THE EFFECTS OF COMPUTER-SUPPORTED COLLABORATIVE LEARNING ON SENSE OF CONNECTEDNESS, SENSE OF LEARNING, AND OVERALL SENSE OF COMMUNITY AMONG HIGH SCHOOL STUDENTS ENROLLED IN A MARKETING COURSE

by

Rebecca Rolader Streetman

Liberty University

A Dissertation Presented in Partial Fulfillment

Of the Requirements for the Degree

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ABSTRACT

The purpose of this quantitative static group study was to determine the effects of computer-supported collaborative learning on sense of community, sense of connectedness, and sense of learning for students in a high school Marketing Principles course. Sense of community pertains to feelings of belonging and is important to the learning process because it can foster shared positive experiences in the classroom setting. Both collaborative learning and computer-based instruction have been researched extensively and their benefits noted; however, this study is important because it focuses on combining the two into what is known as computer-supported collaborative learning. The independent variable in this study was the type of learning environment, specifically, traditional instruction and computer-supported collaborative learning. The dependent variables were sense of classroom community, sense of connectedness, and sense of learning as measured by the Classroom Community Scale. A series of independent *t*-tests were conducted to determine any statistically significant differences among the groups. Mean scores for students taught using computer-supported collaborative learning were compared to the mean scores of students taught the same material using traditional lecture-based individualized learning. Results and findings, along with a conclusion are included.

Keywords: Classroom Community Scale, collaboration, collaborative learning, computer-based learning, computer-supported collaborative learning, sense of connectedness, sense of learning, sense of community.

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Dedication

This manuscript is dedicated to my children, Hailey and Jack. As you watched me throughout this journey, it is my hopes that you have learned the importance of hard work and never giving up. Don't ever let anyone hold you back or convince you that you cannot do something! I am the first in my family to go to college, but I followed the path less traveled because I knew in my heart it was what I should do. Go wherever your heart leads you and pave your own path and know that if I can do this, you can do whatever you set your mind to.

This manuscript is also dedicated to my parents, Bill and Barbara Rolader, who both struggled in the traditional school setting. My father once said to me that he wished he had a teacher like me because maybe he would've stayed in school. You see, my father didn't fit the typical "mold" that students were supposed to fit into during that era. He suffered from a severe illness as a child and, as a result, he didn't learn in the same manner and at the same rate as other children. He was overlooked in the classroom, although he had a lot of potential and excellent work ethic. So, he ended his formal education early, although he and my mother both still set the example for my brothers and I that hard work, dedication, and a heart for God and family will take you to where you need to be in life. I took their guidance and decided to use it to become a transformational teacher that thinks outside the box and finds ways to reach children that may, indeed, be left behind. I may not be able to reach all students, but if I can reach even one through varying teaching strategies, then I will have turned my father's academic struggles into something positive for someone else.

Acknowledgments

I would like to acknowledge my committee for sticking with me throughout this journey. It has been a very long one, but we made it! Dr. Hadaway, thank you for sticking with me from the very beginning and for being there the entire time to support and encourage me. Dr. Keith, thank you for reaching out to me and stepping in at a point that I felt I couldn't go on any further. I know you have a full workload, but something drew you to me and you went above and beyond to help me. You also supported and encouraged me without fail. Dr. Michael, thank you for stepping in this last year or so and for pushing me to do my best work. You had high standards and held me to those, and as a result I grew as a scholar and a person! I could not have made it to this point with the three of you as my committee. You were my strength and I will be forever grateful!

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List of Abbreviations

Adequate Yearly Progress (AYP)

Classroom Community Scale (CCS)

Computer-Supported Collaborative Learning (CSCL)

Institutional Review Board (IRB)

CHAPTER ONE: INTRODUCTION

Overview

Computer-supported collaborative learning (CSCL) combines the use of computer-based instruction as well as collaborative learning and was investigated in this study as a means of determining whether or not student sense of community is effected by the implementation of such strategies. This chapter includes a background on both computer-based instruction and collaborative learning, a statement of the problem, the purpose and significance of the study, and a list of the research questions. Definitions that are applicable for the study are also identified in this chapter.

Background

Students must meet certain academic criteria before high school graduation, and also need to be prepared to interact in a natural social setting in order to be productive members of society. Educators are obliged to help prepare them for such interaction and the best way to do that is to immerse them in real-life situations, requiring them to communicate with their peers and to learn problem-solving skills necessary to succeed in a social environment (Elsaadani, 2012; Findlay, 2012). The difficulty in this task is finding a way to help students reach their fullest potential when individuals within the same classroom have such vast learning styles, educational backgrounds, and personalities that all come in to play in the learning environment. Teachers must give careful consideration to how curricula should be structured in order to accomplish all the objectives and meet the state and local goals on all levels. This is causing schools to put a great deal of time and money into determining ways to intervene with students in danger of dropping out in order to help get them back on-track for graduation (Kalsbeek, 2013).

Many students are struggling academically because they are lacking one or more of the skills necessary in order to succeed in the traditional school setting (Hannafin & Foshay, 2008; Roueche & Kirk, 1974). Factors that hinder these students may be an identified or unidentified disability, unsuccessful experiences in school, family issues, socioeconomic background, academic curriculum, urban school problems, and social issues (Spiegel, 2017; Ward, Kester & Kouzekanani, 2009). Students may also feel disconnected from the learning environment as the large student-to-teacher ratios often lead to a sense that individuals are not important to the learning process (Phirangee, 2016). That feeling of belonging is known as a sense of community. One researcher focused on the significance of community in decreasing the number of student dropouts by hypothesizing that student levels of satisfaction and the likelihood of continuing in a college program would increase if they feel involved in the learning community and were able to develop relationships with other members of the community as part of the learning process (Tinto, 1993). Prior research credits high dropout rates to the lack of interaction between and among students, which can create feelings of alienation, isolation, and disconnection (Phirangee, 2016).

In order to reach these students, both the delivery method of subject-area content, as well as the setup of the learning environment itself needs to be examined. Historically speaking, the traditional teacher-centered classroom is not the most effective environment for many students, thus requiring educators to carefully examine other means for curriculum development (Brown, 2003; Johnson, Johnson & Smith, 1991; Johnson, Smith, Levine, & Haywood, 2010; Roueche & Kirk, 1974). The use of technology in the classroom is one option for reaching students individually. Research studies focused on computer-based instruction date back as early as 1974 (Roueche & Kirk) and have been identified as an effective educational tool because use of

technology provides immediate feedback for both students and teachers and allows students to work at their own pace (Hannafin & Foshay, 2008). Students need to be actively engaged in the learning process, especially in today's technologically evolved society, and the interactivity of computer-based instruction allows for such engagement (Abakumova, Bakaeva & Kolesina, 2016; Carr, 2008; Sharma & Hannafin, 2007; Roueche & Kirk, 1974).

However, with the increasing class sizes and coinciding budgetary cuts, teachers do not always have access to enough computers for each individual student, nor do they have time in the school year to devote large amounts of time to working with students individually on activities to supplement the learning process. Allowing students to work in groups collaboratively may be a solution. The *2010 Horizon Report: K-12 Edition* proposes that collaborative environments "give students tremendous opportunities to interact with peers and mentors, experience other worldviews, and model the kinds of work patterns that take place in an increasing number of professions" (Johnson et al., 2010, p. 6). The report stressed the importance of collaborative learning by listing the topic in their report for the second year in a row. Normally, once a topic has appeared on the near-term horizon, it does not appear in the report again, but the Advisory Board felt strongly enough about it to include it as an area to watch (Johnson et al., 2010). Prior research indicates that collaborative learning can help overcome the constraints of larger class sizes and greater variation in student needs, and can support more of the social aspect of learning by helping students feel more involved in the learning community (Johnson, Johnson & Stanne, 2000).

While collaborative learning has been researched extensively as a learning tool in the classroom (Chelliah & Clarke, 2011; Dewiyanti, Brand-Gruwel, Jochems, & Broers, 2007; Economides, 2008; Gress & Hadwin, 2010; Johnson & Johnson, 1986; Johnson et al., 2000;

Springer, Stanne, & Donovan, 1999) and computer-based instruction has been identified as an effective tool in the delivery of subject-area content (Bialo & Sivin-Kachala, 1996; Bruffee, 1995; Dewiyanti et al., 2007; Fitzgerald & Koury, 1996; Stahl, Koschmann & Suthers, 2006), there has not been a lot of research done at the high school level regarding the effects of combining these two strategies.

CSCL combines the use of computer-based instruction as well as collaborative learning and was investigated in this study as a means of determining whether or not student sense of community is effected by the implementation of such strategies at the secondary level.

Problem Statement

Educational institutions have implemented various strategies to reduce costs, including expanding class sizes (Allais, 2014). Common problems with large classes are "feelings of isolation and insecurity, of a lack of personal connection with, and attention from the teacher, and the consequent lack of motivation to engage in deep learning strategies" (Snowball, 2014, p. 824) and an overall lack of students feeling like they are part of a learning community. Some studies have suggested that feelings of isolation (Haythornthwaite, Kazmer, Robins, & Shoemaker, 2000; Morgan & Tam, 1999) and low sense of community is related to student burnout (McCarthy, Pretty, & Catano, 1990), both of which can lead to attrition. Tinto (1975) argued that insufficient interactions among peers and faculty are likely to result in dropouts. In other words, students who do not have opportunities to collaborate with others and have a low sense of community tend to feel isolated and are at an increased risk of becoming dropouts.

Prior research has indicated that there are significant effects on overall student achievement, persistence, and attitudes when collaborative learning is involved (Allais, 2014), but some educators continue to question the difficulty involved in assessing individual student

progress in a group setting. Likewise, computer-based instruction can provide students with immediate feedback and can help provide teachers with a snapshot of individual student progress (Kelly & Rutherford, 2017). It also allows students to learn at their own pace, repeating materials as necessary until mastery of the learning goals is accomplished.

Some studies have addressed combining both collaborative learning and computer-based instruction. The findings of one study indicated that cultural factors impact thinking styles and that use of computers and collaborative learning could assist teachers in assigning roles to students with differing backgrounds to improve student efficiency. The problem is there has not been extensive research done at the high school level regarding the combination of the two in what is known as computer-supported collaborative learning (Xiaoqing, Huawen, & Mason, 2017).

Purpose Statement

The purpose of this quasi-experimental static group study is to assess the impact of computer-supported collaborative learning (CSCL) (independent variable) on student sense of classroom community (dependent variable), connectedness (dependent variable), and learning (dependent variable) for students enrolled in a Marketing course at a high school in a large, urban, northeast Georgia public school system. The independent variable in this case is the type of learning environment: traditional or computer-supported collaborative learning (CSCL). CSCL is defined as using a computer to complete enrichment activities which require students to work together in order to achieve a common goal (Persico, Pozzi, & Sarti, 2010). The first dependent variable, sense of community is defined as the feeling of belonging and importance as measured by the Classroom Community Scale (Rovai, 2002). Connectedness and learning and will also be measured by the Classroom Community Scale. Connectedness is defined as the

feelings of the participants regarding their "connectedness, cohesion, spirit, trust, and interdependence" (Rovai, 2002, p. 206). Learning is defined as the "feelings of community members regarding interaction with each other as they pursue the construction of understanding and the degree to which members share values and beliefs concerning the extent to which their educational goals and expectations are being satisfied" (Rovai, 2002, p. 206-207).

Significance of the Study

This study will examine the impact of computer-supported collaborative learning (CSCL) on student sense of classroom community, connectedness, and learning. Specifically, it will assess if students feel more connected to their peers and whether or not they learn better in a group setting using computers than they do in a traditional classroom working individually. The concept is that, by working with other group members using a computer, individual students may gain skills necessary to perform well academically, and are, therefore, less likely to drop out of school (Campbell, 2012; Knutas, Ikonen & Porras, 2015).

CSCL is significant to study because it can help prevent problems associated with students feeling disconnected from the learning environment as the large student-to-teacher ratios, which is becoming a significant problem nationwide (Phirangee, 2016). Investigating the effects of CSCL at the high school level is also timely as studies are showing that students are leaving high school without the skills necessary to obtain productive employment in a problem-based, hands-on workforce (Kollöffel & Jong, 2013; Torpey, 2015).

Sense of community is important in all educational settings because it allows students to feel a sense of belonging and as though they matter to the classroom as a whole (Abfalter, Zaglia, & Mueller, 2012). These positive feelings could possibly increase academic achievement, student attitudes, and persistence (Donne, 2012). As a result, not only is the

classroom impacted by positive effects, but so is the school as a whole. Determining the classroom methods that impact sense of community is a significant part of progressing toward these positive outcomes.

Additionally, little research exists that examines the effect of CSCL on sense of community despite policymakers and educators equally continuing to push social construction of knowledge inside the classroom (Johnson et al., 2010). Furthermore, the formation of social communities that foster feelings of mutual care, respect, and common goals is becoming increasingly frequent in pedagogy (Cheung, Chui, & Lee, 2011; Dewiyanti et al., 2007; Donne, 2012; Yang & Chang, 2012). This study was designed to fill the current gap in the literature by testing theories of constructivism, social development theory, communities of practice theory, and theories on collaboration and sense of community.

The results of this study were especially relevant to the state of Georgia as educational leaders evaluate the floundering graduation rate (ABCs, 2015) and are pushing toward project-based learning, student inquiry, reflection, and collaborative learning (Silver, Strong & Perini, 2007). In addition to the current push to increase technology use in the classroom (Johnson et al., 2010), research that explores collaboration, technology integration, and sense of community is timely and significant to ensure that new policy is research-based. Perhaps this study is of greatest value to teachers and curriculum writers. As online group work becomes more popular (Koh & Hill, 2009) and the need for effective and practical strategies including technology implementation increases, it is important that teachers understand the fundamental advantages and disadvantages to student collaborative opportunities and the effects of sense of community in both traditional learning and CSCL activities. This study provides increased knowledge for

teachers that may lead to more effective strategies to increase study sense of community at the high school level.

Research Questions

The research questions for this study are:

RQ1: Is there a statistically significant difference between high school students' overall *sense of classroom community* as measured by the Classroom Community Scale when participating in computer-supported collaborative learning as compared to students who participate in traditional learning only?

RQ2: Is there a statistically significant difference between high school students' *sense of connectedness* as measured by the Classroom Community subscale when participating in computer-supported collaborative learning as compared to students who participate in traditional learning only?

RQ3: Is there a statistically significant difference between high school students' *sense of learning* as measured by the Classroom Community subscale when participating in computer-supported collaborative learning as compared to students who participate in traditional learning only?

Hypotheses

The null hypotheses for this study are:

$H_0$1: There is no statistically significant difference in high school students' overall *sense of community* as measured by the Classroom Community Scale when participating in computer-supported collaborative learning as compared to students who participated in traditional learning only.

$H_0$2: There is no statistically significant difference in high school students' *sense of connected* as measured by the Classroom Community subscale when participating in computer-supported collaborative learning as compared to students who participated in traditional learning only.

$H_0$3: There is no statistically significant difference in high school students' *sense of learning* as measured by the Classroom Community subscale when participating in computer-supported collaborative learning as compared to students who participated in traditional learning only.

Definitions

1. *At-risk Students* - For the purpose of this study, "at-risk" refers to students that are at-risk for dropping out of school. These students were identified by the school system as having failed more than two courses and were not on-track for graduation (ABCs, 2015). Students were also flagged as being at-risk if they had poor attendance or repeated behavioral infractions (ABCs, 2015), although these two issues were not addressed in this particular study.
2. *Classroom Community Scale* – A survey instrument developed by Rovai (2002) that measures the sense of classroom community which individual students perceive as related to the classroom.
3. *Collaborative learning* - "the mutual engagement of learners in the learning process rather than on the sole division of labor to reach a common group goal" (Bernard, Rubalcava, & St-Pierre, 2000, p. 262).
4. *Computer-Based Instruction* - the use of a computer to support the delivery of the subject-area content and consists of an array of educational resources which can be

accessed via a computer that is connected to a server or network of computers by an electronic connection. This includes, but is not limited to: interactive quizzes, guided practice problems, online research, simulations or even educational games (Hannafin, & Foshay, 2008).

5. *Computer-Supported Collaborative Learning* - the use of a computer to supplement learning within a collaborative group. Students work together in groups to achieve a common goal and utilize a variety of technological tools to enhance the learning process (Persico et al., 2010), including online chats, discussion boards, and email between the group members.
6. *Sense of classroom community* - "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) as measured by the Classroom Community Scale (Rovai, 2002).
7. *Sense of connectedness* – "the feelings of the community of students regarding their connectedness, cohesion, spirit, trust, and interdependence" (Rovai, 2002, p. 206).
8. *Sense of learning* - "the feelings of community members regarding interaction with each other as they pursue the construction of understanding and the degree to which members share values and beliefs concerning the extent to which their educational goals and expectations are being satisfied" (Rovai, 2002, p. 206 – 207).

CHAPTER TWO: LITERATURE REVIEW

Overview

This review of the literature highlights CSCL as a potential tool in helping students become more engaged in the learning process. It includes an overview of the theoretical framework guiding the study and an examination of existing literature in regards to the effects of traditional learning, collaborative learning, computer-based instruction and computer-based collaborative learning. Included in this chapter is a review of literature pertaining to classroom sense of community.

Theoretical Framework

Numerous theorists have touched on the benefits of allowing students to work in groups within the classroom through collaborative learning. The impact of computer-based instruction on the instructional environment has also been explored extensively. This study focuses on the combination of both of these theories through the use of CSCL and its effects on student sense of classroom community. CSCL is founded in constructivist theory and involves the combination of both hands-on experiential learning and social integration during the learning process.

Social Development Theory

Learning must consist of ongoing communication (Peterson, Divitini, & Chabert, 2009). Learning, essentially, is a social occurrence heightened through communication and group activities (Wenger, 1998; Wenger, White, & Smith, 2009). As a result, learning environments are more favorable to collaborative activities that promote shared knowledge (Peterson et al., 2009). Cognitive development, as maintained by social development theory, transpires through interactive and multifaceted social encounters (Sivan, 1986). Accordingly, learners can benefit

from interactions between peers (Ding & Harskamp, 2011) and by engaging in social networks of learning (Siemens, 2006).

Social development theory, as a result, incorporates the core nature of learning by utilizing peer assistance, which allows individual desires and objectives to be met through educational and engaging constructs (Sivan, 1986). Since collaboration can result in increased knowledge, social growth, and motivation (Stump, Hilpert, Husman, Chung, & Kim, 2011; Yang & Chang, 2012), it can be utilized as a technique to support social development theory and may also contribute to creating learning communities. When examining the impact of collaboration on student learning, it is crucial to understand the influence of social presence, also known as sense of community (Palloff & Pratt, 2005).

Vygotsky's theory of social development (1978) is based on the concept of hands-on learning (Miller, 2011). Specifically, the progress education theory entails the notion that education is based on personal experiences of each learner (Vygotsky, 1978). The instructor should arrange for experiences that engage students and facilitate further experiences. Experiences lead to more experiences; referred to as the experiential continuum (Miller, 2011). Part of this process is that students should understand why they are learning. Vygotsky also theorized that students should not learn in isolation and that students learn only when their current knowledge is challenged, reformed, and synthesized through their interaction with others.

His theory indicated that education is a social process in which everyone should participate. Students are more likely to actively participate in the learning process when they are put into situations where they share ideas and concepts with their peers (Vygotsky, 1978). At-risk students, specifically, tend to show gains in academic achievement and increased self-

efficacy when students are paired together because learners are able to scaffold their individual knowledge base into a larger pool of knowledge (Kemker, Barron, & Harmes, 2007).

The principle concept of the social learning theory concentrates on the notion that learning occurs not only through authentic activities, as is theorized by constructivist thinking, but also through social activities that entail the use of discussion to promote problem solving (Vygotsky, 1978; Yang & Chang, 2012). Therefore, individuals grow and prosper through the collaborative learning experience (Vygotsky, 1978). The constructivist approach of social development theory is vital to the primary focus of collaborative learning. Thus, any strategy that enables increased collaboration, including computer-mediated technologies, may encourage the development of social relationships (Baker-Doyle & Yoon, 2011; Minocha, 2009).

Social learning theory originated from constructivism, which theorizes that one's psychological developments are made by responses his or her environment (Dewey, 1997; Wenger, 1998). Constructivism theorizes that individuals learn by doing (Dewey, 1922, 1997). Therefore, activities that engage the learner facilitate better learning than passive activities since they allow the learner to build his own knowledge (Vygotsky, 1978). As suggested by Dewey (1922), education results when collaborative activities yield knowledge (Peterson et al., 2009). Social constructivists ascertain that learning and self-identity are joined through social experiences (Vygotsky, 1978; Vygotsky, 1986).

Part of social learning is also observing others. Bandura theorized that self-efficacy improves within a supportive, interactive social setting (Bandura, 1977). Learners can build self-efficacy through interactive activities within collaborative environments. Students gain a feeling of pride and success that will motivate them to continue in the learning process. Today's generation of students are competent and confident in the use of technology; therefore, it can be

hypothesized that, when students are grouped together in a setting involving the collaborative use of their technology skills to solve a problem, barriers that exist in the traditional classroom that often hinders learning will be more easily overcome.

Connectivism

Connectivism theorizes that people desire to use technology to participate in learning experiences that are authentic to real-world concepts and helps one develop individually and establish a connection to the world as a whole (Siemens, 2006). Thus, social networks theoretically create opportunities for collaborative learning through interactions that is not restricted by time and geographic barriers (Lim, Yang, & Zhong, 2009; Siemens, 2006).

Interaction and collaboration within the classroom environment creates a community of learners (Peterson et al., 2009). Communication is enriched through various technologies in modern society (Siemens, 2006). Social technologies such as discussion forums have been known to create an environment favorable to meaningful communication that facilitates mutual discussion and reflection while enhancing interactive relationships that can increase learning (Peterson et al., 2009). Therefore, a social constructivist approach to knowledge building is enhanced by social technology tools that engage learners in collaborative communication which promotes critical thinking and problem solving (Minocha, 2009). When these collaborative relationships are promoted in the technology-supported setting, social networks are created. Learners are better able to collect information from the thoughts and prior experiences of others through these social networks (Siemens, 2006).

