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OCCUPATIONALLY BASED CAREER AND TECHNICAL EDUCATION (CTE) TEACHERS' PERCEIVED NEED FOR STUDENT-TO-STUDENT INTERACTION IN DISTANCE COURSEWORK TO GAIN TEACHING CERTIFICATION

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OCCUPATIONALLY BASED CAREER AND TECHNICAL EDUCATION (CTE) TEACHERS' PERCEIVED NEED FOR STUDENT-TO-STUDENT INTERACTION IN DISTANCE COURSEWORK TO GAIN TEACHING CERTIFICATION

by

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Abstract

The purpose of the study was to contribute to the body of literature regarding occupationally based career and technical education (CTE) teachers' perceived need for student-to-student interaction in distance education coursework. The study was based on a previous study by Moore, Warner, and Jones (2016). Student perceptions on the topic of student-to-student interaction were gathered. Participants in the study were CTE teachers who had entered the teaching profession from industry. Participants were pursuing or had previously pursued coursework in online/distance education formats. Findings of the study indicated that, overall, survey respondents did not have high expectations or particularly positive feelings regarding student-to-student interaction in online/distance education courses. Specific groups of respondents had varied feelings about student-to-student interaction in online courses. Full-time students taking more than nine credit hours per semester seemed to place higher importance on student-to-student interaction than part-time students. Respondents that were members of Generation X (ages 38-57) felt that it was slightly more important to belong to one's classroom community than the younger Millennials (ages 18-37). More experienced students, who had completed five or more online courses, did not seem to perceive that there was a link between interaction and enhanced learning, while respondents who had taken fewer online courses (3-4) seemed to believe that student-to-student interaction helped them learn course content. There are implications of this research for CTE teacher certification programs. The data can be analyzed to determine best practices in CTE teacher preparation and online/distance instruction.

Keywords: distance education, online instruction, student-to-student interaction, career and technical education teacher preparation, CTE teacher preparation

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Table of Contents

List of Tables

Chapter 1: Introduction to the Study

Introduction/Background of Problem

Quality career and technical education (CTE) teacher preparation is a necessity in today's knowledge-based economy. This is even more important today, since skills obtained through CTE courses are central to navigating the vast information available via the Internet. This information is engrained in the lives of today's students, and it is intertwined in their everyday activities (Larreamendy-Joerns & Leinhardt, 2006). In order to produce quality career and technical educators that have the ability to guide future CTE students in an ever-changing technological environment, it will be important to implement new and engaging methods of instruction (Sumner, 2000).

Since one teaching style does not fit all learning situations, developing effective distance education teaching strategies must become a priority over forcing specific technologies on educators. Curriculum developers must be able to separate what technology can do from what to do with the technology (Duncan, 2005). As a result, career and technical educators must focus less on the technology embedded in distance education programs, and focus more on the concern of quality teacher preparation (Zirkle, 2002a).

Much like the evolution of technology, the pedagogies of instruction in distance education have evolved over time. From early print-based programs utilized by the U.S. Army (Duncan, 2005), to video and computer-based instruction, the pedagogies of instruction have progressed. As society moves toward improving instructional practices in the present decade, educators and educational designers must be open to questioning commonly held beliefs and theories about instructional pedagogies employed in career and technical education (Sumner, 2000).

While distance education is certainly not new, the pervasive nature of technological innovations and accessibility of the Internet have resulted in fresh interest in distance education (Moore & Kearsley, 1996 as cited in Zirkle, 2001). Much of the research on distance education in career and technical education is historical or descriptive in nature. Descriptive or historical enquiry allows researchers to understand the realities of distance education of the past or its role within communities or populations of students (Wiersma & Jurs, 2009). As a result, much of the existing research revolves around student access, demographic characteristics of students, perceptions of students' distance education experience, and faculty utilization of distance education (Zirkle, 2003).

To fully understand the body of research found on the topic of distance education, it must be understood that today's online education is very different from previous distance educational models, such as correspondence study (Sumner, 2000), educational radio stations (Zirkle, 2002a), and video lectures (Bernard, Abrami, Borokhovski, Wade, Tamim, Surkes, & Bethel, 2009). The present distance education model offers the capability for student-to-student and student-to-faculty interaction, immediate access to information, and efficient distribution of learning resources in an online environment (Mayadas, Bourne, & Bacsich, 2009).

