and were creating experiences to increase critical thinking based on good practices and not the Community of Inquiry framework. The findings of this study present an understanding of what teachers can do to prepare coursework to meet the needs of online student critical thinking needs; though, a different study is needed to provide a detailed curriculum of best practices around the Community of Inquiry framework.

**Implications for Practice**

Wilson (2012) suggests that interdependence and cooperation are essential aspects of human development and is what drives the evolution of the learning process. This connects to the discussion Garrison (2017) shares in his review of the COI that collaborative inquiry is necessary to develop the elements of metacognition that stimulate lifelong, continuous learning. While the outcomes of this study did not produce a specific list of facilitation techniques, the participants did share several needs for successful online engagement that will enhance critical thinking. From the main themes of this study, it becomes evident that there needs to be a focus on professional development for all staff members who work with online students.

**Professional Development**

Throughout the study, Mary always looped back to the critical point that her students were not always clear on how to critically think. As an important element to collaboration within the online classroom, Mary also discussed that modeling critical thinking behaviors for her students was important because it introduced students to the exact manner that she wants her students to develop critical thinking abilities. When her students were able to collaborate in the
online classroom, using the modeled behavior, Mary offered positive feedback and praised to support her students’ critical thinking growth. The participants all shared that the school needed to provide more professional development opportunities for teachers to discuss ways to improve critical thinking within the discussion-based learning experiences.

As a result of this study, the participants unanimously shared that synchronous interactions are very much needed by students if the teachers are hoping for critical thinking advancement. There was significant evidence that institutions providing and supporting online education need to offer professional development opportunities that discuss the Community of Inquiry framework as a means to better understanding the practicality of collaborative approaches to thinking. The professional development may offer what the Community of Inquiry framework is and how the three presences work together to create active and creative engagement among learners to think and learn collaboratively within online education. By providing online educators an opportunity to discuss the Community of Inquiry framework, instructors can better understand the flow of interaction and how the way students and teachers engage can determine the efficiency and productivity (Pentland, 2012) of the discussion-based learning forums. Themelis (2014) shares that the tools that enhance communication within virtual education have an important role in the learning experience and how instructors share their academic expectations within a course. The way to distribute the professional development of the COI frameworks, based on my research, recommends instructors engage in the interwoven nature of the presences so there is an organic understanding of how the COI thrives; though, the presenters would function best if being a mix of COI experts and school-based administrators who point out how and when each of the presences are happening and creating a continuous
thread of engagement among practical application of the COI and the effectiveness of a community of inquiry.

**Growth Mindset**

From the findings of the study, there appears a need for training in the growth mindset framework. Dweck’s (2016) growth mindset research discusses how students will either thrive in the moment of a difficult challenge or shut down completely. The participants shared that many of their students attempting discussion-based learning forums, without having any experience with them, will share they cannot participate in them due to anxiety or lack of understanding or feeling put on the spot to engage with people they have not met face-to-face.

This study offers suggestive evidence for providing teachers with an opportunity to better understand Dweck’s (2016) growth mindset work which will allow teachers to better understand the premise that with practice, perseverance, and effort, people have limitless possibilities to learn and manage failures as a positive to learning growth.

**Implications for Self**

Online discussion-based learning forums are associated with the use of critical thinking skills used among students and instructors (Arend, 2007). To further this statement, developing critical thinking skills for success beyond the classroom is a recognized primary goal of colleges and universities (Stedman & Adams, 2012); therefore, it is evident through this study that ninth-grade students need to have guidance and access to acquiring these skills when taking online courses. Therefore, it is important to note that there still is no universal definition of critical thinking and how it should be approached as a facilitation tool among instructors using discussion-based learning forums within online courses.
From this study, it is evident that facilitators understand that critical thinking involves more than just accumulating and processing information. The participants all shared that the students needed modeling opportunities to facilitate responses through the lens of Bloom’s Taxonomy and what it meant for the students to use the higher-order thinking levels when discussing information learned among their courses. The participants shared they had to help students understand that critical thinking involved identifying, analyzing, synthesizing, and evaluating information to generate actionable responses for effective discussions within the discussion-based learning forum and assessments. While developing critical thinking abilities is often looked at as an educational objective, the participants were not guided by their administration as to how to effectively teach critical thinking skills to online ninth-grade students. As a researcher, this feeling among staff promotes the idea that instruction is needed among online programs as to how students are able to learn in a way that advances higher-order thinking abilities.