Social networks are made up of the connections that individuals make with others that offer support and chances for growth (Baker-Doyle & Yoon, 2011). People, in general, innately yearn for social grouping, and when being involved in a group provides experiences and

knowledge—a target that is boosted by social networks – it is especially rewarding (Minocha, 2009). This longing to learn from a social environment while making use of technology is supported by the theory of connectivism.

Communities of Practice

Sense of community, which is the general feeling of belonging (McMillan & Chavis, 1986), is grounded in the theory of communities of practice (Wenger, 1998; Wenger et al., 2009). The theory of communities of practice, much like the social development theory, suggests that learning is a social phenomenon that transpires through social participation. A community of practice develops through the pursuit of common goals and may occur within a number of settings, including families, work environments, at school or a social group. A community of practice involves each individual establishing a personal identity, mutual engagement, and interrelations within members (Wenger, 1998). Therefore, communities of practice are essential to everyday life.

In order for meaningful learning to occur, individuals must actively participate in a community of practice where knowledge is gained through social interactions. Learning, thus, occurs through both social structure and situated experience, and consists of the shared experience of the community of practice. (Wenger, 1998). Understanding and establishing these social opportunities for learning is crucial in cultivating globally competent and productive citizens that will be able to function in today's constantly changing society (Wenger, 1998). Collaborative activities are effective ways to increase these types of opportunities.

As educational instruction progressively requires more technology integration, examining the effects of various methods of instruction will become crucial (Rovai, 2002). Research has identified a relationship between peer connectedness within the learning community and

cognitive learning, thereby indicating that activities which foster social learning within a community of practice may increase sense of community (Rovai, 2002). It is necessary to recognize the social bonds that are developed between learners in both face-to-face and computer-based instruction in order to establish a more comprehensive understanding of sense of community in the adolescent classroom (Rovai et al., 2005).

Technology has helped to provide links for common experiences among individuals, therefore creating a community of practice (Wenger et al., 2009). When a community of practice is created, learning may become more relevant and communication may be furthered. As technologies that enable communication become more diversified and readily available, the communities of practice theory becomes more applicable as it is centered on the potential of individuals to work together in learning communities (Wenger et al., 2009). Therefore, technology creates new opportunities for community through the creation of digital habitats. As digital habitats are created, participation and engagement may increase, and certain practices may be formed creating interaction with and between technologies (Wenger et al., 2009), therefore leading to the construction of sense of community.

Sense of Community

Historically, sense of community was based on geographical location and involved members of a town working together to form a community and was not, necessarily a conscious process. These communities shared responsibility, interdependence, common goals, and interpersonal relationships (Palloff & Pratt, 1999). Essentially, a sense of community was crucial to survival and beneficial to the society.

Recent research has indicated that sense of community is more than a theoretical concept (Glynn, 1981). Sense of community may include group attitudes and behaviors that provide a

specific set of characteristics which are related to satisfaction and competence and are crucial to development of a mutually engaged community (Glynn, 1981). This notion supported earlier findings that concluded that the concept of community was rooted in social interaction despite geographic location (Hillary, 1955).

McMillan (1976) later proposed a definition of psychological sense of community that involved feelings about group members within the community and the level of commitment to the group for each of those members. Later, a collaborative effort between McMillan and Chavis (1986) removed the term psychological from the definition of 'sense of community' and asserted that a shared emotional connection, along with group cohesiveness and bonding, as definitive elements of true community. McMillan and Chavis (1986) also conferred that dynamics, interrelatedness, and interdependence between group members were crucial elements to their theory on sense of community.

In 1938, Dewey ascertained that the school community happens to be a place where adolescents gain authentic experiences by doing projects and was defined as a geographic location. Dewey supported students forming social groups and ascertained that the quality of education was determined by the manner in which students form a group (Dewey, 1958). However, early research on schools, community and collaboration did not transpire into an interest in studying the notion of psychological sense of community until psychologist Seymour Sarason proposed in 1974 that psychological sense of community is key in determining self-definition.

The theory of communities of practice is the foundation for sense of community, (Wenger, 1998; Wenger et al., 2009) and is similar to the social development theory given that the fundamental basis is the concept that learning is a primarily social occurrence that transpires

through social interaction (Wenger, 1998; Wenger et al., 2009). It is theorized that in order for real learning to occur, individuals must take part in a community of practice where knowledge is mutually shared and socially gained (Wenger, 1998).

Recent research on sense of community found that it promotes social identity, which is an essential component of learning (Chiessi, Cicognani, & Sonn 2010; Palloff & Pratt, 2005). This, in turn, increases opportunities for learning within schools (Admiraal & Lockhorst, 2012; Sancho & Cline, 2012). Current day definitions of sense of community consists of four elements: membership, influence, integration and fulfillment of needs, as well as a shared emotional connection (Abfalter et al., 2012; McMillan & Chavis, 1986). Membership is an individual's identification and sense of belonging in relation to other members of the group (Abfalter et al., 2012; Palloff & Pratt, 1999). Influence is the individual's perceived impact on the community (Abfalter et al., 2012). Integration and fulfillment of needs involves the incentives and rewards that are essential to being a member of the community (Abfalter et al., 2012; McMillan & Chavis, 1986). Shared emotional connection includes the experiences, history, and identification that members within the community share (Abfalter et al., 2012).

Centered around strong personal philosophies on the importance of constructing classroom community, Alfred Rovai has conducted a considerable amount of research on the subject. Rovai (2002) proposed that the classroom community is a social community of students who learn through sharing knowledge, values, and goals. When students experience perceptions of disconnect, it may result in diminished participation in the learning community; therefore, connectedness is an essential gauge of the effectiveness of the learning community. In order for learning to take place, perceptions of connectedness and a sense of community must take place (Rovai, 2002). Hence, the degree to which the student learns and experiences connectedness will

impact the student's sense of community and therefore affect the value of the learning experience.

In an effort to categorize the numerous aspects of sense of community, Rovai (2002) identified two predominant components of sense of community within the classroom: connectedness and learning. Connectedness is characterized as interpersonal relationships and is cultivated through building a sense of safety and trust among community members (Rovai, 2002). It conveys a certain level of care and satisfaction between group members which may lead to the development of a learning community (Rovai, 2002). Equally, learning is characterized as the active and social construction of knowledge that results from a successful learning community (Rovai, 2002) and is achieved through the shared creation and meeting of goals among the community members.

While the definition of sense of community in early studies focused on the interpersonal relationships and the feelings of belonging within a geographic community, it is now more focused on common interests, skills and goals (McMillan & Chavis, 1986). Therefore, the notion of community can be extended from a geographic location to a community without spatial boundaries (Palloff & Pratt, 1999). This includes the community within modern-day, technology rich learning communities (Buch & Spaulding, 2011; Chiessi et al., 2010).

In today's technologically advanced world, a community without spatial boundaries is known as a virtual community, an increasingly growing topic in the business, social, and educational world. Virtual communities are constructed through computer-mediated methods where communication promotes content that is established by the overall community, rather than individuals. Like in face-to-face communities, the element of belonging within the community is essential for positive outcomes in a virtual community (Palloff & Pratt, 1999).

Related Literature

Throughout the years, educational institutes have realized that many students struggle within the traditional classroom and that teacher-led lectures followed by rote note-taking and standardized tests are not necessarily the most effective way to reach all students. Studies have been conducted on various learning styles and teaching environments and a plethora of findings and literature have emerged. Much of this literature is centered around computer-based learning and collaborative learning.

Classroom Climate and Learning: Positive Peer Interaction vs. Teacher Lecture

Walberg and Anderson (1968) conducted a study which focused on the relationship between a student's individual satisfaction with the classroom climate and his or her learning experience. The research was designed to find a measureable relationship between a classroom's climate and its effects on student academic achievement, as well as student interest in the subject. For this study, the classroom climate referred to how students related to each other within the classroom and was quantified by the group behavior. The study also evaluated the level of satisfaction the students experienced as well as the relationships they experienced in the classroom.

The results of Walberg and Anderson's (1968) research were that individual perceptions of classroom climate were positively correlated with how students perceived their progress during a course. The findings were 32 statistically significant correlations ($p < .05$). In their study, students reported positive peer relationships and felt more prepared to make decisions when they were allowed to work in groups with their peers in order to complete classroom activities.

Other research addressed a concern with a predominantly lecture-based classroom in that students may lose interest because they are not actively engaged in the learning environment (Middendorf & Kalish, 1996). Students were asked to write summaries of presentations they had observed in the classroom. The results showed that students retained the greatest amount of information during the first five minutes of the lecture. After that time, the students' capacity to remember information dwindled. The lowest level of retention was observed during the 15-20 minute portion of the lecture. In a later study, Tileston (2000) concurred that student attention spans deteriorate after 15-20 minutes into the lecture. Tileston credited this phenomenon to the fact that today's students are immersed in a world of multimedia from birth. Unless another instructional methodology intervenes, students' lack of engagement may interfere with their ability to learn in a traditional, lecture-based classroom (Frederick, 1986).

School Accountability and the Need to Evaluate Learning Environments

Accountability is mapped out through the ABCs of Public Education (ABCs, 2015). Public schools all over the country must measure and report Adequate Yearly Progress as defined in the No Child Left Behind Act of 2001. The ABCs Accountability Report has been utilized by the state of Georgia to measure AYP since 2002 when the No Child Left Behind Act was legislated. AYP measures the yearly progress of various groups of students at each school, district, and state levels against yearly targets. Students are grouped into categories according to ethnicity, economically disadvantaged students, limited English proficiency students, and students with disabilities, as well as the school as a whole. AYP measures the yearly progress toward achieving grade level performance for each student group. With the level of accountability increasing, it is crucial that educators provide optimal instructional practices and environments to foster student success.

Traditional Learning

A traditional classroom consists of teacher-led lectures, along with supplemental activities to facilitate a textbook-driven curriculum. Learning is usually measured by paper and pencil tests where students are expected to reproduce facts and definitions (Kollöffel & Jong, 2013). Traditional learning involves learning in solitude with little engagement from the students. This enables teachers to maintain order and structure within the classroom, while also controlling the pace of presentation of the subject matter.

Critics of the traditional learning method argue that students do not gain the proper conceptual understanding (Kollöffel & Jong, 2013). The traditional learning method can make it difficult to differentiate instruction for students with different learning styles and abilities, especially in larger classes. Roueche and Kirk (1974) conducted studies involving various teaching methods and concluded that traditional approaches have not been successful with struggling students. One of their eleven suggestions for successfully serving remedial students is to accommodate individual differences and facilitate opportunities for students to learn at their own pace. They state, "individualized instruction is critical to the effectiveness of developmental programs" (Roueche & Kirk, 1974, p. 88). Struggling students typically do not have the listening skills to succeed in the traditional lecture-based classroom. They learn best by being actively engaged in the learning process.

Collaboration

Before proceeding, it is necessary to discuss the difference between collaborative learning and cooperative learning. Much of the existing literature uses the terms collaborative learning and cooperative learning interchangeably, and the definitions are very similar. Collaborative learning and cooperative learning have some variations in their processes, but their

long-term goals are very similar in nature (Bruffee, 1995). Both collaborative and cooperative learning are centered on the notion of students working together to accomplish a goal (Panitz, 1997). However, for the purposes of this study, the term collaboration will be used and will entail the complete make-up of students working together in order to achieve a common goal. In a true collaborative environment, one part cannot exist without the other parts. This interdependency enables a more structured environment in which to build the social skills necessary to accomplish the desired goal of scaffolding learning in a way that benefits students both academically and socially (Jones, 2010). Collaborative groups work together toward a common goal determined by the teacher. Collaborative learning is more student-centered than cooperative learning (Johnson et al., 1991). Transferring the responsibility of learning away from the teacher to students produces a more meaningful learning experience.

Collaborative learning, or the shared engagement of learners in the learning process to reach a common group objective (Bernard et al., 2000), has become an progressively widespread teaching strategy worldwide both in the preK-12 setting (Johnson & Johnson, 2009) and the post-secondary setting (Bell, Urhahne, Schanze, & Ploetzner, 2010; Vaughan, Nickle, Silovs, & Zimmer, 2011). Contrasting with numerous other instructional practices that have a tendency to come and go, collaborative learning has continued to be a favored educational practice since the 1980s (Johnson & Johnson, 2009). This result is mostly due to the findings in numerous empirical studies confirming the advantages of collaborative learning in regards to teaching and learning (Ding & Harskamp, 2011; Miller & Benz, 2008).

Collaborative learning has been one of the most scrupulously and meticulously researched of all instructional methods (Slavin, 1990), and has a long-standing, solid educational foundation that dates all the way back to Biblical times. Although its context was not in a

formal educational setting, the book of Ecclesiastes models the importance of working together to accomplish a common goal and the value in being able to help each other overcome individual weaknesses by joining forces with others.

Collaborative learning has roots in constructivist epistemology. In the early 1600s, Johann Amos Comenius, a pedagogical reformer, believed that students could benefit in their own learning by teaching each other (Johnson, Johnson, & Smith, 1998). The idea was that by verbalizing, explaining, and even arguing subject matter to their peers, students are able to reinforce concepts and create schema in which to establish improved retention of the material.

More than 900 studies have corroborated the value of using collaborative or cooperative learning (Johnson et al., 2000). Three individuals who deserve recognition for being the most widely-cited authors for their research contributions to collaborative and cooperative learning are Johnson, Johnson and Slavin (Sapon-Shevin & Schniedewind, 1992). They state, "if students' learning goals are structured cooperatively, then students will help, assist, encourage, and support each other to achieve" (Johnson & Johnson, 1992, p. 174). Slavin supports this concept by ascertaining that the ultimate goal of collaboration is for students to teach each other as part of the learning process (Slavin, 1991).

Elements of Collaboration

Johnson et al. (1991) specify that collaborative learning entails the use of small groups in an instructional setting in order for students to be able to work together and maximize their own, as well as each other's learning. A true collaborative learning environment includes certain essential elements that markedly separate it from the notion of students merely getting together in groups to work on an assignment (Johnson, 2003). These elements include five essentials: positive interdependence, individual accountability, face-to-face interaction, use of collaborative

skills, and group processing. Positive interdependence means that the group works together to reach a common goal. In order to reach the goal, everyone in the group must complete his part. Individual accountability means that all group members are responsible for the successful completion of their individual task. Face-to-face interaction requires group members to offer feedback to each other, as well as to encourage each other. Appropriate use of collaborative skills includes making sure that students practice team-building skills such as trust, communication, leadership, and effective conflict resolution and instructors should teach and model these skills to students (Johnson & Johnson, 1992). Finally, group processing requires team members to evaluate their progress and identify areas needing improvement.

Johnson & Johnson's design of collaborative learning demands that all students within a class actively engage in the learning process. It is important to note that, although group success is crucial, collaborative activities must also have a degree of accountability whereby group members are assessed individually. This can be accomplished by using individual tests, as well as by holding each group member responsible for his contribution to a task. In order to achieve individual accountability, feedback should be given not only to the group but to each individual as well (Johnson & Johnson, 1999a).

Existing literature also denotes that in a collaborative environment, "students are expected to discuss what they are learning, explain to each other how to solve the assigned problems or complete the assignments, and provide each other with help, assistance, support, and encouragement" (Johnson & Johnson, 1992, p. 177). Additionally, successful cooperative groups should be able to assess their own strengths and weaknesses (Johnson & Johnson, 1999b) and discuss circumstances that help or hinder productive work within the group.

Slavin (1987) echoes many of Johnson & Johnson's ideologies about collaborative learning, including the fact that the essential feature is that all members within the group strive toward the same goal. Having a common goal places more value on the academic work and increases student motivation (Slavin, 1991). Slavin's work is built on the idea that "when the group's task is to ensure that every group member learns something, it is in the interest of every group member to spend time explaining concepts to his or her groupmates" (Slavin, 1991, p. 77).

One final note about the elements of a collaborative environment: it is essential that the teacher still determine and communicate the ultimate goal for each group (Barkley, Cross, & Major, 2005). Students are encouraged to share resources, provide mutual support, and express group celebration for the accomplishment of the assigned task, and the groups may determine how they wish to approach the given mission, but the teacher should still act as facilitator and be an active part of the learning environment (Johnson & Johnson, 1999b).

Effects of Collaboration

Numerous studies conducted on collaborative learning indicate that it is successful in promoting academic achievement (Johnson et al., 2000; Panitz & Panitz, 1998; Slavin, 1987). Johnson and Johnson (2002) sustained this notion by documenting more than 249 separate studies that have evaluated the effectiveness of collaborative, competitive, and individualistic learning in the college classroom. The findings of their meta-analysis indicated that collaborative learning led to a higher increase in academic achievement, improved critical thinking, enhanced problem solving, and greater transfer of learning compared to competitive or individualistic learning. They concluded that working together to achieve a common goal results in larger success rates than does working alone.

Findings from numerous research studies conclude that collaboration can provide numerous benefits to teaching and learning, including increased student motivation, perceptions of success, heightened levels of satisfaction, feelings of improved communication, cognitive growth, and socio-emotional or effective growth (Miller & Benz, 2008). Studies have also indicated that collaborative learning approaches in higher educational settings increase student motivation (Saleh, Lazonder, & Jong, 2007), improved attitudes towards the learning process (Yang & Chang, 2012), and increased academic achievement (Yang & Chang, 2012).

Collaboration has proven to be an effective instructional practice in satisfying the needs of a diverse variety of learners with various experiences, needs, personalities, goals, and abilities (Miller & Benz, 2008) by fostering opportunities for instructional differentiation. Collaborative learning has been known to be advantageous by allowing group participants to both contribute and obtain knowledge in a mutually beneficial relationship even when that knowledge is not equivalent between members (Saleh et al., 2007; Stump et al., 2011). As active participation and engagement increases, collaborative learning can result in increased student learning (Saleh et al., 2007).

Collaboration promotes active engagement in the learning process, thereby increasing the possibility of knowledge attainment (Treagust, 2007). Studies have indicated that constructive learning methods are heightened through collaborative learning (Dewiyanti et al., 2007). Collaborative activities also provide opportunities for inquiry-based learning, which has been known to increase long-term knowledge retention (Akinbobola & Afolabi, 2009).

Collaborative learning that transpires in small peer groups may promote student communication, shared ideas, and mutual feedback from peers; thus, leading to gains in student achievement and meaningful knowledge building (Stump et al., 2011). There are numerous

causes for increased grades in a collaborative learning environment. Studies suggest that seeing and reading other group members' ideas leads to mutual cognitive stimulation (Hopfer & MacEachren, 2007; Saleh et al., 2007; Stump et al., 2011). An increase in grades for at-risk students is likely the result of the fact that they receive additional individualized instruction from their peers when working in groups. High-achieving students' grades increase because they are better able to retain information when they are asked to redeliver information to others.

Numerous studies investigated shared responsibility for learning, collaborative exchanges in the classroom, and cooperative learning where students concentrated on sharing input on learning and setting common goals in a help-centered setting (Johnson & Johnson, 1991; Newman, Griffin, & Cole, 1989; Rogoff, 1994; Slavin, 1981, 1991, 1995; Solomon, Battistich, Kim, & Watson, 1996). Studies have also indicated that collaborative experiences promote greater interpersonal relations for students than do competitive or individual assignments (Jarvela, Volet, & Jarvenoja, 2010). As students learn to communicate and work with others, they see their own worth, thus building a higher self-concept. These positive relationships transfer to real-life situations. As students of differing backgrounds and abilities learn to work together, they become more understanding of diversities which will surround them on a daily basis throughout life (Economides, 2008), thus, developing a sense of community within the classroom. Teamwork among diverse students reduces the likelihood of accidental segregation which can result from the common practice of tracking students into classrooms based on similar abilities alone. Wang (2009) stated, "the developmental principles for normal and disabled children are almost the same, for which reason these two kinds of children should be educated together and take part in connatural activities" (p. 102).

Collaborative group strategies allow students to participate in conversation and debate, where the individual learner must consider the input of others while still defending his own perspective (Ding & Harskamp, 2011). Individual learners more efficiently develop their own understanding when provided with occasions to collaborate with peers through the process of critique, defense, and validation of concepts and opinions (Stump et al., 2011). This discussion within groups can encourage lower-achieving students to actively participate in the learning process (Saleh et al., 2007) and feel more like part of the classroom community than they would in traditional learning environments working in solitude.

When collaborative learning is utilized, individuals perceive that they can reach their goals if and only if the others in the group also reach their goals, thus creating a community within the classroom. Thus, students seek outcomes that are beneficial to all those with whom they are grouped. What makes collaborative learning different from most instructional methods is that students can help, assist, support, and encourage each other's efforts to learn. If there is an "appropriate social supportive system," students are more likely to "overcome emotional disturbance caused by inferiority complex and disadvantageous social position" (Wang, 2009, p. 102).

Student perception in collaborative environments is also an important factor toward success. Walberg & Anderson (1968) conducted a study on collaborative groups and the results indicated that student perceptions of the classroom climate directly correlated to their perceived learning during the course. The findings of this study were that there were 32 statistically significant correlations ($p < .05$). Students reported closer relationships with their peers, and improved decision-making ability when they were able to work with their peers.

Unlike competition, collaboration generates many positive effects on classroom behavior

as well (Anderman & Maehr, 1994; Covington, 1992). Collaborative learning increases students' individual perception of belongingness and contributes to a sense of belonging by the group (Osterman, 2002). In a study by Johnson, Lutzow, Strothoff, and Zannis (1995), collaborative learning promoted peer support and contributed to a significant drop in classroom disruptions. Collaborative assignments have also been linked to increases in student engagement in the learning process (Solomon, Battistich, Schaps & Lewis, 2000).

As collaborative partnerships are frequently essential in the successful workplace and society as a whole, the attainment of skills that encourage inquiry and critical thinking are essential. These skills are developed through active learning that facilitates interactions with peers (Stump et al., 2011). Active learning has been known to result in increased perseverance, more positive student attitudes, and increased student achievement compared to passive learning (Stump et al., 2011), therefore becoming a more favorable learning strategy (Cheung et al., 2011). And through experience in these collaborative partnerships, students are able to develop and practice skills necessary to being part of a community.