Student satisfaction in distance education. Online instruction is a popular mode of instruction for students. It appeals to students whose busy schedules do not make on-campus courses possible. Online instruction is advantageous to students who enjoy the ability to set their own pace. Despite its popularity among students, online instruction requires students to be very self-motivated in order to be successful (Davenport, 2001). The challenge for educational curriculum designers will be to determine if the millions of students who have completed online

courses are satisfied, and if they feel that they have experienced quality learning experiences in the online learning environment (Mayadas et al., 2009).

Based on the research, it is commonly believed that communication between students is linked to student success in distance education (Moore, Warner, & Jones, 2016). In a study that focused on the interactions in face-to-face, hybrid, and online instructional environments, participants felt instructors encouraged interaction more in courses that incorporated technology. However, others perceived that student-to-student interaction was lacking (Brannan, 2005). Another study suggested that the use of blogs for student-to-student communication generally led to positive perceptions regarding levels of interaction, and students received motivation to learn from classmates (Yang & Chang, 2011). Others have found that immediacy of communication and continual interaction are considered to be important to student learning and satisfaction (Conaway, Easton, & Schmidt, 2005).

While comprehensive utilization of distance education in CTE teacher preparation may be in its early stages, many colleges and universities throughout the country use some form of distance education, in whole or in part, to train CTE teachers (Zirkle, 2004), and it has been widely received by students. Research specific to CTE teachers participating in distance education programs has included student comments about increased benefits of discussion board utilization for student interaction. Research indicates that CTE teachers specifically appreciate the opportunity to gain understanding of the opinions of other students, and have felt that the interactive discussion board experience broadened their own knowledge of the material (Zirkle, 2005).

While some research points to the importance of student-to-student interaction in distance education, other research has indicated that students do not perceive student-to-student

interaction to be vitally important. In a study of graduate students in agricultural and extension education courses taught via distance learning, it was determined that students did not desire interaction with other students (Moore et al., 2016). Another study indicated that students who prefer using online learning technology often place less importance on opportunities for student-to-student interaction (Wong & Fong, 2014).

The potential for demographic differences in perception of student interaction may also be a consideration. For instance, one study indicated that male students who preferred online learning technology placed less importance on student interaction opportunities than females (Wong & Fong, 2014). Another study indicated that older students rated interactions in distance education courses higher than more traditional students (Brannan, 2005). A study of online interaction in a distance education MBA program found that there was a division in attitudes toward interaction based on student nationality and location. In this particular study, Australian students were found to be less participatory than other students involved in the study from locations such as India and the Middle East (Watson, 2010).

Perceptions of adult learners. There have been mixed research findings on the topic of the perceptions of adult learners in relation to distance education. One study found that socioemotional contacts with other students may be less significant to some adult learners (Kellogg & Smith, 2009). A different study noted that many CTE teachers in alternative certification programs are more mature, non-traditional learners lacking basic computer technology skills. As a result, they may have markedly less experience with information technology. This may impact their ability to interact effectively in distance education courses (Zirkle, 2005).

The future of distance learning in CTE. The importance of student-to-student interaction in online instruction is deeply embedded in the thinking of the educational community (Kellogg & Smith, 2009). As a result, developing online coursework that involves student-to-student interaction is recommended. Interaction (Moore et al., 2016) and immediacy are also considered to be important to student learning and satisfaction (Conaway et al., 2005). Strategies that utilize student-centered approaches allowing the instructor to develop trust, personalize instruction, and establish clear expectations are recommended to increase student intrinsic satisfaction (Bolliger & Wasilik, 2012).

Today, hybrid and online learning environments are commonplace, and the teacher is called upon to design course content, as well as become a facilitator of learning activities through technology-mediated communication. Consequently, the wide-spread availability of computer technology has led to learning opportunities that involve more interactive processes from teacher to student and student to student (Yang & Chang, 2011).

In the future, it has been suggested that institutions offering CTE programs via distance learning, should determine what barriers may exist within their institutions that may hinder students (Zirkle, 2003). Since student satisfaction is based on what learners believe to be important, students who are satisfied with learning experiences tend to receive greater learning outcomes, and are often more motivated to continue their education (Bolliger & Wasilik, 2012). In spite of distance education's convenience and popularity, there can be significant institutional barriers involving faculty and instruction, as well as student/learner barriers to overcome for successful implementation (Zirkle, 2004). Removing barriers to student satisfaction, as well as instructional barriers, has the potential to improve distance learning within the institution and beyond.