Throughout this study, it seemed evident that the participants understood the need for developing the necessary critical thinking skills used by students, but the school administration did not provide professional development, problems of practice teams, or curriculum designed to engage students in such kind of cognitive skills necessary to develop higher-order thinking abilities. The participants encouraged students through modeling and facilitation of expectations, but the school curriculum developers and administration did not help develop methods identified through research that help develop critical thinking and higher-order cognition among students. It cannot be assumed that online instructors are trained or knowledgeable in techniques that advance students’ critical thinking abilities.
When online school curriculum developers are developing curriculum for students that requires them to engage in critical thinking, educational institution administrators and educators need to have ongoing training throughout the year in ways to explain how to facilitate constructs identified as skills that encourage critical thinking advancement. Online institutions should consider training for online instructors that explain higher-order thinking, Bloom’s Taxonomy, critical thinking frameworks, and common assessments and opportunities that engage online learners in a best practices model to help students attain the important thinking skills necessary for post-education engagements.

As learned through the participants within this study, the academic administrators and curriculum developers assumed that the online instructors understood the levels of critical thinking and higher-order skills necessary to engage in discussion-based learning forums. For the future success of online educational institutions, there needs to be an ongoing discussion among staff regarding how students learn, think, and advance with information beyond rote memorization and the bridge to making a deep sense of new information learned, even at a cross-curricular level. The participants worked tirelessly to help students better understand the ways to stimulate critical thinking; though, it was shared that many of the department discussions were more about what to do and how to create higher-order thinking questions with little understanding among all staff as to the objectives required for critical thinking advancement.

As a researcher, it is noted there is much more that needs to be discussed regarding the structuring of questions and discourse experiences during discussion-based learning forums. A necessary component needed, based on the results of this study is the understanding of parts-whole relationships and techniques, strategies, and questioning that promotes deeper levels of thinking among ninth-grade students.
It is critical to note that this research showed that these participants, as a collective, were working towards assisting ninth-grade students in understanding their thinking and how they are articulating that thinking beyond base knowledge and fact recall. The participants, while a small sample among the thousands of online instructors, offered a strong understanding of how to implement and facilitate critical thinking skills despite a lack of administrative support; though, they did not offer specific researched-based methods being used.

**Limitations of the Research**

This study took an initial step towards exploring how online instructors were using discussion-based learning forums to enhance critical thinking abilities among ninth-grade students. There were several limitations identified in this research. While the study was designed to answer the research questions, it was upon completion of the study that specific limitations were noted.

The qualitative Interpretative Phenomenological Analysis (IPA) study is devoted to the exploration of personal experiences in a systematic way, and it helped the researcher understand lived experiences of teachers working to help ninth-grade students enhance their critical thinking abilities. Unfortunately, the study does not capture statistical data to help uncover best practices as concluded by best practices surveys and statistical analysis for the use of methods of facilitation.

Despite hundreds of virtual schools located within the United States and globally, the study was conducted at one small, private online high school in Maryland. The five participants were all female though male and female teachers were asked to participate voluntarily. The school did not have any adults listed as gender neutral or gender fluid. The results may not be representative of other online high school programs located in the United States or
internationally. The qualitative data was gathered to represent perspectives from a variety of ninth-grade instructors, but the sample of staff was small and came only from those who volunteered despite being asked several times. Males instructors are not represented in this study which does limit the perspective in terms of comparison of style or facilitation of critical thinking strategies and curriculum development. This limitation may have resulted in a homogenous sample not indicative of other online programs. Also, the evidence for creating a conclusive analysis of findings is limited because of only having one school and one gender represented.

Also, the participants within this study shared that the curriculum was prepared for them; therefore, they were required to follow the requirements as prescribed to them which, per the surveys, can limit the ability of teachers wanting to personalize or individualize programming needs to fit the student learning style. The participants did share that there was flexibility in the development of the discussion-based learning forums, including the discussion-based assessments, but the limitations could be something to consider for future studies looking at ways teachers are utilizing curriculum for enhancing critical thinking abilities within ninth-grade students.

Time to conduct any necessary follow-up questions regarding the study was limited. After all rounds of questioning for this study were completed, and the researcher was coding for themes, the school to which all of the participants were teaching for was sold to another corporate education company. Teachers who started with the study were no longer accessible under the original study agreements.

This study explored critical thinking at a basic level through the understanding of the participant’s knowledge of Bloom’s Taxonomy and their previously acquired knowledge of
critical thinking throughout their educational and career development. This study did not require participants to use specific critical thinking skills or strategies other than what they were already using within their practices as a schoolwide initiative.

The discussion of metacognition was not part of this study. Metacognition is an executive cognitive process and reflects the awareness and strategies to assess the learning process (Schraw & Dennison, 1994). Without the assessment of metacognition, the process of thinking about thinking, the study limits the recognized importance of social behaviors and collaboration as understood by the students within the educational experience.