Computer-Based Instruction

A "personal, individualized approach to schooling is crucial for adolescents at risk for dropping out" (Ward et al., 2009, p. 199). Providing individualized instruction is often difficult in a traditional classroom setting where the student-teacher ratio is often very undesirable. Some students need to have material repeated multiple times, while other students become bored if too much time is spent on familiar material. Therefore, computers are ideal for teaching because they provide the opportunity for students to work at their own pace, repeating material as necessary or moving ahead as desired. Using technology as a learning tool creates a more learner-centered classroom which is focused on helping each individual learner reach his or her

potential; this then, leads to a "deeper and more sustained learning across the curriculum" (Johnson et al., 2010, p. 5).

Computer-based instruction, also known as computer-assisted instruction, first surfaced in the 1960s and was used primarily to drill, tutor, and test students (Kulik & Kulik, 1991). The earliest instances of software in instruction involved drill and practice and were popular throughout the mid-twentieth century. In the 1970s, technology that employed artificial intelligence models that could adapt to individual learners was introduced (Koschmann, 1996). Recent advances in technology have made computers more powerful and more feasible; therefore, more students have access to computers at home and at school (Rapaport and Savard, 1980). Experts in education predict that the use of computers and the internet in the K-12 setting will grow exponentially in the near future and will continue to grow indefinitely (Cavanagh, 2007).

Elements of Computer-Based Instruction

Computer-based instruction allows students to use interactive tools that often involves visual elements as well as auditory components. Computer-based instruction typically includes activities that are designed to supplement the learning process, but not entirely replace the teacher. The teacher's role is that of facilitator and coach (Brown, 2003). According to a report cited by Cavanagh (2007), "K-12 Online Learning: A Survey of U.S. School District Administrators," released by the Sloan Consortium in March of 2007, many of the public school administrators responding to the survey reported that they view the combination of face-to-face instruction and online instruction favorably as opposed to individualized online learning because it allows increased interaction between the student and the teacher. They noted that the blended

approach provided significantly more assistance for students, and would most likely result in increased comprehension of the material (Cavanagh, 2007).

Computer-based instruction may include videos, tutorials, online tutoring, and a website with additional resources (Ford & Klicka, 1998). Interactive tutorials are also available and contain guided practice problems (Mahmood, 2006; Merisotis & Phipps, 2000). Software can be programmed for completion of the specific learning goals, allowing students to work at an individual pace, but preventing them from proceeding to the next lesson before mastering the current one. So, students are able to control the pace of their own learning, without fear of embarrassment or the pressure of competing with their peers, although the teacher still controls a schedule for eventual completion of each lesson by all students. Students receive immediate feedback on assignments and can revisit topics until they have mastered the content (Cotton, 1991; Hannafin & Foshay, 2008). The computer allows for flexible accessibility, so each student can choose when, where and how long to work outside the classroom (Brown, 2003).

Teachers can create quizzes, tests, and other activities that are delivered, completed, and scored by the computer. Technology also assists the teacher by featuring components that store, organize, and process scores, and other data that inform instructors and students as to individual student progress throughout the course (Ford & Klicka, 1998). Frequent testing and timely feedback have been identified by the National Association of Developmental Education as critical components to developmental education (Boylan, 2002).

Effects of Computer-Based Instruction

Today's learners were born into a technology-rich world (Black, 2010). Students of the 21st century prefer methods of information access that is quick and efficient (Black, 2010). They prefer easy access to information, feedback that is immediate, and activities that are engaging;

plus, they enjoy being socially connected to others (Black, 2010; Wenger et al., 2009). All of these learning preferences are driven by technology (Black, 2010).

Research studies have indicated that the use of current technological tools may enrich the educational process through acquisition of knowledge (Findlay, 2012; Zhu, 2012). CSCL can also aid in the development of problem-solving skills by exposing learners to experiences in a collaborative learning community. This may better prepare them for success in the world of work (Minocha, 2009), thereby getting adolescents ready to be contributing members of a global society and allowing them to gain valuable experience in a community setting.

Numerous studies indicate that the use of a computer has a positive impact on student achievement and self-efficacy. Kulik and Kulik (1991) conducted a meta-analysis of 254 studies comparing outcomes in computer instructed and traditional classes. The study consisted of students from kindergarten through adulthood who used computer-based instruction in mathematics, social studies, science, language arts, and vocational classes. The computers were used for a variety of things including drill and practice, and tutoring. They found positive changes in student attitudes toward learning, a decrease in the amount of time needed for instruction, and an increase in exam scores. In 81% of the studies, the computer-based classes had higher end-of-course exam scores.

Cotton (1991) conducted a review of 59 research reports on computer-based learning and student outcomes and found that the use of computer-based learning as a supplement to traditional instruction produced higher achievement than traditional instruction alone. Bialo and Sivin-Kachala (1996) published a report based on 176 individual studies and literature reviews and concluded that technology had a positive impact on academic achievement for all subject areas from preschool all the way through higher education.

Several studies did indicate that the test scores of low-achieving students were higher with computer-assisted instruction combined with traditional instruction than with traditional instruction alone (Hannafin & Foshay, 2008). Fitzgerald and Koury (1996) conducted a review of studies from 1988 to 1995 and found that students with mild and moderate cognitive learning disabilities learned as well or better with computer-assisted instruction than without it.

The fact that computer-based instruction allows students to work at their own pace, and provides immediate feedback, along with guided practice problems and 24-hour access, eliminates many of the struggles faced by at-risk and struggling students (Merisotis & Phipps, 2000). Existing literature shows that computer-based instruction, used in supplement with traditional instruction in a blended format, results in higher test scores, specifically for low-achieving students, than with traditional instruction alone (Hannafin & Foshay, 2008). In fact, a review of studies from 1988 to 1995 in K-12 classrooms concluded that students with cognitive learning disabilities learned as well or better with computer-based instruction than with traditional lecture-based instruction alone (Fitzgerald & Koury, 1996).

Technology is currently at the forefront of education with legislatures insisting on the integration of instructional technology in the classroom (Johnson et al., 2010; NCLB, 2001) as well as pushing for the attainment of technological literacy skills (ITEAA, 2011) in order to make sure students are able to compete in a global economy (Williams, 2009). Therefore, further studies should be conducted as to the use of technological skills in the classroom in order to influence educational pedagogy.

Computer-Supported Collaborative Learning

Researching CSCL is often difficult for a number of reasons. To start with, the terminology is different throughout the existing literature. Some studies refer to it as computer-

based collaborative learning, while others refer to it as computer-assisted cooperative learning or even online collaboration. Many searches also yield results for virtual learning environments, and other forms of online learning or online communities. It is important to note, that for the purposes of this study, CSCL will consist of the use of computers to assist groups of students reach a common learning goal. The computers will be used to supplement the learning process in a traditional face-to-face classroom setting, creating what is known as a blended learning format.

The overall goal of CSCL is to combine technological tools with collaborative environments that facilitate social knowledge construction via an array of methodologies (Gress & Hadwin, 2010). While there is not much existing literature regarding the use of computer-based collaborative learning at the high school level, as this study intended to address, there have been some studies done on computer-based collaborative learning at both the secondary level and elementary school level.

Though studies in collaborative learning and technology took place throughout the 1980s and 90s, the earliest public workshop directly addressing CSCL occurred in 1983 and was entitled, "Joint Problem Solving and Microcomputers." In 1989, the term "computer-supported collaborative learning" was first used in a NATO-sponsored workshop in Italy (Stahl et al., 2006). The swift development of social media technologies and the increasing need and desire of individuals to understand and use those technologies have piqued the interests of researchers from various disciplines to the field of CSCL (Resta & Laferrière, 2007).

Learners in the present day are more socially connected through technological tools than in previous generations (Robinson & Stubberud, 2012). Evidence indicates that youths favor learning via the use of technology that increases collaboration (Elsaadani, 2012) and reduces

response time (Lightfoot, 2009). Studies have indicated that "students working in small groups tend to learn more of what is taught and retain it longer than when the same content is presented in other instructional formats" (Vaughan et al., 2011, p. 113), resulting in a fondness towards collaborative activities across the curriculum (Bell et al., 2010). Today's generation of learners have been labeled as "the most socialized generation in the digital world" (Black, 2010, p. 96). The interest in increased socialization has resulted in an increased need to study how collaborative activities and the use of technology may impact learning in various subject areas.

Much of the literature on CSCL has been focused on higher education; therefore, more research regarding the effects of collaborative learning on the K-12 population needs to be conducted (Ronsisvalle & Watkins, 2005). An essential component of CSCL has been the degree and quality of interactions as well as the immediacy of feedback. Therefore, an increasing need exists to examine the impact of educational technology tools on student learning at the post-secondary level (Resta & Laferriére, 2007) as well as the implications of research findings in the K-12 classroom (Ronsisvalle & Watkins, 2004).

Elements of Computer-Supported Collaborative Learning

While a plethora of technology can be used to facilitate CSCL, there are certain components that should be included: individual participation, interaction among group members, social cues, cognitive skills, and meta-cognitive skills & knowledge construction (Anderson, 2007; Asterhan & Schwarz, 2010; Breland & Shiratuddin, 2009; Burton & Martin, 2010; Capponi, Nussbaum, & Lagos, 2010; Jones, 2010; Koschmann, 1996; Stahl et al., 2006). Teachers, acting as facilitators, may create homework, discussion board posts, blogs, quizzes, and exams that can be graded by the software (Brown, 2003).

Additionally, collaborative writing should be part of the CSCL experience (Onrubia & Engel, 2009). Collaborative writing can take on many forms including research papers, blogs, interactive whiteboards, and short stories. The process of planning and writing as a group enables students to state their ideas and verbalize their understanding of the subject matter as well as to reflect on the learning process.

Another aspect of CSCL is technology-mediated discourse. Technology-mediated discourse refers to the use of technology to enable organized debates, discussions, and other social learning opportunities involving the examination of a given theme (Asterhan & Schwarz, 2010). Examples of common technology tools include mind maps, survey systems, and message boards. Like collaborative writing, technology-mediated discourse enables group members to participate in collaborative conversations and knowledge-building asynchronously, so as to accommodate individual schedules.

Effects of Computer-Supported Collaborative Learning

CSCL has been shown to produce many of the same benefits as traditional collaboration, including improved learning and academic performance (Koh & Lim, 2012). The interactive design of technological tools enhances the construct of collaborative activities while also promoting the formation of learning communities (Minocha, 2009). The formation of learning communities may lead to shared engagement, joint enterprise, and a mutual respect that promotes knowledge acquisition (Wenger, 1998; Wenger et al., 2009). In other words, use of technology tools encourages peer interaction and aids in the development of social networks that enable the sharing of knowledge and experiences (Siemens, 2006), allowing participants to feel like they are part of an online community. As social interactions and opportunities for immediate and continual feedback increase, students' enthusiasm about learning, motivation to

learn, ability to retain knowledge, and academic performance may also increase (Mahle, 2011). Students are provided with more flexibility and additional opportunities to learn through participation in mutual interactions with peers through the use of social software and other technologies (Minocha, 2009; Siemens, 2006), without being limited by time and geographic obstacles. This offers more flexibility, accessibility, immediate feedback, and long-term knowledge retention (Lim et al., 2009).

Research has consistently supported that collaboration offers both academic and social rewards (Bye, Smith, & Rallis, 2009; Miller & Benz, 2008; Yu, Tian, Vogel, & Kwok, 2010). Recent studies have also indicated that collaborative learning via the use of technology has become an important part of classrooms today (Keser, Uzunboylu, & Ozdamli, 2011; Yang & Chang, 2012). Collaboration along with the use of technological tools provides learners with many of the same rewards as traditional collaborative activities, yet in more efficient and beneficial ways (Miller & Benz, 2008). Using the basic beliefs of constructivism, students are capable of actively engaging in the learning process (Dewey, 1997) and share in a collaborative learning community (Dewiyanti et al., 2007; Donne, 2012; Vygotsky, 1986).

Althaus (1997) conducted a study examining the impact of computer mediated discussions on academic performance. All 134 participants were enrolled in the researchers' face-to-face discussion courses and given the opportunity to participate in computer-mediated discussion groups to supplement their face-to-face class. Students had the opportunity to log on and participate in the discussion at their convenience, which allowed them to have more time to read posts, reflect on them, and put together insightful responses. Results of this study were that students who actively participated in the computer-mediated discussions typically earned higher grades than students who only took part in face-to-face discussions.

Another study was conducted at a high school in Michigan in the 2010 – 2011 school year with 600 students, many of which were at risk of dropping out of school. This study used the flipped classroom model where students were able to watch recorded video lessons at their own pace in order to free up class time for collaborative projects and individual attention. The results of this study reflected an increase in the amount of time teachers were able to spend with each student, a reduction in classroom failures, a decrease in discipline problems and an increase in standardized test scores (Campbell, 2012).

In existing studies, the combination of computers and socialization with peers tends to lead to an increase in academic achievement and self-efficacy. Students engage more freely in collaborative virtual environments, pool knowledge and resources within the group context, and create final products which contain fewer errors (Breland and Shiratuddin, 2009). There are also indicators that collaborative computer-based projects result in the production of higher quality documents (Brodahl, Hadjerrouit & Hansen, 2011), and increased student engagement and reflection (Resta & Laferrière, 2007). It can be concluded that technology-enhanced social interaction employs cognitive processes with potential to improve academic achievement (Resta & Laferrière, 2007).

These benefits seem to be especially noteworthy with students who struggle in traditional classroom settings. At-risk students do have some weaknesses in certain areas, but also have strengths in other areas, and the combination of collaborative learning and computer integration can prove helpful in revealing these strengths. Collaborative learning environments assist in engaging students and building student self-efficacy, thereby increasing the likelihood that at-risk students will stay in school (Roueche & Kirk, 1974).

The growing use of technology in the workplace, home, and school has changed how information is delivered and how individuals learn (Chelliah & Clarke, 2011; Koh & Lim, 2012). The movement in the technological world is creating opportunities for CSCL both in and out of the workplace (Koh & Lim, 2012). The use of technology allows users the ease and capability of conducting work collaboratively (Koh & Lim, 2012; Wang, 2010). This is particularly essential as professionals must have the skills and abilities to effectively collaborate within their respective fields. As a result, educational institutions are obligated to prepare students for such circumstances (Lim et al., 2009), which creates a necessity to integrate computer-supported collaborative activities in the classroom.

Sense of Classroom Community

An essential component to examining the effects of computer-supported collaboration on student learning is developing an understanding of the concept of social presence, also known as sense of community. Social presence is one of the most noteworthy elements in refining instructional success and creating a sense of community. Sense of community has been defined as "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). Collaboration has been known to increase student sense of classroom community by decreasing the likelihood for learner isolation, thereby increasing opportunities for meaningful learning experiences (Palloff & Pratt, 2005). The development of a community of learners is enhanced through collaboration that fosters social construction of knowledge (Palloff & Pratt, 2000).

Sense of community has been acknowledged for playing a crucial role in collaborative learning in both traditional and online classrooms (Abfalter et al., 2012; Dawson, 2008; Rovai,

2002). For this reason, sense of community was examined in the current study as well. Sense of community, for the purpose of this study, was defined as how participants perceive that they belong in a social group and how their individual needs are fulfilled within that group (Abfalter et al., 2012; Wenger, 1998; Wenger et al., 2009). Sense of community in the classroom has turned out to be a progressively vital notion as collaborative activities brings about the formation of learning communities within the classroom (Rovai, 2002). This is reinforced by the literature on effective education rooted in the theories of both constructivism and social learning.

The use of technology has been shown to deliver ways for users to share common experiences, hence establishing a community of practice (Wenger et al., 2009). When a community of practice is developed, learning may turn out to be more relevant, trust and mutual respect may increase, individuals may become more engaged in the learning process, and expansive learning may, therefore, be developed (Wenger et al., 2009). As technological tools that support communication become more widespread, the theory of communities of practice continues to become more relevant (Wenger et al., 2009). When technological environments are created within the classroom and users experience increased involvement and engagement specific situations and practices may be formed that link interaction between technologies, which may generate mutual agreements (Wenger et al., 2009), thus leading to the creation of sense of community.

Royal and Rossi (1996) found sense of community to be associated with student behavior. The higher the sense of community, the less likely students were to play a part in negative behaviors, skipping classes, or even dropping out of school. Bateman (1998) conducted a study examining students' psychological sense of community in the classroom as compared to social and academic skills. This study found a positive correlation between psychological sense

of community in the classroom and academic achievement. Studies have also associated increased sense of community in school with greater academic motivation (Hawkins, Catalano, Kosterman, Abbot, & Hill, 1999; Solomon et al., 2000).

Wighting (2006) conducted one of the few existing studies regarding sense of community at the high school level by examining the relationship between sense of community and use of technology. This study of ninth and eleventh grade students (N = 181) revealed a positive correlation between technology and sense of classroom community for the participants. In addition to the notion that the use of computers may add to students' motivation and satisfaction of working within a community of learners, Wighting also stated that "classroom community is important and could be linked to academic success" (p. 378).

In another study among high school students, Wighting, Nesbit, and Spaulding (2009) found a positive correlation between sense of community and academic achievement when analyzing student achievement as measured by the PSAT. Nevertheless, recommendations for further study included examining the effect of sense of community on academic achievement using a variation of measurement tools (Wighting et al., 2009) because the study was small-scale and may not be generalizable to other populations.

One study involving middle and high school students found that a correlation existed between the middle school students' perceptions of relationships and academic achievement (Schulte, Shanahan, Anderson, & Sides, 2003); however, the same correlation was not found with the high school students, thereby warranting further research. Findings also indicated a relationship between sense of community, school attendance, and academic achievement; however, further research was suggested (Schulte et al., 2003).

A number of studies investigated collaborative interactions in the classroom involving students sharing ideas and goals and creating shared responsibility for teaching and learning (Johnson & Johnson, 1991; Slavin, 1981, 1991, 1995; Solomon, Battistich, Kim, & Watson, 1996). In 1994, Battistich, Solomon, Watson, and Schaps attempted to measure students' sense of classroom as a community. Elementary students in fourth, fifth and sixth grade were included in the study. The researchers examined students' perceptions of whether or not students cared about one another and felt as if they had an active and important role in the classroom setting. The researchers stated in their discussion that "we strongly believe that the concept of school as community has great potential for improving educational practice" and that "the concept of school community seems to be particularly powerful" (Battistich et al., 1994, p. 11).

Social community originates primarily from the work of McMillan and Chavis (1986) and McMillan (1996). It signifies the feelings of learners within the classroom community in regards to their interconnectivity, mutual trust, interdependence, and sense of belonging. Learning community, conversely, entails the feelings of learners within the classroom community in regards to the extent in which they share values and the degree to which their academic goals and expectations are satisfied by the group. Mutual goals are crucial features of learning communities and the learner must feel as though his contributions to the group play a part in creating a shared knowledge and where a sense of community is fostered through social interactions (Rovai, 2002).

The social nature of learning is becoming increasingly more widely accepted and gives emphasis to the importance of understanding sense of community in the classroom. Moreover, the benefits of collaborative learning and sense of community (Wighting et al., 2009) on academic achievement have been documented. When students socially engage, as they do in a

collaborative setting, a learning community is formed. Acquisition of knowledge is supported and enhanced when an effective learning community exists, thus promoting motivation to learn (Palloff & Pratt, 2000). Given the drive to implement collaborative activities in the classroom (Bell et al., 2010), research that studies the effect of collaborative learning on student sense of community is both timely and necessary.

Rovai suggests small-group activities in order to allow students to actively engage in an assortment of learning activities, resulting in the making of connections with other students and promoting community. Instructors should facilitate an environment that is meant to stimulate interaction. Learning in educational settings occurs in social circumstances both inside and outside the classroom (Chelliah & Clarke, 2011). As a result, both the school as a whole and the classroom can impact academic achievement, student attitudes, and persistence (Donne, 2012). Based on the findings derived from the plethora of professional literature on classroom communities (Buraphadeja & Kumnuanta, 2011; Royal & Rossi, 1996; Solomon et al., 2000; Walberg & Anderson, 1968), students involved in a classroom community should feel as though they fit in and are accepted at school, that they can trust others, that they can readily connect with others at the school, and that they are supported by the school. They should also perceive that they matter to other students and to the school; thus creating a sense of responsibility and obligation to each other and to the school. Rovai concludes that developing a sense of community is an essential first step in collaborative learning, without which students are not likely to be willing to take the risks involved in learning.

A strong sense of classroom community is derived from an educational environment where learners are actively engaged, teamwork is constant, diversity is incorporated, and learners trust, and respect each other. It also involves an environment where students share a vision for

the school and its future, and develop a common sense of purpose. Research indicates a strong sense of community is positively correlated with increased persistence, as well as increased learning support, group commitment, collaboration, flow of knowledge and learning satisfaction. Rovai concluded that "if sense of community is strong, the educational journey is likely to be both productive and satisfying for students" (Rovai et al., 2004, p. 277).

The current pedagogical drive in the direction of collaborative learning has illuminated the importance of sense of community in the classroom (Wighting et al., 2009). However, most of the existing studies have focused on the effects of collaboration on sense of community for students at the post-secondary level (Cameron et al., 2009; Koh & Hill, 2009; Ouzts, 2006). Wighting's study is one of the few studies that examines the effects of collaborative learning on students' sense of community at the high school level. Wighting (2009) found a positive correlation between sense of community and academic achievement.

The significance of sense of community for improved knowledge retention is also supported by research. Wehlage, Rutter and Smith (1989) concluded that effective schools offer students a supportive community. Vann and Hinton (1994) conducted a study of adult learners in a worksite GED program. They found that 84% of program completers were a part of class cliques, while 70% of program dropouts were socially isolated. In another study, Ashar and Skenes (1993) found that by building a social environment in a higher education business program, social integration had a significant positive effect on student retention. They concluded that students may have initially been attracted to the program based on learning needs alone, but not to retain them and those students who perceive connections to other students are more likely to persevere to graduation.

Overall, research indicates that there are many benefits to individuals with a strong sense of community (Abfalter et al., 2012; Slynn, 1981). The experiences associated with sense of community provide opportunities for adolescents to participate in important social roles that are crucial to development of relationships within society (Chiessi et al., 2010) and lead to the creation of a social learning community (Rovai, 2002). The interactions between members of a community are important in the development of both personal and social identity (Chiessi et al., 2010); therefore, a strong sense of community within an educational setting may positively impact both students and teachers (Rossi, 1997).