Statement of the Problem

There is a paucity of literature regarding the CTE occupationally based teacher's perceived need for student-to-student interaction in distance courses taken to gain teaching certification. There are discrepancies in the literature regarding student perceptions of the importance of student-to-student interaction in distance education. Research indicates that interaction among students is an important part of the distance education learning process (Yang & Chang, 2011; Conaway et al., 2005). Other research suggests that student-to-student interaction in distance education is not desired or perceived necessary by distance education students (Moore, et al., 2016). Additional studies have indicated that student-to-student interaction does not change the level of student success in a course (Bernard et al., 2009), while others indicate that interaction leads to improved confidence and greater achievement (Moore, 2014).

Questions remain about occupationally based CTE teachers' perceptions of the perceived need of student-to-student interaction in distance education courses. It is possible that this group of students may have differing views on the importance of student-to-student interaction in distance education courses that lead to attainment of teaching certification. As a result, the present study group consisted of adult learners who were former professionals in career and technical fields such as agriculture, business, family and consumer sciences, marketing, healthcare, trade and industry, and technical/communications (Scott, 2014). It was determined that the population of CTE teachers could represent a more mature population of professionals with technical expertise, but less preparation in teaching pedagogy (Zirkle, 2005). This fact was expected to lead to varied results when compared to previous studies utilizing diverse learner populations.

Purpose/Significance of Study

The following study contributes to the unique body of literature regarding occupationally based CTE teachers' perceived need for student-to-student interaction in distance education. The study may also contribute to the broader body of literature on the topic of post-secondary student perceptions of student-to-student interaction in distance education, as well as CTE student perceptions of student-to-student interaction in distance education. Implications for the body of research on adult learners' perceptions of student-to-student interaction in distance education may also be discovered.

Research Design

The study was descriptive in nature. Information was gathered from occupationally based CTE teachers that participated in programs designed to attain teaching certification via distance coursework. Post-secondary students pursuing CTE alternative teaching certifications in the online format were surveyed. Participants from post-secondary institutions in Kentucky, Missouri, and West Virginia were included in the study.

The Moore et al. (2016) survey instrument was utilized with permission. The instrument included 18 Likert-type statements. The existing instrument had been deemed to possess content validity. It was field tested by Moore et al. (2016), and was previously administered. Minor changes were made to the instrument to better reflect the population of occupationally based CTE teachers. After changes were made, the instrument was field tested by CTE experts to assure that each item would be comprehended as intended. The electronic survey instrument (see Appendix A) was emailed to CTE teachers/students enrolled in programs that utilized online courses to gain alternative CTE teaching certification. Initially, an initial explanatory recruitment email (see Appendix B) was sent to recipients, and an email containing the link to the survey instrument was sent 24 hours later (see Appendix C). A follow-up email request was

sent 10 days after this in order to increase the response rate (see Appendix D). A research consent letter was attached to each email communication (see Appendix G).

Research Questions/Hypothesis

There is a paucity of literature regarding CTE occupationally based teacher's perceived need for student-to-student interaction in distance/online courses taken as they complete coursework to gain teaching certification. The amount of research on student-to-student interaction in career and technical education is sparse, and it has yielded varied results (Moore et al., 2016). Additional research should be pursued in an effort to yield useful information for educators interested in improving the accessibility of quality distance education in CTE areas (Zirkle, 2002b).

As a result, this study focused on the students' perceived need of student-to-student interaction among CTE occupationally based teachers. The population included students who participated in occupationally based teacher education programs with online components in their induction programs. The study sample included students from post-secondary institutions in Kentucky, Missouri, and West Virginia. Two research questions were addressed:

1. What are the expectations of distance education occupationally based teachers regarding student-to-student interaction in distance education classes?
2. Is there a difference in the expectations of distance education occupationally based teachers regarding student-to-student interaction in distance education classes, according to the following dependent variables?
    - gender;
    - personality type;
    - work status;

- student status;
- generational classification; and
- number of distance education courses taken.

Definition of Key Terms

Asynchronous: This term relates to modes of instruction that occur without immediate student and instructor involvement. Methods such as email, listservs, video recorded correspondence, and Internet-based courses that utilize learning management systems are included in this definition (Zirkle, 2002a).