The possibility of bias existed since the interviews were conducted with five staff members who work with the researcher. However, there was transparency with the participants interviewed of this concern and, it is believed, that the participants were honest and transparent in their own right with their survey, interview, and discussions. While considered a limitation, the responses seemed genuine based on their feedback of likes and dislikes of the discussion-based learning forum curriculum expectations and the limited ability to modify curriculum needs for students based on best practices.

**Recommendations for Future Studies**

The overall findings of this study have implications for future studies. This research took place in a context that involved educators who were asked to implement discussion-based learning forums within synchronous, online learning environment without having any formal implementation training. The study did not take into consideration the cultural differences of students located outside of the United States or the special needs of students who may have accommodations.
With e-learning initiatives having a traction among many different types of educational institutions, there must be sustained support throughout the organization (McGill, Klobas, & Renzi, 2014) to assist with the understanding of the online framework as a way to “gain ongoing material support for the initiative and attracting others to become involved in the adoption and development” (McGill et al., 2014, 32); otherwise, leadership will not be able to help instructors remain informed on how to best support students taking online courses. From this study, it is suggested that online instructors have ongoing professional development that educates the instructors as to what the Community of Inquiry framework is and how to frame it within curriculum design and facilitation of content with students.

This research has revealed additional areas of inquiry and sets up additional questions needing further research to further the overarching understanding of how online instructors are using discussion-based learning forums as a means to enhance critical thinking abilities within ninth-grade students. For some researchers, there is a great concern that the Community of Inquiry long reigns as the dominant theoretical perspective for developing online and blended learning research (Garrison, 2017). There is a need to further develop the research of collaborative virtual education and how it impacts cognitive presence. Based on discussions formulated by Garrison (2017), the Community of Inquiry questionnaire is an important tool needed to future analyze large populations over a wide range of collaborative learning environments. In other words, to better understand collaborative learning environments, future researchers should incorporate the quantitative element data collection into this kind of research by using the Community of Inquiry questionnaire.

However, there may be a need to bring in specialized work that incorporates Dweck’s (2012) growth mindset work to better understand how students think when faced with critical
thinking challenges. To further the understanding of the cognitive presences within the Community of Inquiry, it may be fair to include the critical thinking framework that introduces students to master thinking dimensions through a process of identifying thinking parts and evaluating the usage of the elements through three main elements: elements of reasoning, intellectual standards, and intellectual traits (Paul & Elder, 2010).

Cognitive presence seems to be affected by the discourse within the collaborative inquiry and social interactions, as shared by the participants within this study. This study did not focus on elements that increase personal awareness or what makes up purposeful communities; though, the participants did focus on modeling a means to create social and cognitive awareness. Further research may develop suitable indicators for facilitation techniques that affect students’ cognitive presences that were not specifically defined within this exploration of how teachers are fostering critical thinking skills within ninth-grade students through discussion-based learning forums.

One of the most needed skills of online instructors is facilitation skills (Kyong-Jee & Bonk, 2006). More research is needed for specific facilitation skills, as utilized by online instructors, that will enhance online learning experiences for students as a means to enhance critical thinking abilities.

Another direction to focus on for future research would be to better understand the constructs that develop a discourse that promotes critical thinking. Research that provides understanding to curriculum design in higher-order discourse and how that curriculum looks and evaluates students’ movement from different realms of critical thinking through assignments will draw more resolution for perceived learning and learning outcomes.

There may be value in setting up a study that looks at the instructors’ facilitation skills and the students’ responses to their instructors’ ability to facilitate. The first part of the study
could be a training designed to explain the Community of Inquiry to instructors while also have a student-friendly session that breaks down the presences of Community of Inquiry into student-friendly language. Then the researcher could set up interviews, surveys, and group sessions for instructors, students, and instructors and students that quantitatively and qualitatively break down the responses. The critical part of this study sets up the Community of Inquiry through the three presences and ensures all elements of curriculum, questions within the curriculum, and social interactions are all designed with the Community of Inquiry in mind. When the instructors and students all have a common language, community engagement agreements, and streamlined research data collection based on this commonality, the researcher may better understand the cognitive presence of students as driven by a mutual understanding of the framework.

**Conclusion**

Through the data presented within this study, the endorsement of discussion-based learning forums through synchronous learning opportunities that increase critical thinking abilities among ninth-grade students requires facilitation by staff with an understanding of higher-order thinking skills and can identify how and when students participate in community learning opportunities. Based on this study, it is suggested that online schools train their onboarding staff (instructors and curriculum developers) to understand the value of the Community of Inquiry frameworks and how understanding the interwoven nature of the three presences will guide students to the most successful learning outcomes.