Studies that involve undergraduate college students have indicated a correlation between increased sense of community and perceived academic achievement (Buraphadeja & Kumnuanta, 2011). At a high school level, sense of community has been found to increase learning and academic achievement by increasing peer involvement (Wighting et al., 2009). Despite current understandings of sense of community in the classroom that has focused on adult learners, a need exists to examine sense of community more thoroughly in adolescents (Chiessi et al., 2010; Wighting et al., 2009).

Summary

In conclusion, a number of studies exist that establish the positive effects of both collaborative learning and CSCL on student learning (Bluic et al., 2010; Winters & Alexander, 2011; Yang & Chang, 2012), and some studies have indicated that the use of these two strategies combined has an even more significant impact on student academic achievement, but few studies have been conducted to show the impact of CSCL at the high school level in a blended environment through conjunction with the face-to-face setting.

As budget cuts continue to be a hot topic in education, class sizes are increasing but the

amount of technology in each classroom is not. There is a need to restructure the current learning environment in order to improve graduation rates among students, and CSCL may be an option in improving student engagement, compensating for various learning styles and abilities, working with limited technology, and addressing the overwhelming student-teacher ratios.

Additionally, few studies exist that examine the effect of CSCL on sense of community. This is in spite of legislators and educators continuing to push for social construction of knowledge inside the classroom (Johnson et al., 2010). The development of social communities that fosters feelings of perceived shared respect and desire to work for a common goal is becoming more and more frequent in pedagogy (Cheung et al., 2011; Dewiyanti et al., 2007; Donne, 2012; Yang & Chang, 2012).

This study seeks to fill the current gap in the literature by measuring sense of classroom community at the high school level as it relates to CSCL, thus supporting the theories of constructivism, social development theory, and communities of practice theory.

CHAPTER THREE: METHODS

Overview

Collaborative learning and computer-based instruction can have a positive impact on academic achievement of students, but few studies have been done at the high school level to assess the impact of CSCL on student perceptions of the learning environment. The purpose of this study was to determine the effect of CSCL on student sense of community, connectedness, and learning in a high school Marketing Principles course. This methodology section includes a detailed description of the design, participants, setting, instrumentation, procedures, and data analysis for this study.

Design

This quantitative study utilized a static group comparison design involving the use of subjects that were assigned to the experimental and control groups by non-random assignment (Gall, Gall, & Borg, 2007). Students chose to take Marketing Principles as their elective, and were placed in sections of the course throughout the day via computer selection, depending on the availability of their other courses. As a result, true randomization of participants was not possible, making a quasi-experimental design a necessity (Gall et al., 2007). The rationale for the static group comparison design was based on its simplicity.

The focus of this study was on computer-supported collaborative learning (CSCL) and how it impacts student sense of community, sense of connectedness, and sense of learning. The independent variable in this study was the type of learning environment: traditional or CSCL. CSCL is defined as using a computer to complete enrichment activities which require students to work together in order to achieve a common goal (Persico et al., 2010). The dependent variables were sense of community, sense of connectedness, and sense of learning. Sense of community,

is defined as the feeling of belonging and importance as measured by the Classroom Community Scale (Rovai, 2002). Connectedness is defined as the feelings of the participants regarding their "connectedness, cohesion, spirit, trust, and interdependence" (Rovai, 2002, p. 206). Learning is defined as the "feelings of community members regarding interaction with each other as they pursue the construction of understanding and the degree to which members share values and beliefs concerning the extent to which their educational goals and expectations are being satisfied" (Rovai, 2002, p. 206-207).

Research Questions

The research questions for this study are:

RQ1: Is there a statistically significant difference between high school students' overall *sense of classroom community* as measured by the Classroom Community Scale when participating in computer-supported collaborative learning as compared to students who participate in traditional learning only?

RQ2: Is there a statistically significant difference between high school students' *sense of connectedness* as measured by the Classroom Community subscale when participating in computer-supported collaborative learning as compared to students who participate in traditional learning only?

RQ3: Is there a statistically significant difference between high school students' *sense of learning* as measured by the Classroom Community subscale when participating in computer-supported collaborative learning as compared to students who participate in traditional learning only?

Hypotheses

The null hypotheses for this study are:

$H_0$1: There is no statistically significant difference in high school students' overall *sense of community* as measured by the Classroom Community Scale when participating in computer-supported collaborative learning as compared to students who participated in traditional learning only.

$H_0$2: There is no statistically significant difference in high school students' *sense of connectedness* as measured by the Classroom Community subscale when participating in computer-supported collaborative learning as compared to students who participated in traditional learning only.

$H_0$3: There is no statistically significant difference in high school students' *sense of learning* as measured by the Classroom Community subscale when participating in computer-supported collaborative learning as compared to students who participated in traditional learning only.

Participants and Setting

The population for this study consisted of high school students located in a public school system in northeastern Georgia during the Spring 2018 term. The school district was a very diverse suburb outside of Atlanta. The school system enrolled more than 170,000 students during the 2016 – 2017 school year (NCES, 2016). Of those students, 65% identified themselves as white, 14% black, and the remaining percentages were split among American Indians, Asians, Pacific Islanders, and a small percentage that identified themselves as "other." Data reflects that 12% of the students in the county were on Individualized Education Plans, and 12% received English Language Learners support (NCES, 2016).

From that population, a convenience sample of 139 participants were drawn from one school. From that sample, 112 students returned their assent/consent forms and were considered

eligible participants in this study. The sample size of 112, exceeded the required minimum of 100 participants for a medium effect size with statistical power of .7 at the .05 alpha level (Gall et al., 2007). Students were selected through a non-randomized convenience sampling because they were already enrolled in one of four Marketing Principles courses being taught at this school by this particular teacher.

The school used in this study consisted of students in grades 9 – 12. Based on data from the school accountability report (Lee & Dees, 2016), total student enrollment at this particular school within the district was approximately 2600 students. The school consisted of a student body which was majority black (73%), with a minority Caucasian population (8%). The school had a small ESOL population, and roughly 13% Special Education students. According to school records, many of the students throughout the school were transient students that had only been in this school for a limited amount of time.

According to The National Center for Education Statistics (2016), approximately 63% of the students were in the free or reduced lunch program. Therefore, the school had been identified as a Title I school. The school involved in this study failed to make Adequate Yearly Progress for two consecutive years due to a low graduation rate, and was placed on a plan for improvement in which the dropout rate was a major concern.

Participants were placed into either the control group (n = 56) or the treatment group (n = 56). Once the students indicated a desire to register for Marketing Principles, the school computer randomly placed the students in one of four sections offered throughout the day. These sections are referred to as Marketing Principles sections 2, 4, 6 and 8. The sample was identified from the population through the teacher's willingness to participate. Students who returned their consent/assent letters were considered participants in this study. Students were all 9th through

12th graders with an array of academic abilities, including Advanced Placement students, as well as special needs students with a variety of disabilities. The Marketing Principles classes introduce students to basic marketing and entrepreneurship skills, including writing a business plan and starting and advertising a business.

The participating sample consisted of 62 males and 50 females. There were 67 freshmen, 29 sophomores, 12 juniors and 4 seniors. The average age of the sample was 16 years old. From the sample, 2 students identified themselves as American Indian, 1 Asian, 93 Black, 9 Hispanic, 3 White, and 4 mixed. Total sample size was 112.

The teacher involved in the study held a current professional teaching license in her field in the state of Georgia and was a fourth year teacher. She was a member of the newly-established Entrepreneurship Alliance and had assisted in establishing an Entrepreneurship program in this particular school. She was in good standing as measured by the prior year's professional yearly evaluation by the building principal and associate principal, and was the current Teacher of the Year at this particular school at the time this study was conducted.

The students indicated on their course selection sheets during the prior year's registration process that they would like to be enrolled in Marketing Principles. Marketing Principles was designed to introduce students to all aspects of starting, owning, and operating a business. This course was the first course of three in the Marketing Pathway offered in the state of Georgia. From within the Marketing Principles course, the researcher and classroom teacher selected the Entrepreneurship Unit for this study. All of the instruction for the unit being taught in this study was given by the classroom teacher and had been approved by the Marketing teachers throughout the state of Georgia and aligned with current district and state standards. Instruction of the control group and the experimental group consisted of the same content and was provided to all

students in a face-to-face classroom setting over a period of four weeks. The only difference in the setting between the two groups was the medium in which the activities were completed, and this served as the treatment. The control group engaged in traditional activities, as well as some computer-based instruction, working alone. The experimental group engaged in computer-based instruction, collaborative activities, and a combination of both in what is known as computer-supported collaborative learning (CSCL). The school was on block schedule, where classes met every other day for 90 minutes each day. Marketing Principles is considered a yearlong course, and was broken down into two semesters, with each semester running approximately 18 weeks.

The participants in the study were assigned to an experimental group and a control group using non-randomized means. Since both groups were expected to be equivalent in demographic and gender make up, two class sections were designated as the experimental group and the remaining two sections were designated as the control group. Each group consisted of a morning class and an afternoon class. The rationale for choosing this method was that it was not feasible to schedule students in course sections based on random assignment. There were many factors that were involved in the scheduling of students, including grade level, availability of core courses, and elective courses that would prohibit random assignment.

The control group included 29 males and 27 females. There were 30 freshmen, 12 sophomores, 11 juniors and 3 seniors in the control group. The average age of the group was 16 years old. From this group, 1 student identified himself as American Indian, 49 students identified themselves as Black, 3 Hispanic, 2 White, and 1 mixed. The control group included 56 total students from Marketing Principles periods 2 and 4.

The treatment group included 33 males and 23 females. There were 37 freshmen, 17 sophomores, 1 junior and 1 senior in the treatment group. The average age of the group was 16

years old. From this group, 1 student identified himself as American Indian, 1 Asian, 49 identified themselves as Black, 1 Hispanic, 1 White, and 3 mixed. The treatment group included 56 total students from Marketing Principles periods 6 and 8.

Instrumentation

To measure student sense of community, sense of connectedness, and sense of learning, the Classroom Community Scale was used (Rovai, 2002). The notion of classroom community is constructed on the concept of community as contained in the professional literature. In order to explore the factors that influence students' sense of community so as to assist in course design and instructional delivery, Rovai (2002) developed and field-tested the Classroom Community Scale (CCS). These factors included "feelings of connectedness, cohesion, spirit, trust, and interdependence among members" (Rovai, 2002, p. 201). A set of 20 questions was developed to address the identified components of sense of community. Later, more questions were added in order to address feelings of community specific to either the traditional or virtual classroom. As a result, the final Classroom Community Scale is suitable for use in both traditional face-to-face classrooms as well as virtual or online classrooms (Rovai, 2002). Next, the questions were evaluated by a panel of three experts to determine relevancy. As a result, non-relevant items were deleted. The result was the final Classroom Community Scale which contains a total of 20 questions with a range of responses using a 5-point Likert-type scale.

The Classroom Community Scale was field tested for reliability with a Cronbach's coefficient α of .93 (Rovai, 2002). Validity of the Classroom Community Scale was confirmed through the ratings of the three university professors who taught educational psychology, as well as grounding each item in the professional literature (Rovai, 2002). Additionally, the readability

and ease of understanding of the Classroom Community Scale were verified through a Flesch Reading Ease score of 68.4 and Flesch-Kincaid grade level score of 6.6 (Rovai, 2002).

Lastly, two subscales of the Classroom Community Scale were identified: connectedness and learning (Rovai, 2002). Connectedness represented the feelings of cohesion, spirit, trust and interdependence, while learning represented the feelings of involvement as they related to the expansion of knowledge and shared values and beliefs as individual educational goals and expectations are being satisfied (Rovai, 2002). Internal consistency was estimated for each subscale, with a Cronbach's α of .92 for the connectedness subscale and a Cronbach's α of .87 for the learning subscale. Therefore, both subscales showed reliability (Rovai, 2002). The Classroom Community Scale is appropriate for use on adolescent students (Rovai, Wighting, & Lucking, 2004; Wighting et al., 2009). The usefulness of the CCS is especially important for research in a K-12 educational setting where student learning and perseverance are persistent issues (Rovai et al., 2004).

Permission to use the Classroom Community Scale for this particular study was granted by Rovai through email correspondence (Appendix A). Permission to use the Classroom Community Scale is provided, as "researchers may use this instrument [the Classroom Community Scale] for studies they conduct provided they give proper attribution by citing this article" (Rovai, 2002, p. 202). See Appendix B for a print version of the Classroom Community Scale. The Classroom Community Scale was completed in an online survey utilizing the SurveyMonkey® online survey program. Students were given approximately 30 minutes during class to complete the Classroom Community Scale.

Scoring of the Classroom Community Scale is completed by instructing students to choose the option on the Likert-type scale that most appropriately describes their feelings about

each item. The options were strongly agree, agree, neither agree nor disagree, disagree, and strongly disagree (Rovai, 2002). The researcher then computed scores by adding points that are preassigned to each of the items, with the most favorable choice being assigned a value of 4 and the least favorable choice being assigned a value of 0 (Rovai, 2002). For items 1, 2, 3, 6, 7, 11, 13, 15, 16, and 19, the following scoring scale was used: strongly agree = 4, agree = 3, neutral = 2, disagree = 1, strongly disagree = 0; for items 4, 5, 8, 9, 10, 12, 14, 17, 18, and 20, the scale was: strongly agree = 0, agree = 1, neutral = 2, disagree = 3, strongly disagree = 4. To obtain the overall Classroom Community Scale score, one must add the weights of all 20 items. Scores on the Classroom Community Scale may range from 0 to 80, with a higher score reflecting a strong sense of community and a lower score reflecting a weak sense of community (Rovai, 2002).

Subscale raw scores range from a maximum of 20 to a minimum of 0. To calculate the connectedness subscale score, the scores of odd Classroom Community Scale items, i.e., 1, 3, 5, 7, 9, 11, 13, 15, 17, and 19, are added together. Similarly, to calculate the learning subscale score, the scores of the remaining even Classroom Community Scale items are added together. Possible scores for each of the subscales range from a maximum of 20 to a minimum of 0, with a higher score reflecting a strong sense of connectedness or learning and a lower score reflecting a weak sense of connectedness or learning.

Procedures

Permission to conduct the study was obtained from the principal at the school (Appendix C). Next, the researcher requested permission to conduct the study from Liberty University by submitting to the Institutional Review Board (IRB). See Appendix D for IRB approval. Upon completion of all necessary revisions and final approval from the IRB, the researcher contacted

the classroom teacher again via email to confirm the start of the study (Appendix E). The researcher and classroom teacher met to confirm the unit plans, and review specific instructional methods for the treatment group. See Appendix F for the Timeline for the Entrepreneurship unit.

Each intact Marketing Principles class was assigned to either the control group or the treatment group, leaving two classes (sections 2 and 4) learning via traditional methods, and two classes (sections 6 and 8) learning through computer-supported collaborative methods. Consent forms were then sent home with students under the age of 18 requesting parental permission to participate in completing the Classroom Community Scale once the study was complete. These completed consent forms were collected by the classroom teacher. See Appendix G for a copy of the parental consent form. It was decided during the IRB process that students over the age of 18 were not issued parental consent forms, and merely indicated their desire to participate by telling the teacher they would like to participate.

Once instruction began, the contents of the Entrepreneurship unit were taught to both groups using the same curriculum covering specific predetermined standards according to the state curriculum. The materials for this study were written by the Marketing teacher, in conjunction with the researcher based on the definitions provided for each of the factors involved. Much of the materials were obtained from affective elements of outside curricula, including materials from the Young Entrepreneurs' Alliance, the Network for Teaching Entrepreneurship, and the Georgia Real Curriculum. Some of the materials came directly from the textbooks, some were provided by software manufacturers and have been adapted based on the course content, and some were created based solely on the teacher's assessment of student growth as the study progressed, provided that teacher did not violate any of the parameters of the study. Materials for the entire unit came from CEV Multimedia, Ltd. and other resources created

specifically for Career and Technical Education secondary students, and included PowerPoint presentations, vocabulary, discussions, worksheets, and instructions for the project and can be found in Appendices H - R. All content for the entire unit, including terminology and conceptualization, was consistent, regardless of whether the students were in the control group or the experimental groups.

During the first part of the study, both groups were taught using the traditional lecture method, accompanied by note-taking and class discussions. The course material was delivered in a face-to-face setting for 90 minutes every other day for two weeks, at which point all material had been sufficiently covered according to the state standards. Students then completed the worksheets and supplemental activities. After two weeks of the study being implemented, the researcher met with the teacher to make sure there are no questions or concerns regarding the study. There were no concerns, so the study continued.

As the study progressed, the control group worked individually to complete the enrichment activities which consisted of individual assessments such as worksheets (Appendices I, J, K, L, and M), reading existing case scenarios, and a reflection paper in the form of a written essay. Students then completed the quizzes (Appendices N, O, and S) individually on the computer to check their progress. In the classrooms designated as part of the control group, students were not grouped together but sat in rows of seats in alphabetical order by last name.

In the experimental group, the students participated in CSCL, which involved both the use of computers and collaboration. For this unit, students were grouped according to career interests. For example, students who were interested in creating an online tutoring site worked together, and students who were interested in establishing a bakery all worked together. Each group had 4 or 5 members. These students received the same lectures (Appendix H) and

participated in the same class discussions as the control group. They were also asked to complete the same worksheets (Appendices I, J, K, and M) as the control group, but were able to work together with their group members to complete them, unlike the students in the control group which were required to work independently.

Enrichment activities for the treatment group also consisted of the same quizzes (Appendices N, O, and S) given to the control group. The quizzes for all participants were interactive and on the computer using eClass software and were completed individually, regardless of the group. The problems were free-response, multiple choice, and matching. Each question could be attempted three times during a session. The students received immediate grading of the problem once the submit button was clicked. Each assignment could be attempted up to 10 times. This allowed students to instantly identify and correct their mistakes in an attempt to earn a perfect score on each assignment. The software allowed the instructor to see the grade instantly for each student, decreasing the amount of time each instructor had to spend on grading and allowed more time to spend working one-on-one with the students. The instructor was also able to see the time spent, number of attempts, and the answers to individual problems for each student, so intervention strategies could be implemented as necessary. The computer learning system was available 24 hours a day from any computer that had internet access.

Students in both groups were required to use the computers to research two cases that related to the type of business on which they wanted to base their entrepreneurial venture. However, students in the control group were allowed to only use computers to do research with no collaboration, whereas the case studies were completed in groups in the treatment group.

Online tutorials created by the textbook editors were provided for students in both groups and included additional problems for students to solve if they chose to do so.

Once all the enrichment activities were given to all students in both groups (see timeline in Appendix F), both the experimental and control groups would apply the concepts they had learned in the unit by completing a unit project that would require them to create a simulated business and develop a business plan (Appendix P). Because a goal of this unit was to provide students with all the necessary elements to actually start the proposed entrepreneurial ventures immediately, all business plans would have to be realistic and feasible. No students would be allowed to select businesses that were not appropriate for school, nor would they be able to create businesses would require more than $500 to start up immediately. For example, if students wanted to open a restaurant, they would not be allowed to do so since they wouldn't have the monetary funds to start that in the near future; however, they could start a catering business using the same recipes. The cumulative project for each of the groups would be due the week prior to the end-of-unit test. All activities were designed to reflect the course content and to prepare the students for the end-of-unit test, which would serve as an indicator to the teacher that each student successfully mastered the standards of the unit. See Appendix P for the details of the business plan unit project.

This project required students in the control group to research and complete all elements of their business plan individually in a written format. Students in the control group were allowed to type their business plan and use computers only to do research with no collaboration. The classroom teacher was available both during class and after school to assist students seeking additional help.

Students in the treatment group were allowed to work in groups for the business plan project. Students were in groups of four or five based on similar interests. Like the control group, the treatment group used computers to do research, however, the treatment group used collaborative software to combine their research. CSCL consists of using a computer to complete enrichment activities which require students to work together in order to achieve a common goal (Persico et al., 2010). All students must contribute to the group to some degree and communication and teamwork among the members is essential to the completion of the assignments. Therefore, to complete the business plan in the treatment group, each member within each team was responsible for one or more of the functions of a small business (See Appendix R). For example, one student might be in charge of product development, while another was responsible for the marketing of the business, and a third member might have specialized in competitive analysis and public relations. The fourth, and possibly fifth member of each group, may have been the resident expert in the chosen field. This would be the chef in the catering business, or the scholar in the online tutoring business.

Each member of the group was also required to utilize collaboration software (Google Docs) to enhance their part of the business plan. For example, the Chief Financial Officer was allowed to develop a plan for using current software to establish a budget, while the Marketing Agent utilized graphic design software to create logos and branding for the company and to create a website. All of the elements of the business plan for each group had to be joined together into Google Docs and presented to the class in an oral presentation. Like the control group, these students also wrote a reflection paper upon completion of the unit project. For the treatment group, this included a breakdown of how well the group worked together and what struggles were faced within the group.

Students in both the control group and the treatment group submitted their business plan projects to the teacher for a grade and presented it to the class. After all the material was presented, and all enrichment activities were implemented in each group, the end-of-unit test (Appendix S) was administered to all participants individually. The end-of-unit test was the same for all of the students involved in the study and was in the format of paper-and-pencil. Students marked their answers on a Scantron form which was graded by the classroom teacher.

Upon immediate completion of the study, the teacher was given access to the Classroom Community Scale (CCS). The survey was completed through Survey Monkey, a secure internet survey site, during regular class time. The teacher received brief instructions to read aloud to students regarding the survey and then allowed students approximately 30 minutes to complete the survey. During the IRB process, it was decided that demographic information should not be included with the completed surveys, in order to protect student privacy. The average CCS scores for each group provided an indication of the sense of classroom community in each group, an important indicator when working collaboratively.

The completed surveys were given to the researcher for analysis. No incentive was provided for students because the Entrepreneurship Unit was considered part of the normal curriculum. Students whose consent forms were not returned to the classroom teacher did not participate in completion of the Classroom Community Scale survey as the survey is not considered part of the normal curriculum. These students worked silently and individually on a reflection assignment during this time.

The researcher and classroom teacher are the only data collectors in the Marketing classes. This served as a safeguard control over the confidentiality and safekeeping of survey responses for each participant in order to assure anonymity. The directions for the CCS were

detailed at the beginning of the survey (Appendix B). Following completion, the surveys were organized and secured to maintain confidentiality.

The researcher then added and interpreted the scores for each student. The data was input into the SPSS statistical computer program for ensuing quantitative analysis and was handled only by the researcher. All procedural material, including school permission, IRB permission, consent forms, assent forms, etc. are included in the appendices.

Data Analysis

A series of *t*-tests were used to analyze the data. First the researcher screened the data for errors, inconsistencies, and outliers. Then descriptive statistics were compiled and reported to include the group means and standard deviations. Box and Whisker plots were run and any outliers were removed. The researcher checked for normality using the Kolmogorov-Smirnov test (Green & Salkind, 2013). Any violations of normality that were found were noted. Levene's Test of Equality of Variance was conducted to find out if the group distributions consisted of the same variances (Warner, 2013). Any violations of equal variance that were found were noted. Next, a *t*-test for the difference between the two sample means was conducted at the 95% confidence level. The two groups were compared in each of the three categories of the Classroom Community Scale (CCS) survey with a separate *t*-test for each comparison. In order to limit the risk of type I error with multiple tests run, a Bonferroni correction was used (Warner, 2013). The Bonferroni correction was calculated by dividing the alpha level of .05 by the number of tests run, which in this research is 3, with the new alpha level set at .02. The null hypothesis would be rejected with statistical significance if $p < .02$. The effect size was reported as eta squared ($\eta 2$) (Gall et al., 2007), including determining the mean scores and standard deviations for the survey scores (Gall et al., 2010). IBM SPSS statistical software was used to

determine if there were significant differences between the means of the control and experimental groups.

CHAPTER FOUR: FINDINGS

Overview

The following chapter presents an analysis of the survey and collected data. First, the original research questions and hypotheses are stated. Next, the collected data is described with descriptive statistics to familiarize the reader with an overview of the findings. The following results section has been organized based on each of the hypotheses, along with corresponding statistical tests, analysis, alpha level, effect size and rejection or failed rejection of the null. Tables and figures of data and results are included.

Research Questions

RQ1: Is there a statistically significant difference between high school students' overall *sense of classroom community* as measured by the Classroom Community Scale when participating in computer-supported collaborative learning as compared to students who participate in traditional learning only?

RQ2: Is there a statistically significant difference between high school students' *sense of connectedness* as measured by the Classroom Community subscale when participating in computer-supported collaborative learning as compared to students who participate in traditional learning only?

RQ3: Is there a statistically significant difference between high school students' *sense of learning* as measured by the Classroom Community subscale when participating in computer-supported collaborative learning as compared to students who participate in traditional learning only?

Null Hypotheses

$H_0$1: There is no statistically significant difference in high school students' overall *sense of community* as measured by the Classroom Community Scale when participating in computer-supported collaborative learning as compared to students who participated in traditional learning only.

$H_0$2: There is no statistically significant difference in high school students' *sense of connectedness* as measured by the Classroom Community subscale when participating in computer-supported collaborative learning as compared to students who participated in traditional learning only.

$H_0$3: There is no statistically significant difference in high school students' *sense of learning* as measured by the Classroom Community subscale when participating in computer-supported collaborative learning as compared to students who participated in traditional learning only.

Descriptive Statistics

The data in this study were collected by the cooperating school, in conjunction with the researcher. Data were collected using an electronic, web-based survey, which was administered to students in Marketing Principles classes at the participating school during the Spring 2018 semester. The survey, which was an adapted version of Rovai's Classroom Community Scale (2002), contained 20 opinion statements which were scored on a five-point Likert scale. The statements included topics on sense of community, sense of connectedness, and sense of learning in the classroom. The participating student responses were used to compute descriptive statistics, which reflected the students' attitudes regarding the classroom community. The data can be found in Tables 1 – 3.

Table 1

Marketing Principles Students' Descriptive Statistics of Overall Sense of Community

	N	Mean	Std. Deviation
Traditional	56	44.68	8.36
CSCL	56	48.18	8.14

Table 2

Marketing Principles Students' Descriptive Statistics of Sense of Connectedness

	N	Mean	Std. Deviation
Traditional	56	21.07	5.66
CSCL	56	24.02	5.33

Table 3

Marketing Principles Students' Descriptive Statistics of Sense of Learning

	N	Mean	Std. Deviation
Traditional	56	23.61	4.80
CSCL	56	24.16	4.14

Results

Null Hypothesis One

Null hypothesis one examined if there is no statistically significant difference between high school students' overall sense of community scores regarding the use of computer-supported collaborative learning (CSCL). This hypothesis references the idea that in the overall scheme of sense of classroom community in either traditional learning or CSCL environment, there would be no difference in their attitudes.

Data Screening. Data screening was done to ensure that there were no inconsistencies or outliers. A box and whiskers plot was used to determine if there were any outliers in each group. No outliers were identified. See Figure 1 for the box and whiskers plot.

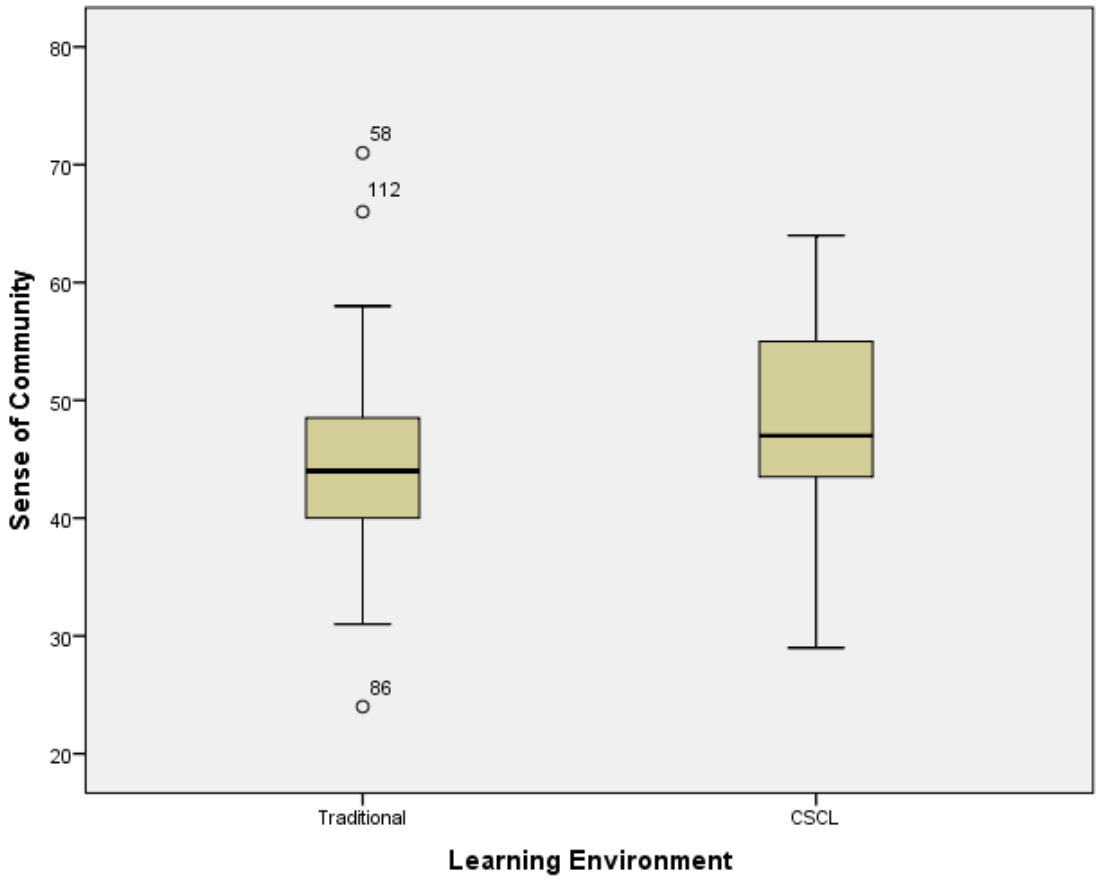

Figure 1. Box and whisker plot for overall sense of community in traditional learning and CSCL.

Assumptions. The independent samples *t*-test requires two assumptions be met. They are the assumption of normal distribution and the assumption of equal variance. The first assumption was that the test variable was normally distributed in each of the two samples. To determine whether the assumption of normality was met, the Kolmogorov-Smirnov test was used. The Kolmogorov-Smirnov test indicated that there were no violations of the normality assumption where (p = .20) for both groups.

The second assumption was that the variances of the test variable were equal for the two sample groups. To determine if this assumption was met, Levene's Test of Equality of Variances was used. No violations of the normality assumption were evident (p = 0.55), so the

variances of the two groups were considered equal and the assumption of homogeneity of variance was met.

Results for Null Hypothesis One. To test the null hypothesis that there is no statistically significant difference in overall sense of community between traditional learning and CSCL, an independent samples *t*-test was conducted. The test was not significant, $t(110) = -2.25$, $p = .03$, $\eta^2 = .04$. The effect size was small. The null hypothesis was not rejected because the *p*-value was more than 0.05/3 = 0.02 using the Bonferroni correction. There is not sufficient evidence to conclude that the participants who were taught using computer-supported collaboration ($M = 48.18$, $SD = 8.14$) felt a different sense of community than those who were taught using traditional methods ($M = 44.68$, $SD = 8.36$), thus, the researcher fail to reject the null.

Null Hypothesis Two

Null hypothesis two examined if there is no statistically significant difference between high school students' sense of community scores on subscale one (connectedness) regarding the use of computer-supported collaborative learning (CSCL). This hypothesis references the idea that in looking at sense of connectedness alone, in either traditional learning or CSCL environment, there would be no difference in their attitudes.

Data Screening. Data screening was done to ensure that there were no inconsistencies or outliers. A box and whiskers plot was used to determine if there were any outliers in each group. No outliers were identified. See Figure 2 for the box and whiskers plot.

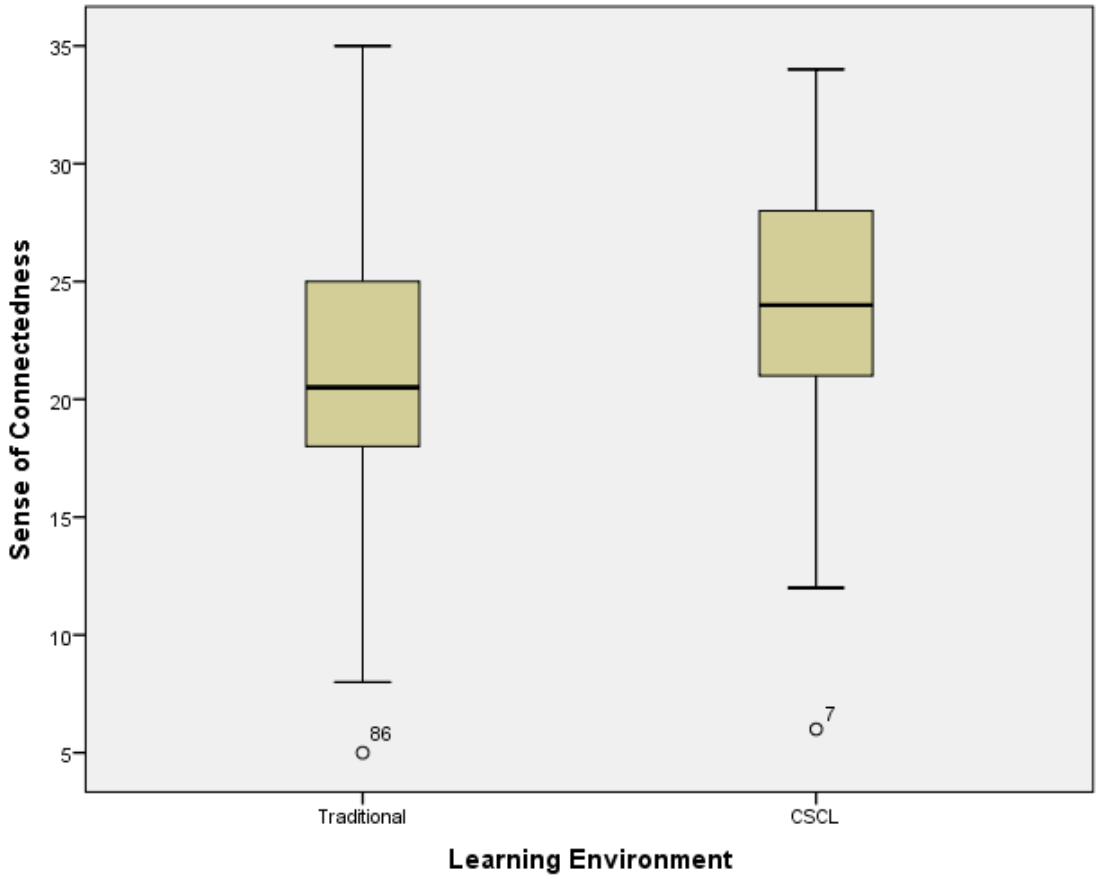

Figure 2. Box and whiskers plot for sense of connectedness in traditional learning and CSCL.

Assumptions. The independent samples *t*-test requires two assumptions be met. They are the assumption of normal distribution and the assumption of equal variance. The first assumption was that the test variable was normally distributed in each of the two samples. To determine whether the assumption of normality was met, the Kolmogorov-Smirnov test was used. The Kolmogorov-Smirnov test indicated that there were no violations of the normality assumption for computer based collaborative learning groups where ($p = 0.20$) but the assumption was valid for the traditional learning group where ($p = 0.02$). While the normality for the traditional learning group was violated, a visual inspection of the histogram (figure 3) indicated that there was a normal distribution of the data. Since the *t*-test is considered robust, the researcher proceeded with the analysis.

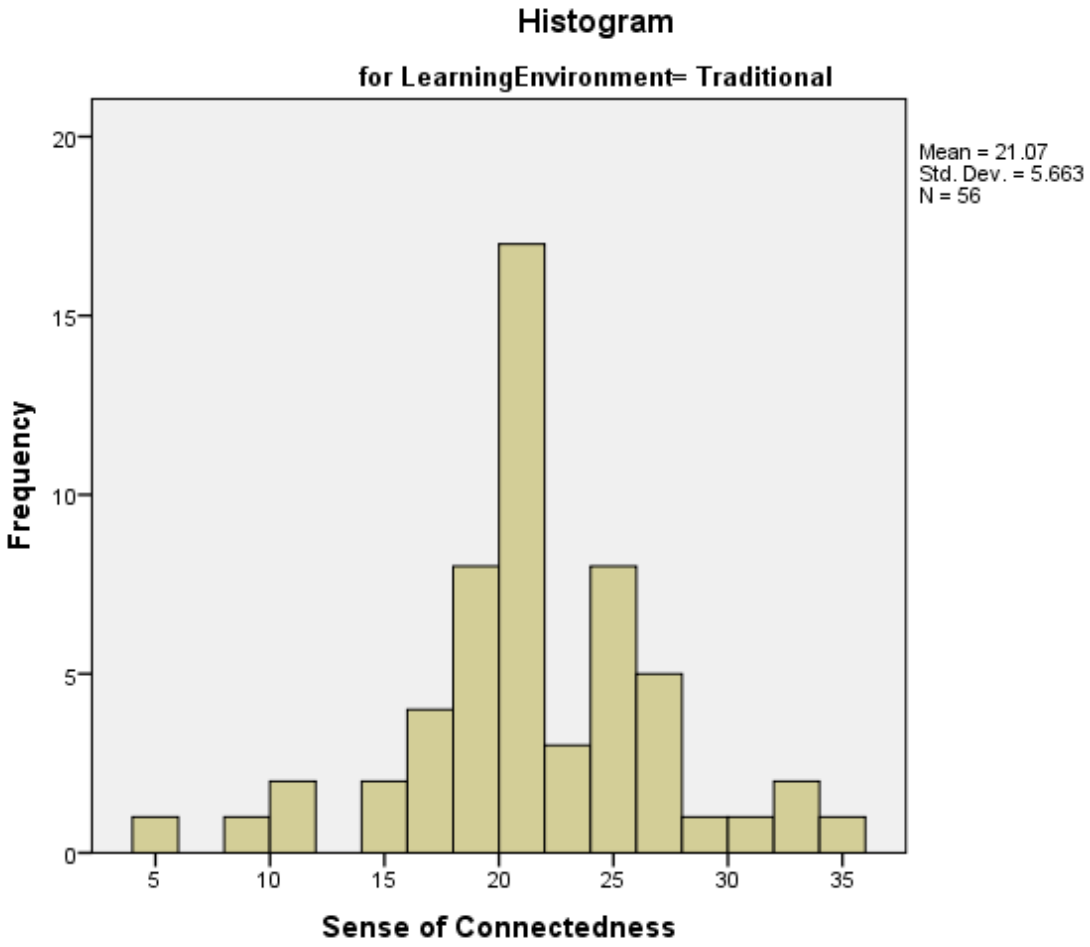

Figure 3. Histogram for sense of connectedness for traditional learning.

The second assumption was that the variances of the test variable were equal for the two sample groups. To determine if this assumption was met, Levene's Test of Equality of Variances was used. No violations of the normality assumption were evident ($p = 0.96$), so the variances of the two groups were considered equal and the assumption of homogeneity of variance was met.

Results for Null Hypothesis Two. To test the null hypothesis that there is no statistically significant difference in sense of connectedness between traditional learning and CSCL, an independent samples *t*-test was conducted. The test was significant, $t(110) = -2.84$, $p = .005$, $\eta^2 = .01$. The effect size was small. The null hypothesis was rejected because the *p*-value

was less than 0.05/3 = 0.02 using the Bonferroni correction. There was sufficient evidence to conclude that the participants who were taught using CSCL (M = 24.02, SD = 5.33) felt a greater sense of connectedness than those who were taught using traditional methods (M = 21.07, SD = 5.66), thus, the researcher rejected the null.

Null Hypothesis Three

Null hypothesis three examined if there is no statistically significant difference between high school students' sense of community scores on subscale two (learning) regarding the use of computer-supported collaborative learning (CSCL). This hypothesis references the idea that in looking at sense of learning, alone, in either traditional learning or CSCL environment, there would be no difference in their attitudes.

Data Screening. Data screening was done to ensure that there were no inconsistencies or outliers. A box and whiskers plot was used to determine if there were any outliers in each group. No outliers were found for either group. See Figure 4 for the box and whiskers plot.

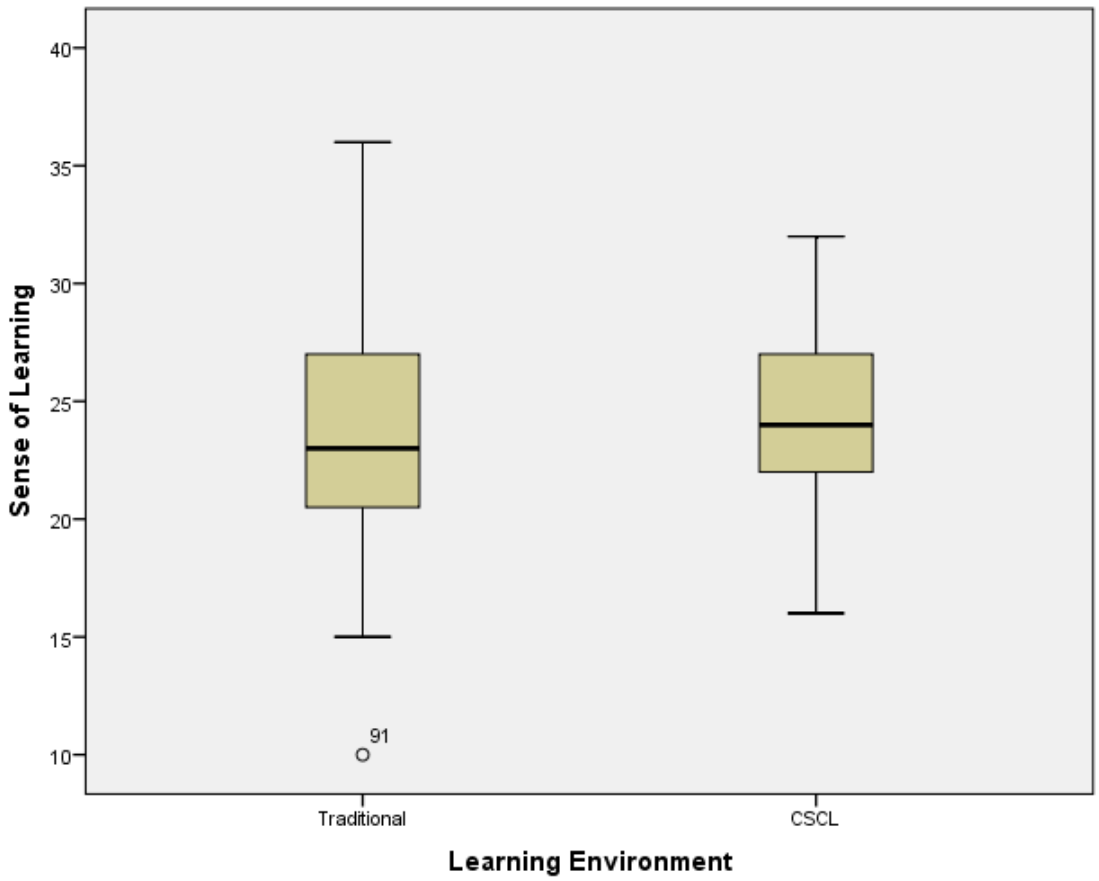

Figure 4. Box and whisker plot for sense of learning in traditional learning and CSCL.

Assumptions. The independent samples *t*-test requires two assumptions be met. They are the assumption of normal distribution and the assumption of equal variance. The first assumption was that the test variable was normally distributed in each of the two samples. To determine whether the assumption of normality was met, the Kolmogorov-Smirnov test was used. The Kolmogorov-Smirnov test indicated that there were no violations of the normality assumption where (p = 0.20) for both groups. The second assumption was that the variances of the test variable were equal for the two sample groups. To determine if this assumption was met, Levene's Test of Equality of Variances was used. No violations of the normality assumption were evident (p = 0.53), so the variances of the two groups were considered equal and the assumption of homogeneity of variances was met.