While this study did not outline facilitation techniques, it did provide thorough explanations of instructors who, because of their experiences within education (brick and mortar and online), understand the needs of their students and how to design critical thinking experiences while managing and monitoring discourse through the use of relationship-building in
synchronous learning environments. The understanding of the cognitive presence is one of significant complexity. To better understand students within any given classroom and how they improve at critical thinking must start with clearly defined outcomes that are supported by the administration within the institution for which the learning is taking place. Garrison (2017) reminds the researcher that cognitive presence is ultimately how the learning community supports and sustains the learning outcomes. More research is needed to continue understanding how virtual learners critically think and present their understandings; however, it is more evident through this study that instructors are trying to find ways to move away from asynchronous learning experiences for relational learning opportunities that give students the means to express understanding within the cognitive domain.
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Appendix A: Interview Schedule

Exploring How Online High School Instructors Foster Critical Thinking within Ninth-Grade Students through Discussion-Based Learning Forums

Time of Interview: __________________________________________

Date: ______________________________

Place: ________________________________________________________

Research Question: How are online instructors using online discussion-based learning forums as a means to enhance critical thinking skills usage among ninth-grade students?

These sub-questions:

(1) What are the characteristics and patterns of instructors’ teacher presence to promote critical thinking skills used to enhance discussion-based learning forums?

(2) How does dialog/discussion opportunities seek to achieve a deeper level of meaning among ninth-grade students learning in an online community?

(3) How do teacher facilitation techniques affect students’ cognitive presence?

Part I:

Introductory Session Objectives (5-7 minutes): Build rapport, describe the study, answer any questions, and review and sign informed consent.

Introductory Protocol

You have been selected to speak with us today because you have been identified as someone who has a great deal to share about discussion-based learning forums located in online ninth-grade classrooms. My research project focuses on the experience of educators using discussion-based learning forums as part of their ninth-grade curriculum. Please take a moment to review the consent form. If you are willing to participate in the study, please sign the consent form. If you have any questions about the consent form, please feel free to ask during this time.

Because your responses are important, and I want to make sure to capture everything you say, I would like to audio record our conversation today. You will have access to the link associated with our conversation today. Do I have your permission to record this interview? I will also be taking written notes. I can assure you that all responses will be confidential and only a pseudonym of your choosing will be used when quoting from the transcripts. What pseudonym would you like given to your interview? I will be the only one privy to the digital recordings which will, eventually, be destroyed after they are transcribed. Do you have any questions about the interview process or how your data will be used?
This interview should last about one hour. During this time, I have several questions that I would like to cover. If time begins to run short, it may be necessary to interrupt you in order to push ahead and complete this line of questioning. Do you have any questions at this time?

Interviewee Background (5-10 minutes)

Objective: To establish rapport and obtain the story of in the participants’ general with the research topic. This section is brief as it is not the focus of the study.

A. Interviewee Background

1) What is your background within education, how did you get to this position you are in now?

2) What has been your experience with online education? Years as an online instructor? Grade Levels?

3) What transitions in online education have you been a part of or witnessed or seen?

4) Why did you transition to online education instruction from the brick-and-mortar classroom?

5) What were your experiences with discussion-based learning in your teaching experiences?

Part 2:

One of the things we are interested in is understanding how instructors promote critical thinking skills of students learning in the online environment, specifically discussion-based learning forums. I would like to hear about your experiences with teaching critical thinking skills to online students, in your own words. To do this, I am going to ask you some questions about the key experiences you encountered. If you mention other people, please do not mention names.

1. How do you define “critical thinking” for ninth-grade students? What skills are involved?

2. Define discussion-based learning forums as used in your online classroom? When using discussion-based learning forums, how do you draw out the knowledge the student(s) has/have on the topic that’s not just recall level?

3. How does dialog/discussion opportunities seek to achieve a deeper level of meaning among ninth-grade students learning in an online community?

4. How do you perceive students engaging in discussion-based learning forums?

5. Describe how you feel students talking with one another in discussion boards, live classes, and discussion-based learning opportunities increases or decreases student presentation of higher-order thinking abilities.

6. How would you see discussion-based learning forums like live, synchronous, lessons increasing critical thinking responses within your ninth-grade students?
7. Do you engage in discussion-based learning forums with your students? If so, describe how you engage with your students in this format.

8. If you could give beginning online student one piece of advice on positively experiencing critical thinking opportunities in discussion-based learning forums, what would it be?

Elaboration Probes:
1) Can you tell me more about that experience?
2) How did it make you feel?
3) If you could, what would you do differently next time?
4) Can you give me an example or say more about that?

Evidence Probes:
1) Are there any other feelings that you have personally experienced?
2) What are your reactions to __________ [professional development trainings]?

This is the end of the interview. Thank you for your participation, do you have any remaining questions before we complete this phase of the study for you?