Results for Null Hypothesis Three. To test the null hypothesis that there is no statistically significant difference in sense of learning between traditional learning and CSCL, an independent samples *t*-test was conducted. The test was not significant, $t(110) = -.65$, $p = .52$, $\eta^2 = .00$. The effect size was small. The null hypothesis was not rejected because the *p*-value was more than 0.05/3 = 0.02 using a Bonferroni correction. There is not sufficient evidence to conclude that the participants who were taught using computer-supported collaboration ($M = 24.16$, $SD = 4.14$) felt a different sense of learning than those who were taught using traditional methods ($M = 23.61$, $SD = 4.80$), thus, the researcher fail to reject the null.

CHAPTER FIVE: CONCLUSIONS

Overview

The following chapter is divided into four sections: discussion, implications, limitations, and recommendations for future research. The discussion section provides a brief overview of the study and reviews the purpose followed by a discussion on each research question. The implications section details how the present study added to the existing body of knowledge regarding computer-based instruction. The limitations section outlines threats to internal and external validity of the present study. This chapter closes with a list of recommendations for future research into computer-based instruction and its effects on classroom sense of community.

Discussion

Utilizing the theoretical frameworks of social development, connectivism, communities of practice, collaboration and community, this quasi-experimental study intended to determine the effects of computer-supported collaborative learning (CSCL) on high school Marketing students' sense of community as measured by Rovai's (2002) Classroom Community Scale. The independent variable was the type of learning (traditional or computer-supported collaborative). Traditional learning was defined as learning that occurs face-to-face in the classroom and involved students working individually on assignments. CSCL was defined as the use of a computer to supplement learning within a collaborative group where all learners are mutually involved in the learning process (Bernard et al., 2000; Dewiyanti et al., 2007; Persico et al., 2010). The dependent variable was sense of community, which was generally defined as "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). Sense of connectedness and sense of learning were also evaluated.

Research Question One

Research question one was as follows: Is there a difference between high school students' overall *sense of classroom community* as measured by the Classroom Community Scale when participating in CSCL as compared to students who participate in traditional learning only? An independent samples *t*-test was used to measure the difference between the two sample means. Results indicated that there was not a statistically significant difference between the control group and experimental group overall Classroom Community Scale sense of community scores. Therefore, the participants who were taught using computer-supported collaboration did not feel a different sense of community than those who were taught using traditional methods, thus, the null was not rejected.

These results support earlier research that suggests that sense of community is equivalent for online and face-to-face learners (Rovai, 2002; Rovai, Wighting, & Liu, 2005). Although this prior research was conducted on higher education learners, adolescents at the high school level may have similar experiences in online communities as do adults. Opportunities to influence and interpret social roles and interact are essential to sense of community (Chiessi et al., 2010) at various stages of life. Several other studies also match the current study in that they did not indicate a difference in sense of community scores for computer-supported learning compared to traditional learning. Rovai's 2002 study, and Rovai, Wighting, and Liu's 2005 study demonstrated that sense of community is equivalent for online and face-to-face learners at the higher education level. These prior studies, however, did not evaluate the effects of CSCL on sense of community as the current study attempted to do.

Results of the current study did not reflect the more definitive results obtained by Wighting's 2006 study. Wighting conducted one of the few existing studies regarding sense of community at the high school level by examining the relationship between sense of community and use of technology. The study of ninth and eleventh grade students (N = 181) revealed a positive correlation between technology and sense of classroom community for the participants.

As mentioned in the literature review, there is limited empirical research related to the impact of CSCL on sense of community for high school students. Results from the current study, and the limited, inconsistent findings in the existing research, support the need to explore the use of CSCL in the classroom as a way to expand classroom sense of community for high school students.

Research Question Two

Research question two was as follows: Is there a statistically significant difference between high school students' *sense of connectedness* as measured by the Classroom Community Scale when participating in CSCL as compared to students who participate in traditional learning only? An independent samples *t*-test was used to measure the difference between the two sample means. Results indicated that there was a statistically significant difference between the control group and experimental group Classroom Community Scale connectedness subscale scores. The participants who were taught using computer-supported collaboration felt a greater *sense of connectedness* as measured by the sense of community scale than those who were taught using traditional methods on average, thus, the null was rejected. However, it should be noted that the effect size was extremely small.

Sense of community is multi-dimensional. Connectedness is defined as "the feeling of belonging and acceptance and the creation of bonding relationships" (Rovai, 2002, p. 322). The

current study indicated that there was a statistically significant difference between groups participating in traditional and CSCL in terms of connectedness, hence indicating that the CSCL environment fostered stronger feelings of belonging and acceptance.

Palloff and Pratt's 1999 study also evaluated a form of CSCL, although it was an older study and, therefore, used different software, which may explain why their results were different than the results of the current study. Their study indicated greater gains in sense of community for students who participated in face-to-face collaboration as compared to those who participated in online collaboration. They suggested that through face-to-face discussion, a variety of ideas may be expressed, questioned, and supported, enabling negotiation and resolution of conflict, which allows for group cohesiveness and the forming of connectivity. They speculated that unresolved conflicts of that nature may not be appropriately addressed in online environments, thereby leading to decreased sense of community (Palloff & Pratt, 1999). Using the collaborative software in addition to the face-to-face time in class was, perhaps, the distinguishing factor in the current study. The Palloff and Pratt study, along with many of the previous studies, compared face-to-face collaboration to collaboration in distance learning environments. The combination of the two as used in the current study offers the best of both worlds by incorporating the use of collaborative software in addition to the face-to-face collaboration.

The modern day technology used in the current study provided students with an additional platform and time outside of class to collaborate. Just as social media provides today's youth with ways to keep in touch more often and maintain a presence in each other's lives on a regular basis, the use of collaborative software and teaching methods used in this study were designed to encourage students to get to know each other on a personal level outside of

school; thus, creating that sense of belonging to a community. Collaborative software also creates a platform for students to share thoughts and ideas they may have after class has ended and they can do so in asynchronous means so that their peers can choose to read their thoughts immediately or at their convenience.

Some students are hesitant to speak out in class because they are shy, embarrassed, or fear rejection. The use of technology provides students with a sense of security, which allows them to be more confident about speaking out, therefore, they felt a greater sense of connectedness to their peers and the learning process in general (Cotton, 1991; Hannafin & Foshay, 2008). This supports the social identity theory in that individuals may act differently in varying social contexts and when a person perceives themselves as part of a group, they will work with that group to achieve common goals.

Based on the results from the few studies that exist with a concentration on sense of connectedness in computer-supported collaborative environments, along with the results from the current study, it would appear that the results are mixed. Therefore, further research regarding the impact of CSCL on student sense of connectedness is recommended.

Research Question Three

Research question three was as follows: Is there a statistically significant difference between high school students' *sense of learning* as measured by the Classroom Community Scale when participating in CSCL as compared to students who participate in traditional learning only? An independent samples *t*-test was used to measure the difference between the two sample means. Results indicated that there was not a statistically significant difference between the control group and experimental group Classroom Community Scale learning subscale scores. Therefore, the participants who were taught using computer-supported collaboration did not feel

a different sense of learning than those who were taught using traditional methods, thus, the null was not rejected.

Learning is defined as "the feeling that knowledge and meaning are actively constructed within the community, that the community enhances the acquisition of knowledge and understanding, and that the learning needs of its members are being satisfied" (Rovai, 2002, p. 322). The learning aspect of community is linked to critical thinking outcomes and research on sense of community has supported that an increased sense of community may contribute to increased learning outcomes (Rovai, 2002; Rovai et al., 2005). In the current student, an examination of the mean learning scores between groups indicated that the control group's learning scores were not statistically different than the experimental group's learning scores; thus, students participating in traditional learning did not experience any difference in sense of learning compared to students participating in computer-supported collaboration in the learning aspect of community.

Other studies resulted in more conclusive results than the current study. Kulik and Kulik (1991) conducted a meta-analysis of 254 studies comparing outcomes in computer instructed and traditional classes. The study consisted of students from kindergarten through adulthood who used computer-based instruction in mathematics, social studies, science, language arts, and vocational classes. The computers were used for a variety of things including drill and practice, and tutoring. They found positive changes in student attitudes toward learning in students who used computers than those who did not. Their study, however, did not include an examination of the effects of collaboration on sense of community in conjunction with computer-based instruction.

The results of the current study are also not as conclusive as the study conducted in 1968 by Walberg & Anderson. Their study examined how peer relationships affected the classroom environment. Their results indicated that student perceptions of the classroom climate directly correlated to their perceived learning during the course. The findings of their study were that there were 32 statistically significant correlations ($p < .05$). Students reported closer relationships with their peers, and improved decision-making ability when they were able to work with their peers.

Although the results of the current study did not support findings from some studies in the literature, the results are not conclusive for or against the use of computer-supported collaboration as a way to increase sense of community and perceived learning for the high school Marketing student. Therefore, further studies regarding the impact of CSCL on sense of learning would be useful.

Results from this study, along with expressed limitations in the few available prior studies found in the literature and the overall lack of other empirical research support the need to explore the use of computer-supported collaborative software in the high school classroom as a way to increase sense of community, connectedness, and perceived learning. Despite the inconclusive results of the current study, there is still enough evidence in the research that the use of CSCL holds promise for increasing students' sense of community; therefore, further research in this area are recommended.

Implications

The value of this type of study would be to benefit educational leaders in evaluating both school personnel and instructional programs within the school setting. This would allow administrators and teachers to focus on areas where sense of community is low in order to

benefit students. At the classroom level, teachers would be able to improve individual classroom management by using the Classroom Community Scale to help assess the classroom sense of community among their students. The information acquired could enable teachers to gain a better understanding of the social dynamics of their classrooms and increase their understanding of individual students within that class. Teachers could use that information to identify individual students who might not feel a part of the class and have difficulty interacting with their peers. This knowledge could then be used to help facilitate interventions for students who are struggling.

Now that the Classroom Community Scale has been utilized in the high school setting to assess computer-supported collaboration, it opens up immense possibilities for future studies on this topic. Using this study as a guide for further research into classroom sense of community could be beneficial for various subject areas, schools, and even districts, all of which use a plethora of methods in their teaching pedagogies. Teachers who teach the same content could evaluate sense of community within each classroom to analyze varying teaching methodologies in their respective classes. This information can then be correlated to student learning using formative assessments and the data can be used by teachers to collaborate on development of the most effective methods for delivering content; thus, increasing student learning. The implication for educators is that they should know and understand how students perceive sense of community in their schools and classrooms in order to more effectively engage and motivate students. Past studies have shown links between engagement and motivation to student sense of community in the classroom; therefore, although this study showed no statistically significant relationship between collaboration and sense of community, it did show a statistically significant relationship between the connectedness factor. For that reason, additional research to further

explore the ability of student collaboration to predict sense of community in the classroom is necessary to move schools to student-centered environments with activities designed to connect students through common learning goals.

The implications for educational leaders who seek to increase student involvement are the ability to measure sense of community and use that information to design a school climate that keeps students on task and ready to learn and to take pride in their school climate because they feel as though they matter to their peers and to the learning process. Students who feel connected to their learning communities may be more persistent in achieving academic success (Donne, 2012; Kemker et al., 2007; Wighting et al., 2009) and could cause less classroom disruptions (Johnson et al., 1995), therefore, resulting in fewer disciplinary referrals as well as fewer interruptions to the learning process within the classroom. Replicating this study, with an additional element of analyzing classroom disruptions and their relationship to sense of classroom community could have implications at the high school level that could lead to fewer disruptions, which could increase educational successes, resulting in an increase in the number of students who graduate on time (Ashar & Skenes, 1993). Thus, additional research in conjunction with this study to further explore classroom disruption as a significant predictor of classroom sense of community could have implications at the high school level.

This study could also be used by colleges for teacher training of secondary teachers. The lack of existing research regarding the effects of computer-supported collaborative learning on sense of community at the high school level could imply that not many secondary teachers are implementing such strategies and even fewer are considering the effects on student sense of classroom community. By including elements from this study in their teacher training curricula,

educators at the college level could introduce high school teachers to some of the benefits seen in existing studies conducted at the elementary and middle school level.

The ability to generalize the findings of this study is limited due to lack of ethnic diversity. It would be beneficial to conduct more studies utilizing computer-supported collaborative software with more diverse student populations in both urban and suburban settings. The ability to generalize findings beyond the present study is also limited because only four courses at the same high school were sampled and the learner characteristics, course design, course content, and instructional style used by the teacher in the present study may not be representative of other educators and other settings. Furthermore, the researcher exercised no experimental control over the course examined in the present study and cause-and-effect relationships were not confirmed. However, this researcher's findings that CSCL was found to be a significant predictor of sense of connectedness, one aspect of community, can have an impact on future research. These findings are noteworthy and should be explored further.

Limitations

Several limitations existed in this study, including non-randomization (Rovai et al., 2013). True randomization was not possible in this study due to intact groups. The lack of randomization of the sample provides a slightly weaker design than desired and could be an internal threat to validity (Rovai et al., 2013). In order to limit this threat, a quasi-experimental design was used.

Generalizability may have been a limitation of this study (Rovai et al., 2013). The results of the study may not be generalizable to other populations, grade levels, or subject areas due to the sample being selected from an accessible population at the high school where the researcher worked and based on the classroom teacher's willingness to cooperate. From that teacher's

students, the study was limited to the students who voluntarily agreed to participate and returned signed informed consent forms. It was also assumed that the sample population is representative of all high school marketing students in Georgia. However, this may not be the case and leads to external threats of validity. Further studies, including longitudinal studies, would need to be conducted in order to determine generalizability.

Experimental treatment diffusion may have been a limitation of this study (Rovai et al., 2013). Experimental treatment diffusion occurs when communication happens between groups. Students were assumed to have followed guidelines presented by the respective classroom teacher and to have no communication with students outside of their designated group. Specifically, participants in the experimental group were assumed to have completed assignments collaboratively using a computer and those in the control group were assumed to have completed assignments individual in a traditional manner. However, participants may not have acted in accordance with prescribed research guidelines.

Convenience sampling was also used because it was not feasible to schedule students based on random assignments. Students were already scheduled into assigned sections based on availability of other courses throughout the day. Nonequivalent group designs are highly susceptible to internal validity threats in participant selection due to non-randomized design. There are two threats of this nature which were specific to this study: selection bias and social validity. To control selection bias, the two groups were made as equivalent as possible. This was accomplished by splitting the four classes into either the control or the experimental group according to class size and time of day the course was offered. One of the morning classes was assigned to the treatment group and one morning class was assigned to the control group, and one afternoon class was put into each group. The largest morning group was put with the

smallest afternoon group, thus balancing the number of participants in each group. This placement of different course sections into different groups also helped to minimize social threats because participants were isolated and unaware of each other's activities.

Although the Classroom Community Scale (Rovai, 2002) is considered valid and reliable, since the nature of the survey instrument is a self-reported measure, the individual responses should be considered a threat to internal validity because it leaves open claims to truthfulness.

Implementation may have been a limitation of this study (Rovai et al., 2013). It is possible that students in the experimental and control groups may have been treated differently by the classroom teacher despite the efforts to reduce this likelihood. Both groups were exposed to the same curriculum and all instructional content and pacing guides, therefore, it was assumed that all instructional material was provided to the experimental and control groups equally, hence, providing treatment fidelity. This included both traditional and collaborative activities. The same classroom teacher was used for each section of the course and she was instructed by the researcher to provide homogenous instruction each of the classes. In additional, training on computer-supported collaboration was provided to the classroom teacher prior to beginning the study. Measures to ensure treatment fidelity of the Classroom Community Scale were taken including providing a script to ensure that administration of the survey was the same for each group.

Regarding the research design, future methodology could include a non-random sample in order to strengthen the design as this study employed a convenience sample of students (Gall et al., 2007). Additionally, a true experimental design could be utilized rather than a quasi-experimental design in order to increase the strength of the experimental design and validity of the results (Gall et al., 2007).

Recommendations for Future Research

Based on the limitations of this study, the researcher recommends replicating it by obtaining a sample from several high schools in order to provide for a more diverse setting and generalization. The researcher also recommends lengthening the duration of the study from a four-week period to a semester-long study. Lengthening the study would encompass a broader range of content and End of Course exams could be used as a test construct to measure academic achievement in relation to sense of community in a collaborative environment.

Future studies could employ qualitative approaches in order to determine the reasons behind student scores on the Classroom Community Scale from both the student and teacher perspectives. A qualitative case study could also investigate student perceptions of using computer-supported collaborative software.

The purpose of this study was to determine the effect of computer-supported collaboration on high school students' sense of community, as well as connectedness and learning. Results indicated that there was not a statistically significant difference in overall sense of community or sense of learning of students participating in CSCL as compared to traditional learning. However, results did indicate that there was a statistically significant difference in sense of connectedness of students participating in CSCL as compared to traditional learning, with students participating in CSCL experiencing a higher sense of connectedness. Based on these results, CSCL was found to produce an increase in positive student outcomes for connectedness as compared to traditional learning, but not for sense of community or learning, therefore suggesting the need for further examination of current pedagogy utilizing technology in the high school classroom.

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APPENDIX A

Permission to Use Classroom Community Scale

SR

Streetman, Rebecca
Tue 1/27/2015, 5:08 AM

Thank you for sending me a copy of the Classroom Community Scale booklet last year. Upon further research, I feel that the Classroom Community Scale would enhance my study examining Computer Supported Collaborative Learning Environments.

I would like to request permission to use, reproduce, distribute, and publish your Classroom Community Scale for purposes related to my dissertation as a doctoral student at Liberty University in Lynchburg, Virginia.

Thank you for your time and consideration of my request.

AR

Alfred Rovai <alfrrov@regent.edu>
Tue 1/27/2015, 5:31 AM

Hi Rebecca,

Yes, you may use the instrument as described. Make sure to cite the relevant Internet and Higher Education journal article in any report you write. See my Web site in my signature block below to obtain relevant information about the instrument and journal article.

Best wishes,

Alfred Rovai, Ph.D.
aprovai@mac.com
http://www.alfredrovai.com/

APPENDIX B

Classroom Community Scale
(CCS)

Developed by
Alfred P. Rovai, PhD
alfrrov@regent.edu

SURVEY DIRECTIONS: Below you will see a series of statements concerning a specific course or program you are presently taking or recently completed. Read each statement carefully and **click on** your response in the parentheses to the right of the statement that comes closest to indicate how you feel about the course or program. There are no correct or incorrect responses. If you neither agree nor disagree with a statement or are uncertain, **click on** the neutral (N) area. Do not spend too much time on any one statement, but give the response that seems to describe how you feel. **Please respond to all items.**

SA = Strongly agree
A = Agree
N = Neither Agree or Disagree
D = Disagree
SD = Strongly Disagree

1. I feel that students in this course care about each other….(SA) (A) (N) (D) (SD)
2. I feel that I am encouraged to ask questions….(SA) (A) (N) (D) (SD)
3. I feel connected to others in this course….(SA) (A) (N) (D) (SD)
4. I feel that it is hard to get help when I have a question….(SA) (A) (N) (D) (SD)
5. I do not feel a spirit of community….(SA) (A) (N) (D) (SD)
6. I feel that I receive timely feedback….(SA) (A) (N) (D) (SD)
7. I feel that this course is like a family….(SA) (A) (N) (D) (SD)
8. I feel uneasy exposing gaps in my understanding….(SA) (A) (N) (D) (SD)
9. I feel isolated in this course….(SA) (A) (N) (D) (SD)
10. I feel reluctant to speak openly….(SA) (A) (N) (D) (SD)
11. I trust others in this course….(SA) (A) (N) (D) (SD)
12. I feel that this course results in only modest learning….(SA) (A) (N) (D) (SD)
13. I feel that I can rely on others in this course….(SA) (A) (N) (D) (SD)
14. I feel that other students do not help me learn….(SA) (A) (N) (D) (SD)
15. I feel that members of this course depend on me….(SA) (A) (N) (D) (SD)
16. I feel that I am given ample opportunities to learn….(SA) (A) (N) (D) (SD)
17. I feel uncertain about others in this course….(SA) (A) (N) (D) (SD)
18. I feel that my educational needs are not being met….(SA) (A) (N) (D) (SD)
19. I feel confident that others will support me….(SA) (A) (N) (D) (SD)
20. I feel that this course does not promote a desire to learn….(SA) (A) (N) (D) (SD)

APPENDIX C

Permission from Local School

GWINNETT COUNTY PUBLIC SCHOOLS

LOCAL SCHOOL RESEARCH REQUEST FORM

Name of School: South Gwinnett High School

Name of Researcher: Rebecca Streetman

Position or Grade: Career & Technology Teacher

A. Research Project

a. **Title:** The Effects of Computer-Supported Collaborative Learning on Sense of Community for High School Marketing Students

b. **Statement of Problem and research question:** ~~Students~~ Students should be actively engaged in the learning process and feel like they are part of the learning environment. RQ1, RQ2 & RQ3 are attached.

c. **Subjects or population for the study:** Marketing Principles students at South Gwinnett High School

d. **Reason for doing this research:**

- [X] Graduate Study at Liberty University University/College
- [ ] Publication/Presentation
- [ ] Other (please specify) _____

e. **Dates research will be conducted:** October 2017 to November 2017

B. All research and researchers must a) Protect the rights and welfare of all human subjects, b) Inform students and/or parents that they have the right not to participate in the study, c) Adhere to board policies and applicable laws which govern the privacy and confidentiality of students records.

C. This request applies to research conducted within and by local school personnel. All other research requests must be submitted by completing a GCPS Research Application and submitting it electronically according to instructions. For complete details and instructions, please visit our Web Page at the following link: http://tinyurl.com/ce7pmpm or you can simply go to gwinnett.k12.ga.us. When you open our webpage, click on "I want to" section.....Apply for Research Approval." This will take you to our webpage.

D. Principals ONLY need to approve Local School Research Requests. The copy sent to the Research & Evaluation Office is for filing purposes only. No further approval is necessary.

E. After approval by the principal, please forward a copy of this completed form to:

Via GCPS Courier:	**Via US Mail:**	**Via Fax:**
Jim Appleton GCPS - Research & Evaluation ISC	Dr. Jim Appleton, Executive Director Research & Evaluation Department Gwinnett County Public Schools 437 Old Peachtree Road, NW [redacted], GA 30024	Jim Appleton 678-301-7088

[redacted] 10/5/17

Principal's Signature **Date of Approval**

APPENDIX D

LIBERTY UNIVERSITY.
INSTITUTIONAL REVIEW BOARD

February 19, 2018

Rebecca Streetman
IRB Approval 3115.021918: The Effects of Computer-Supported Collaborative Learning on the Sense of Community of High School Students Enrolled in a Marketing Course

Dear Rebecca Streetman,

We are pleased to inform you that your study has been approved by the Liberty University IRB. This approval is extended to you for one year from the date provided above with your protocol number. If data collection proceeds past one year, or if you make changes in the methodology as it pertains to human subjects, you must submit an appropriate update form to the IRB. The forms for these cases were attached to your approval email.

Thank you for your cooperation with the IRB, and we wish you well with your research project.

Sincerely,

[redacted]

Administrative Chair of Institutional Research
The Graduate School

LIBERTY
UNIVERSITY.
Liberty University | Training Champions for Christ since 1971

APPENDIX E

"Streetman, Rebecca" <rstreetman@liberty.edu> wrote: -----
To: "kimya_rainge@gwinnett.k12.ga.us" <kimya_rainge@gwinnett.k12.ga.us>
From: "Streetman, Rebecca" <rstreetman@liberty.edu>
Date: 02/20/2018 10:04AM
Subject: Fw: IRB Approval 3115.021918: The Effects of Computer-Supported Collaborative Learning on the Sense of Community of High School Students Enrolled in a Marketing Course

I received IRB Approval!!!!! You may start the study tomorrow, as we discussed. Please let me know if you have any questions.

APPENDIX F

Timeline/Course Planner for Entrepreneurship Unit

Activity	*Estimated Time to Complete*
Class Discussion: Name some businesses	30 minutes
PowerPoint Lecture & Discussion (use Entrepreneurship Standards as guide)	3 hours (2 days)
Starting a Small Business Vocabulary	30 minutes
Crossword: Entrepreneurship Vocabulary Review (Key for Crossword is included)	30 minutes
Assessment 1: Intro to Entrepreneurship (Key is included)	30 minutes
Class Discussion: Functions of a Small Business	30 minutes
Small Business Worksheet (Key for Worksheet is included)	30 minutes
Visualize Your Future Activity	180 minutes (plan & present)
Business Plan (Plan, research, present)	2 weeks (5 days)
Assessment 2: The Business Plan	30 minutes
Entrepreneur Quiz (Students complete, then discuss) (Key is included)	60 minutes
Final Assessment: End-of-Unit Test	90 minutes

**Please note: each class period is 90 minutes per day and meets every other day*

APPENDIX G

PARENT/GUARDIAN CONSENT FORM

THE EFFECTS OF COMPUTER-SUPPORTED COLLABORATIVE LEARNING ON THE SENSE OF COMMUNITY OF HIGH SCHOOL STUDENTS ENROLLED IN A MARKETING COURSE

Rebecca Streetman
Liberty University
School of Education

Your child/student is invited to be in a research study of computer-supported collaborative learning. He or she was selected as a possible participant because he/she is enrolled in Marketing Principles at South Gwinnett High School for this semester. Please read this form and ask any questions you may have before agreeing to allow him or her to be in the study.

Rebecca Streetman, a doctoral candidate in the School of Education at Liberty University, is conducting this study.

Background Information: The purpose of this study is to determine the effects of Computer-Supported Collaborative Learning on student sense of classroom community.

Procedures: If you agree to allow your child/student to be in this study, I would ask him or her to do the following things:

1. All students in the Marketing Principles courses at South Gwinnett High School will be taught the Entrepreneurship unit using the Georgia Department of Education curriculum, but two of the classes will use collaborative software to work in groups on some assignments, while two classes will work independently on all assignments.
2. After the Entrepreneurship unit has been taught, students who participate in this study will take the Classroom Community Scale Survey. The survey will be given in class and should not take more than 15 minutes. The scores from the survey will be used to assess the effects of computer-supported collaboration on sense of classroom community.

All scores will be kept confidential.

Risks: The risks involved in this study are minimal, and are considered part of the regular classroom setting.

Benefits: The direct benefits participants should expect to receive from taking part in this study are feeling more involved in the learning process. The benefits to society are potentially improving Marketing instruction for the sake of helping students feel more involved in the learning process, and feeling a greater sense of classroom community.

Compensation: Your child/student will not be compensated for participating in this study.

Confidentiality: The records of this study will be kept private. In any sort of report I might publish, I will not include any information that will make it possible to identify a subject. Research records will be stored securely and only the researcher will have access to the records. All records, including consent forms and data, will remain locked in separate file cabinets by the researcher for a minimum of three years, after which time all forms and data will be destroyed.

Voluntary Nature of the Study: Participation in this study is voluntary. Your decision whether or not to allow your child/student to participate will not affect his or her current or future relations with Liberty University or South Gwinnett High School. If you decide to allow your child/student to participate, he or she is free to not answer any question or withdraw at any time without affecting those relationships.

How to Withdraw from the Study: If your child/student chooses to withdraw from the study, your child/student should exit the survey and close his or her internet browser. Your child/student's responses will not be recorded or included in the study.

Contacts and Questions: The researcher conducting this study is Rebecca Streetman. You may ask any questions you have now. If you have questions later, **you are encouraged** to contact her at Rebecca_streetman@gwinnett.k12.ga.us. You may also contact the researcher's faculty advisor, Dr. Kurt Michael, at kmichael9@liberty.edu.

If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher, **you are encouraged** to contact the Institutional Review Board, 1971 University Blvd, Green Hall 1887, Lynchburg, VA 24515 or email at irb@liberty.edu.

Please notify the researcher if you would like a copy of this information to keep for your records.

Statement of Consent: I have read and understood the above information. I have asked questions and have received answers. I consent to allow my child/student to participate in the study.

(NOTE: DO NOT AGREE TO ALLOW YOUR CHILD/STUDENT TO PARTICIPATE UNLESS IRB APPROVAL INFORMATION WITH CURRENT DATES HAS BEEN ADDED TO THIS DOCUMENT.)

_____

Signature of Minor Date

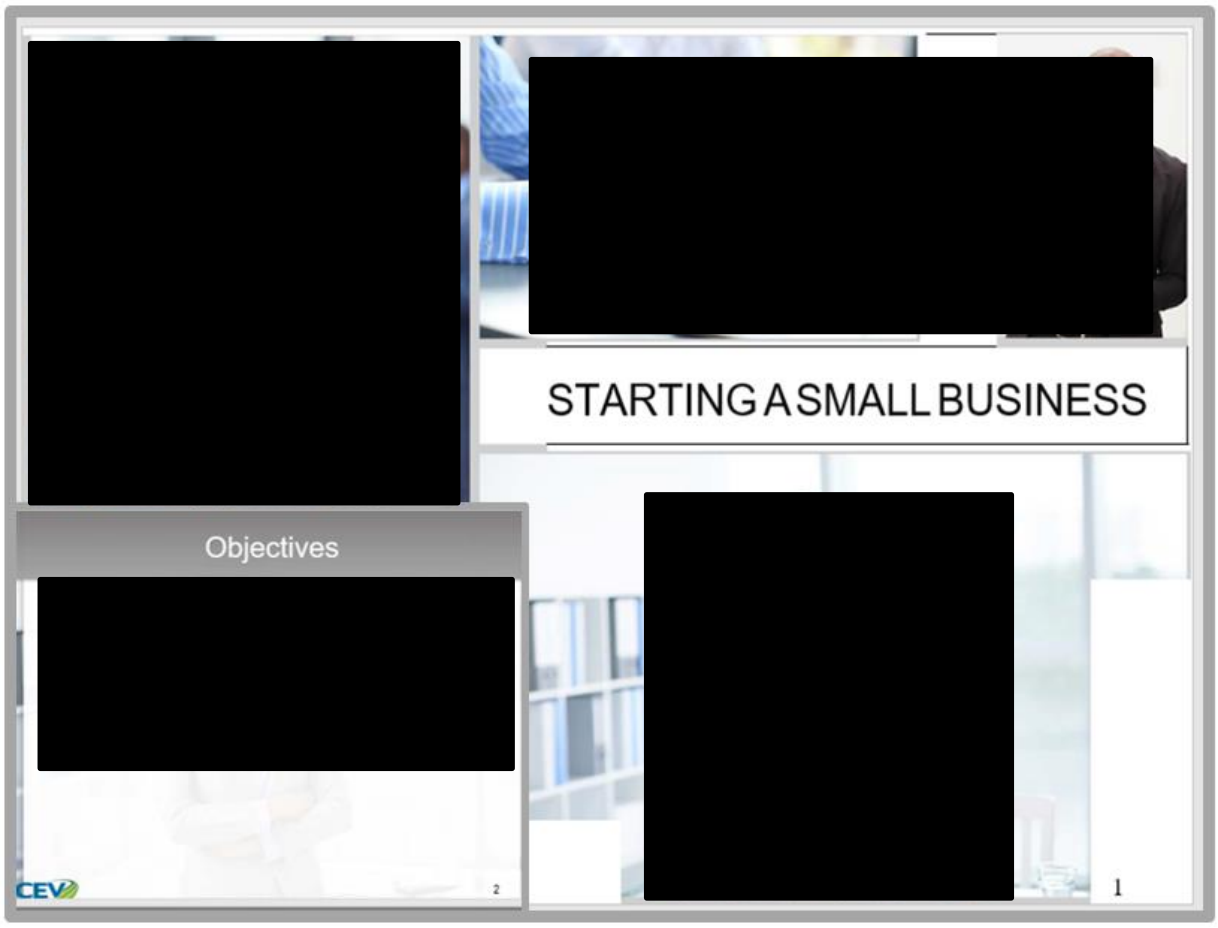
_____

Signature of Parent Date

_____

Signature of Investigator Date

APPENDIX H

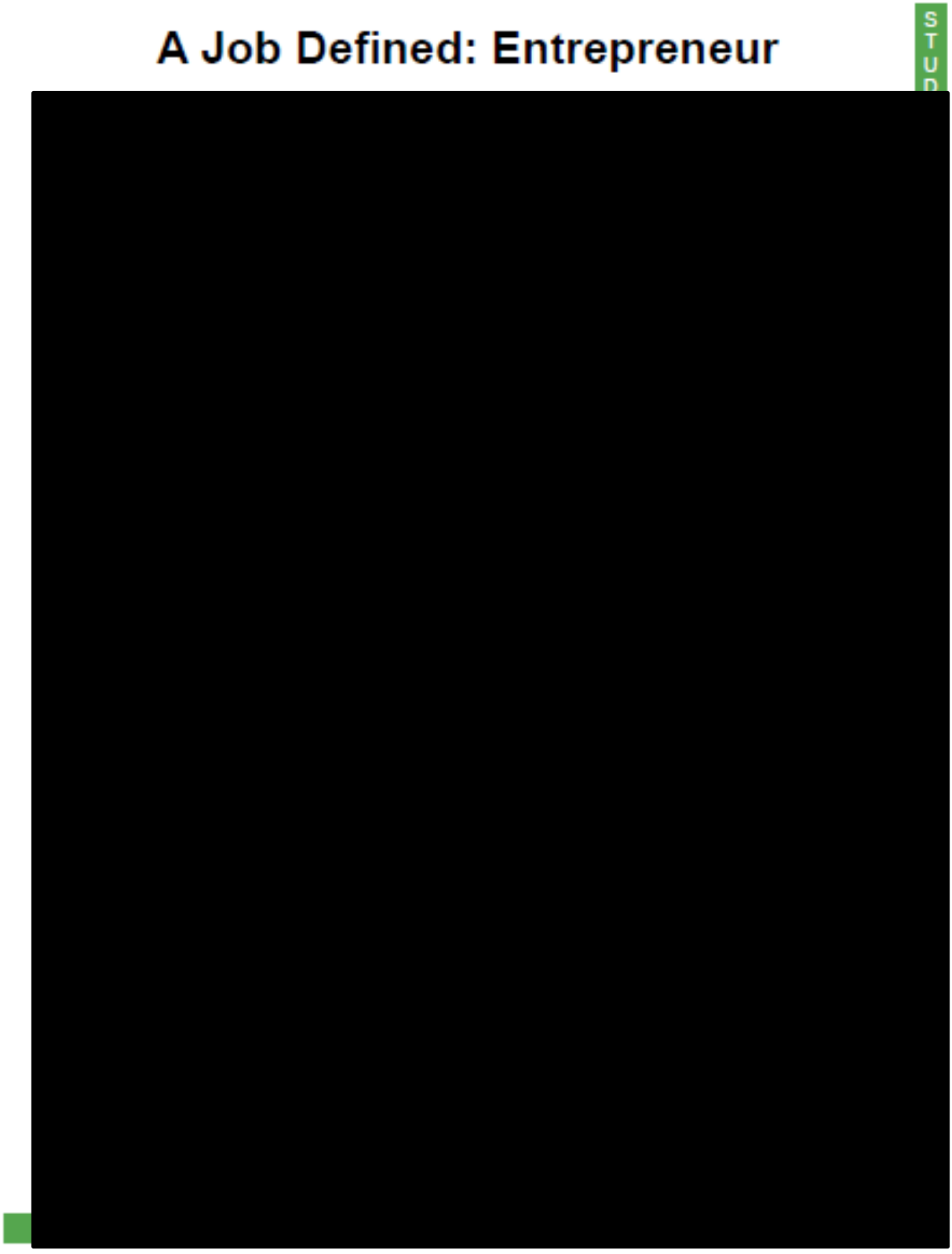


APPENDIX I

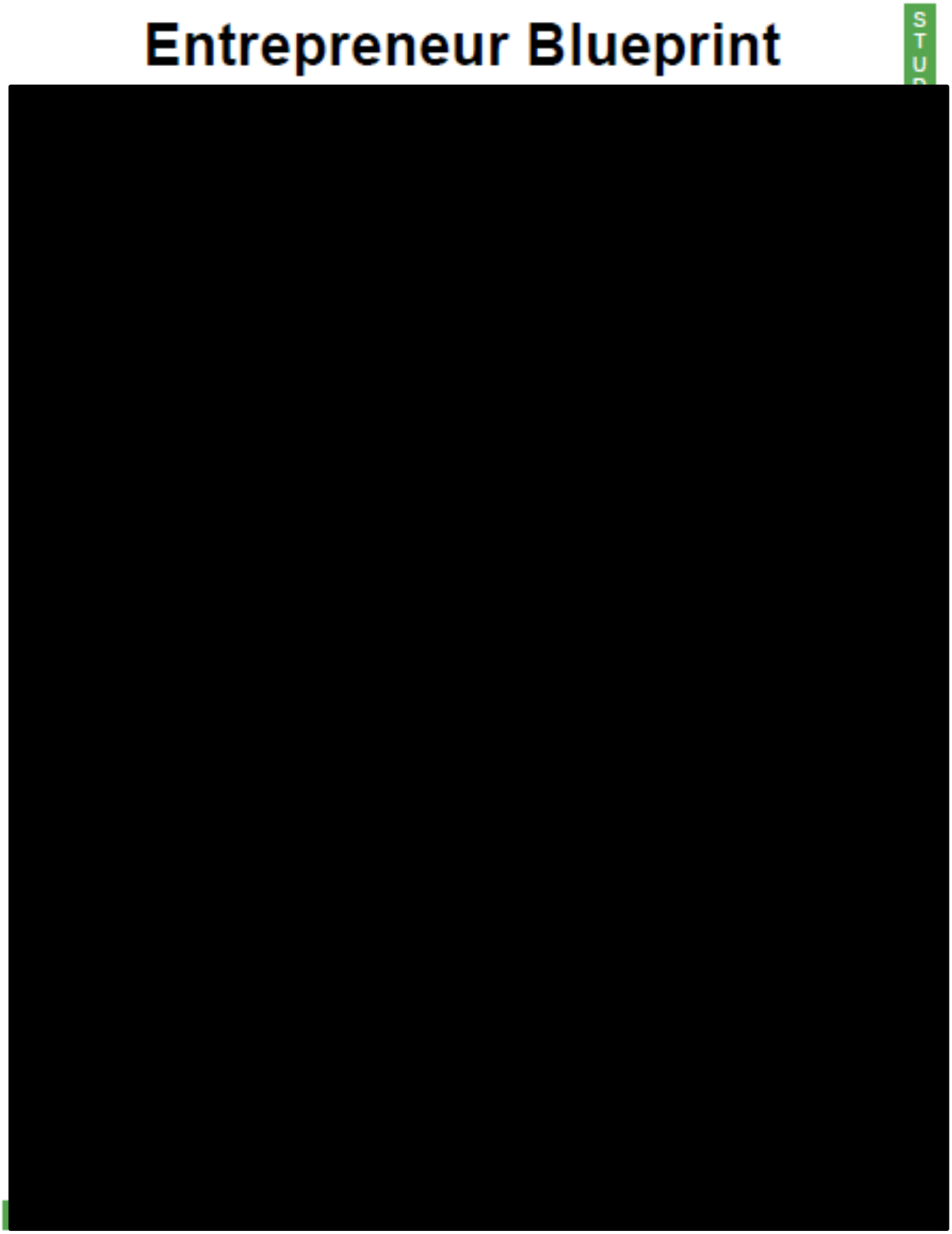
APPENDIX J

Functions of a Small Business

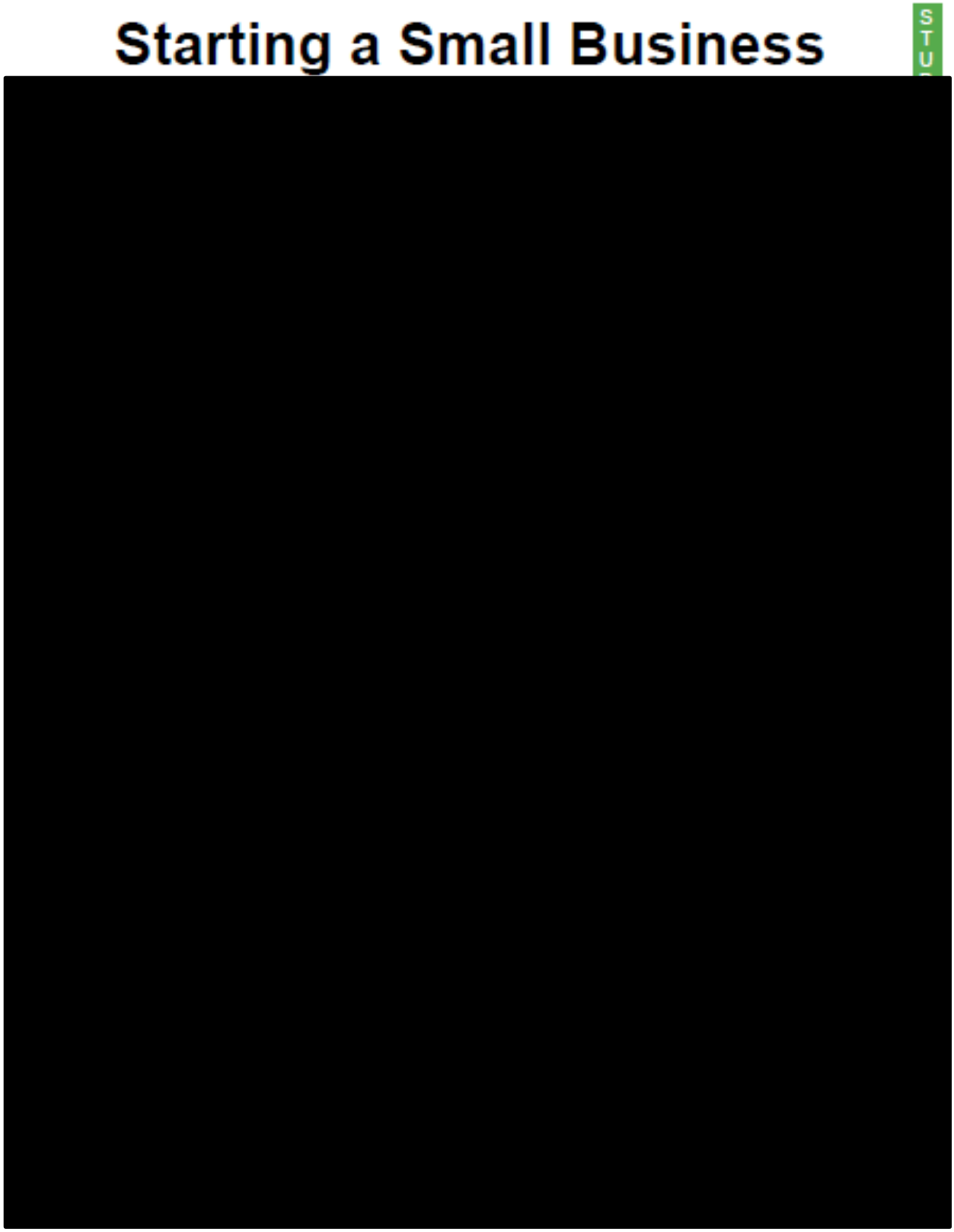
APPENDIX K



APPENDIX L



APPENDIX M



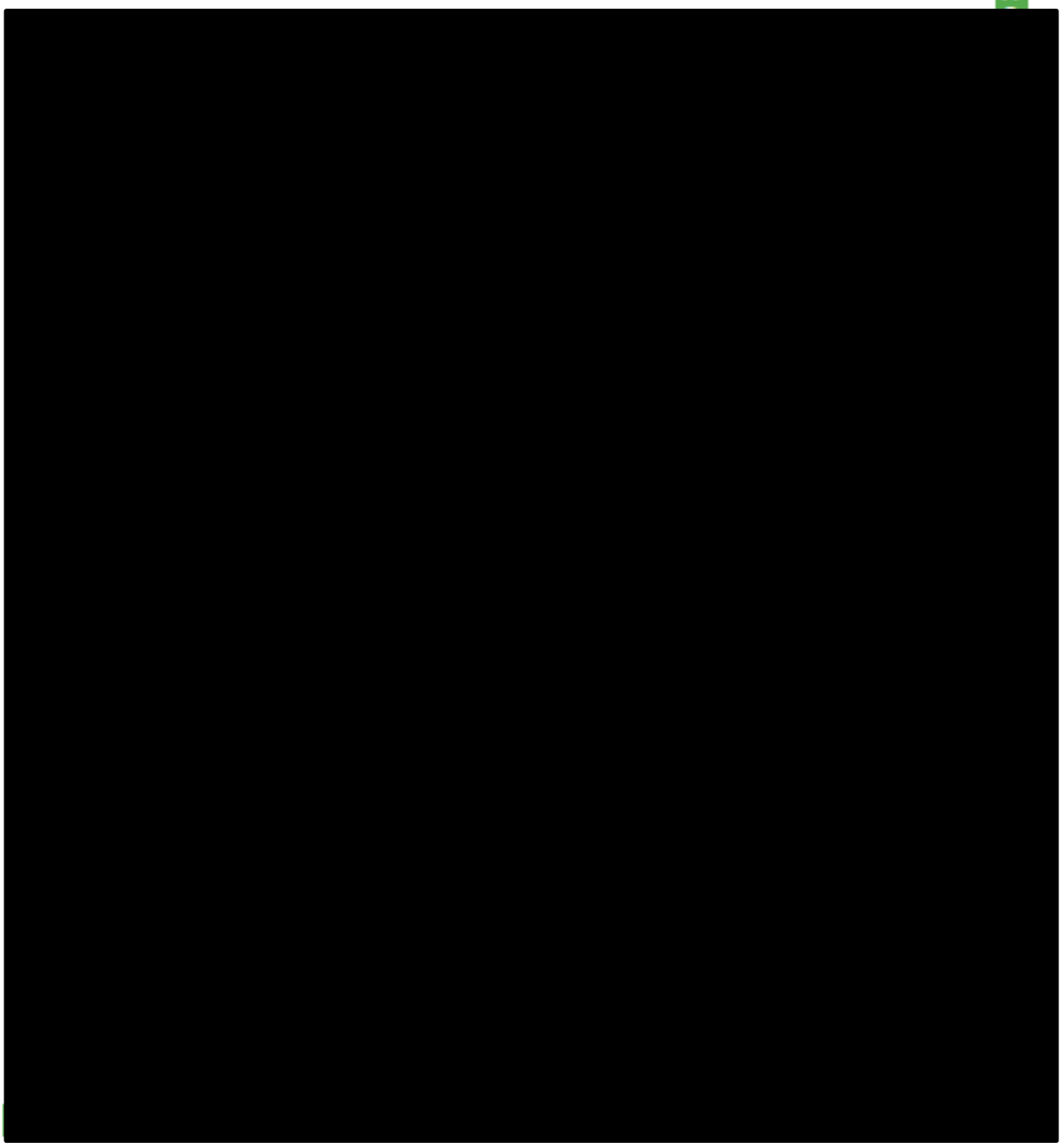
APPENDIX N

Entrepreneur

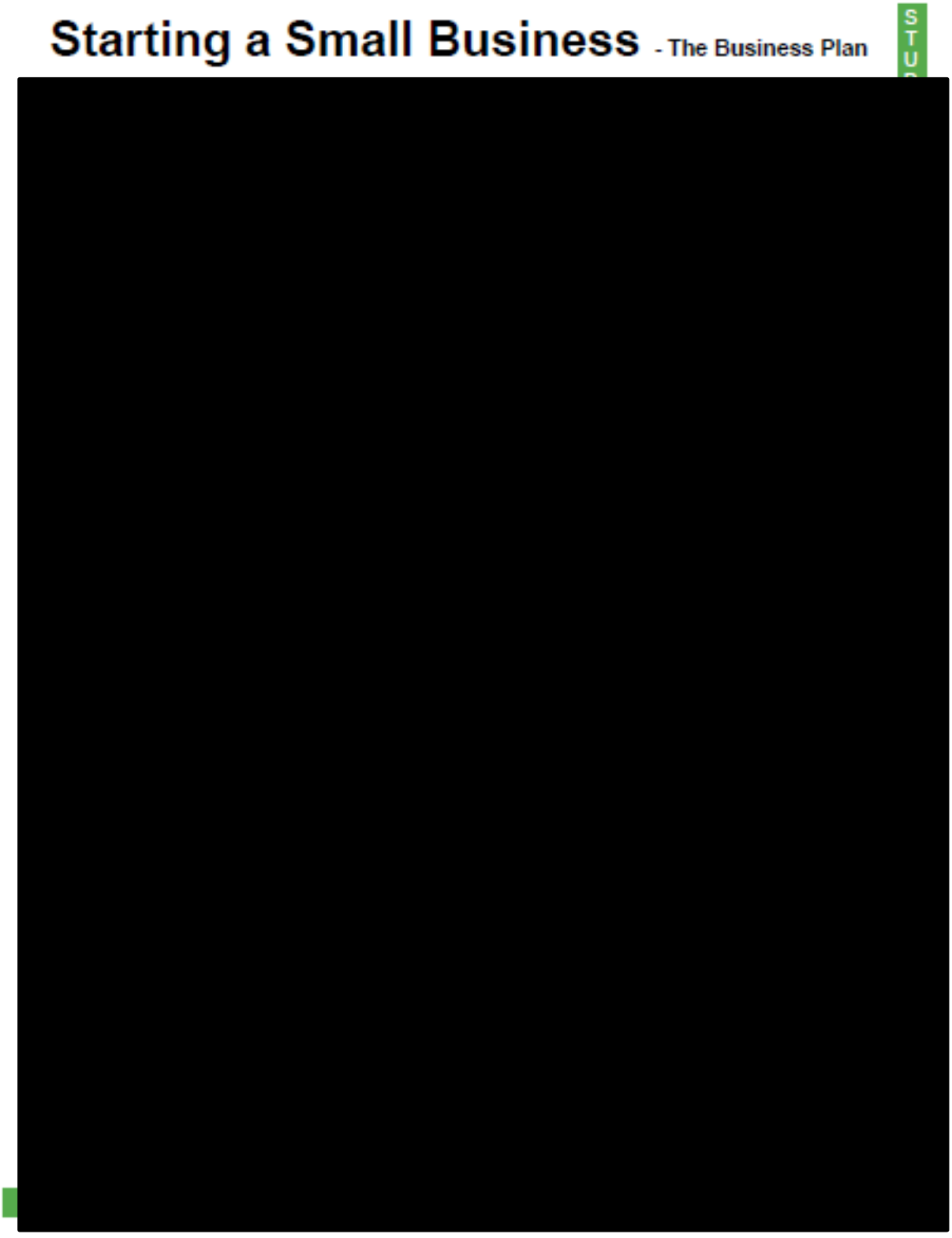
STUDENT A

Directions:

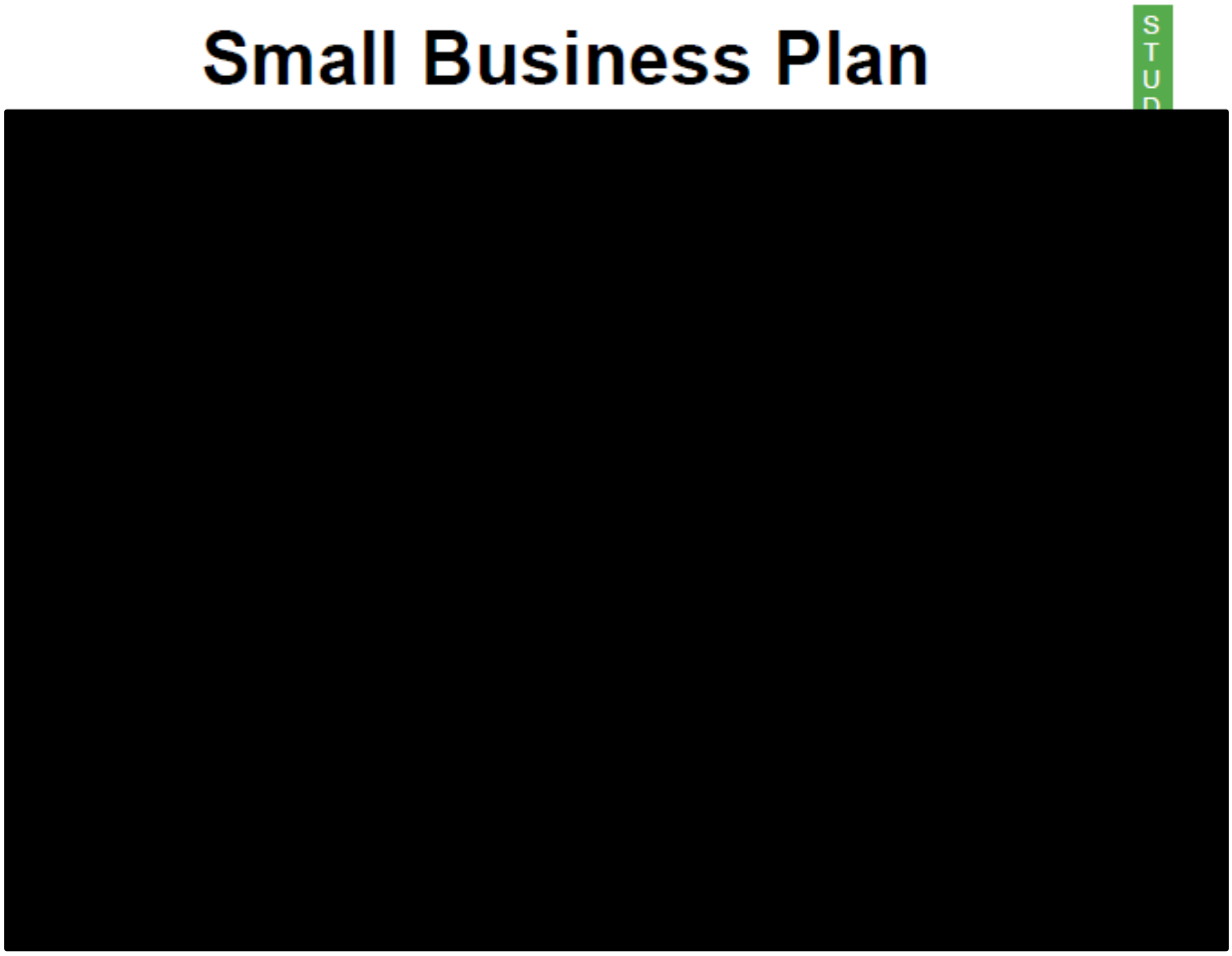
For this *Activity*, you will take an online quiz which will ask you about qualities you would need to own your own business.



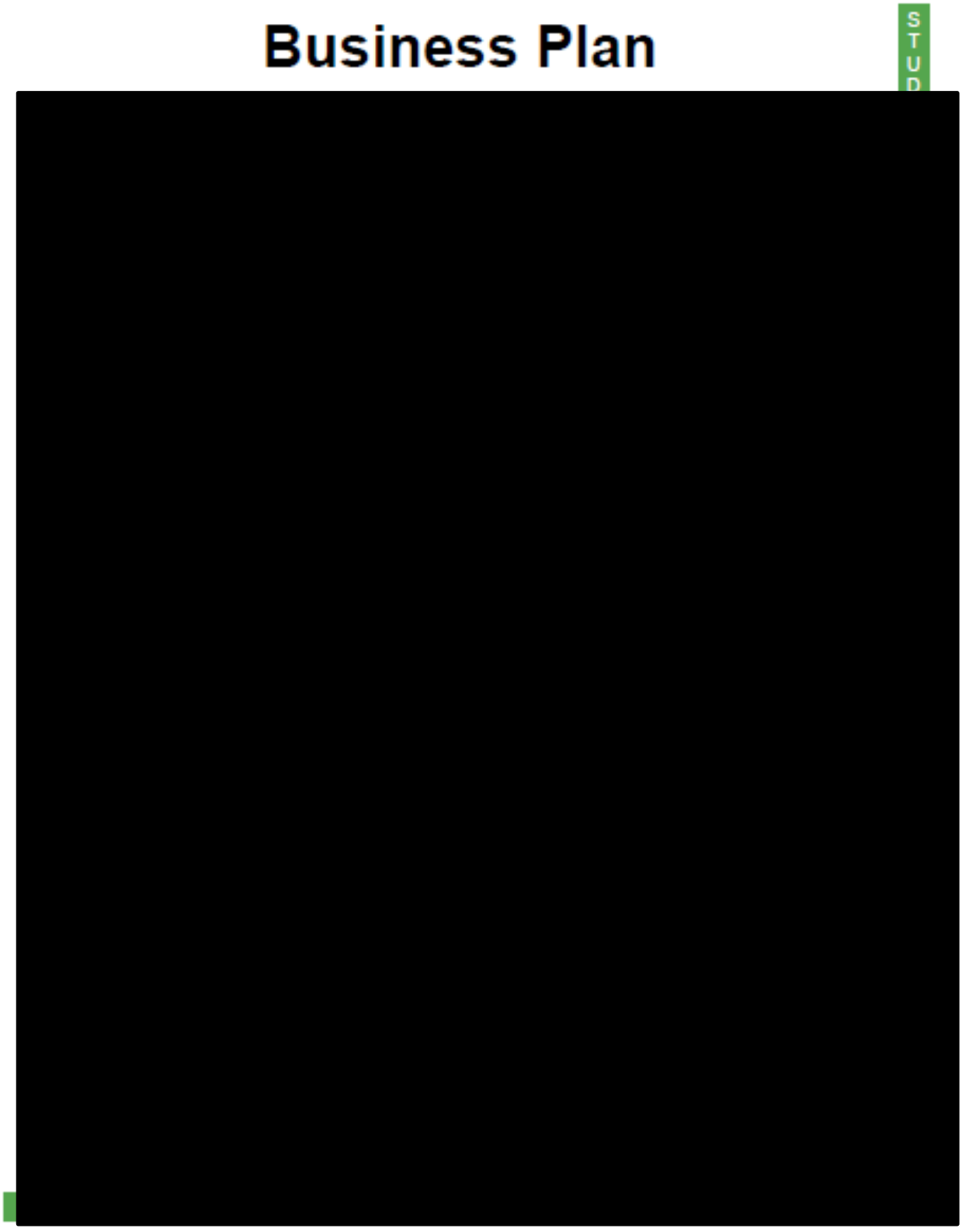
APPENDIX O



APPENDIX P

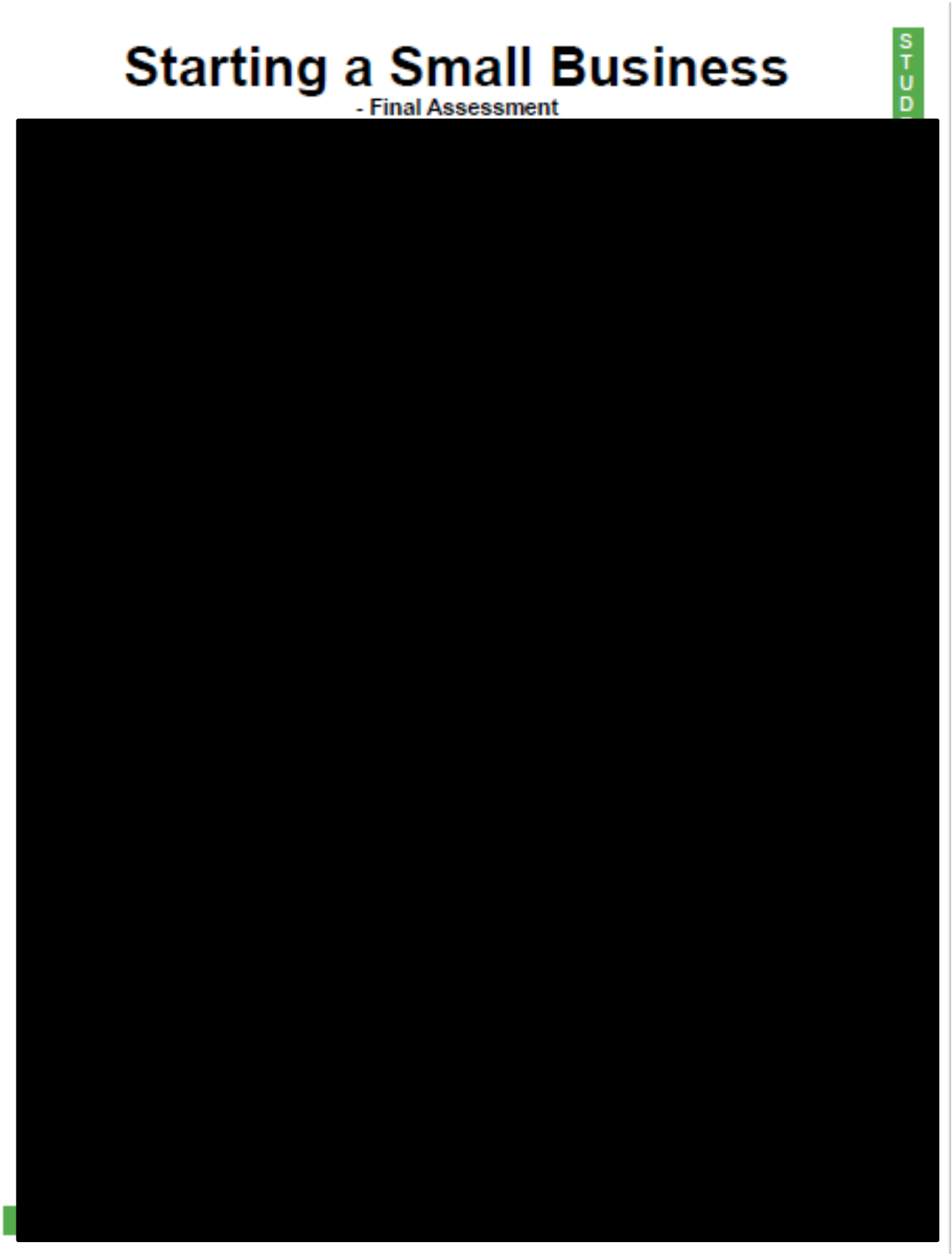


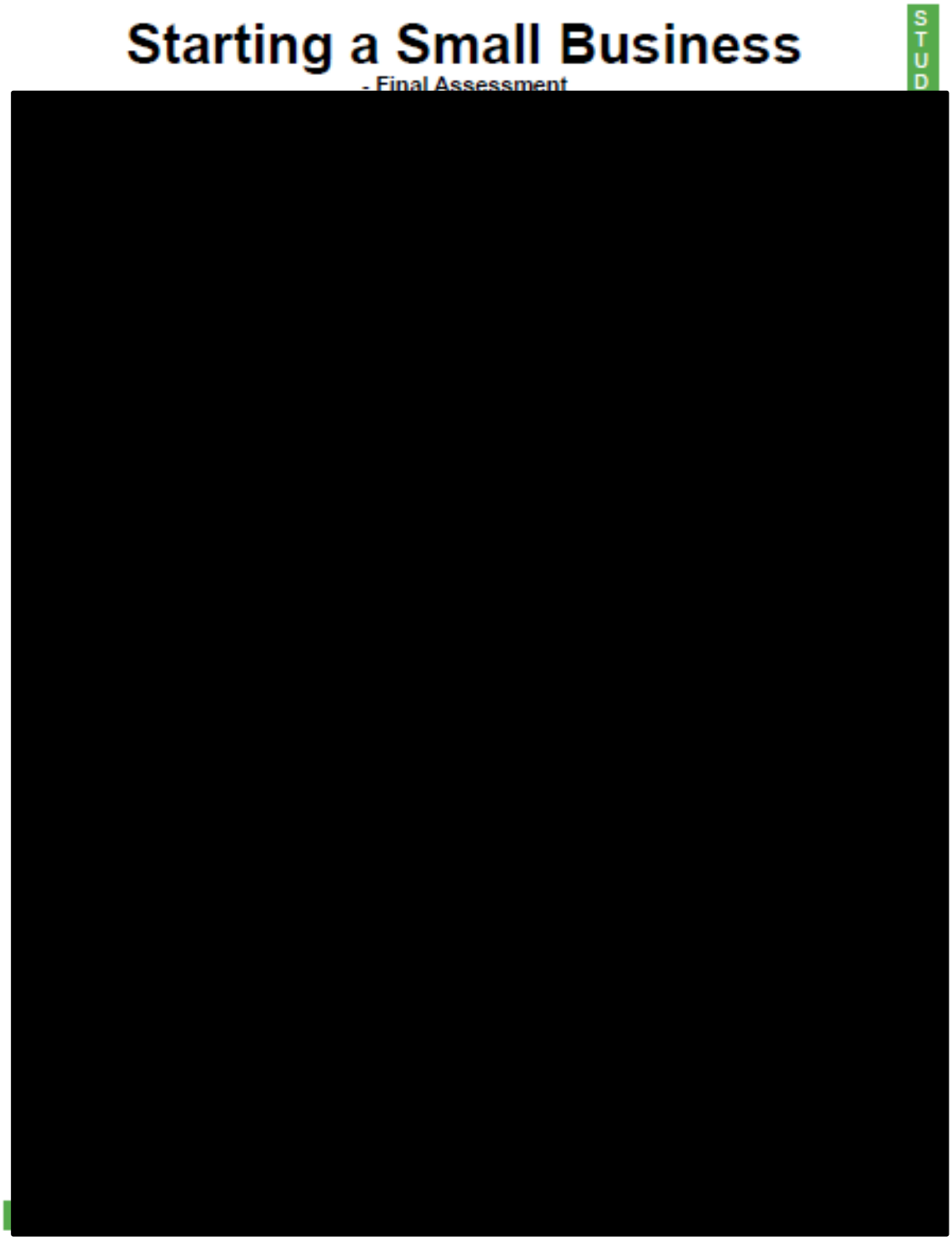
APPENDIX Q



APPENDIX R

APPENDIX S




Starting a Small Business
- Final Assessment
STUD