Career and Technical Education (CTE): This term includes programs that prepare students for occupations or further education. Today's secondary CTE programs help ready students for postsecondary education content and the workplace by assisting students as they learn basic skills and gain a core knowledge base. CTE programs work to assure that learners who may enter the workforce immediately after high school are prepared with sought-after skills and knowledge for a specific occupational area (Scott, 2014). CTE areas of instruction include "agriculture, business, family and consumer sciences, marketing, health, trade and industry, technical education" and technology education (Scott, 2014, p. 3).

Collaboration: This term refers to class activities that may include student interaction. In this study, this refers to student-to-student interaction that may exist in distance/online education.

Democratization: This term refers to the idea of "increasing either the access to higher education of a population that would otherwise be excluded, or increasing the range of people who might be served by elite institutions" (Larreamendy-Joerns & Leinhardt, 2006, p. 567).

Distance Education: This is a broad term that encompasses the various instructional alternatives to on-campus, more traditional face-to-face instruction. Throughout history, this has included methods such as correspondence study, video-taped instruction, courses broadcasted via radio, etc. In the present study, the term distance education is often used interchangeably with the term online education. This refers to any instruction that occurs in an online format.

Immediacy: This term relates to immediate supportive feedback from other learners or the instructor.

Online Education. This term refers to the instructional alternative to on-campus, face-to-face learning and teaching. Online education is a type of distance education (Larreamendy-Joerns & Leinhardt, 2006).

Student-to-Student Interaction. This term involves activities where students communicate and respond to each other within a distance learning format. This may include communication via message boards, chats, email, blogs, etc.

Synchronous. This term refers to modes of instruction that take place simultaneously with student and teacher participation. Examples include videoconferencing, interactive television, and live Internet-based modes of communication (Zirkle, 2002a). This could include participation in videoconferencing and chats (Borokhovski, Tamim, Bernard, Abrami, & Sokolovskaya, 2012).

Vocational Education: This term refers to education that prepares students for work-related activities. The term is used interchangeably with the more recent term, career and technical education, or the acronym, CTE.

Expected Outcomes

It was expected that student-to-student interaction in distance education courses would be perceived as important to occupationally based career and technical education (CTE) teachers completing coursework to obtain their teaching certification. While it has been suggested that socioemotional contacts with other students may be less significant to some adult learners (Kellogg & Smith, 2009), other sources suggest that interaction has a positive effect on learning to those willing to take advantage of the opportunities (Bernard et al., 2009).

Summary

This study contributes to the body of literature regarding the CTE occupationally based teachers' perceived need for student-to-student interaction in distance/online courses taken as coursework is completed to gain teaching certification. Since there are discrepancies in the literature regarding student perceptions of the importance of student-to-student interaction in distance/online education, this study was designed to increase knowledge for distance educators and course designers.

Chapter 2: Review of Related Literature

Introduction

In order to fully investigate the occupationally based career and technical education (CTE) teachers' perceived need for student-to-student interaction, a thorough literature review was conducted. Olcott (2005) stated that today's researchers in the field of distance/online education "need to seriously get back to basics;" "they need to review their literature" (p. 37). Research was completed on the topics of the history of career and technical education, as well as the history of distance education. Student-to-student interaction in distance education was investigated, as well as the advantages and disadvantages of distance education. Barriers of distance education and the expectations of students enrolled in distance/online courses were researched in order to determine if students who enroll in online courses expect or desire student-to-student interaction. Methodologies of distance education and the importance of student collaboration in distance education were also researched. Best practices in pedagogies of distance and online education were reviewed. The topics of leadership in distance education, faculty training for online instruction, and adult learners were researched.

Specific attention was paid to a similar study by Moore, Warner, and Jones (2016). This study had a similar focus, and it was determined that the survey instrument would have the potential to be utilized. Permission to make use of the Moore et al. (2016) survey instrument was granted. The instrument was revised slightly to accommodate the specific population of CTE teachers pursuing alternative certification in a distance/online education format. Two qualifying questions were added to the instrument. A question was added to assure that all respondents had entered the classroom directly from industry, and that they had pursued/were pursuing alternative teaching certification. Another question was added to assure that respondents had taken distance/online courses in pursuit of their teaching certification. The Moore et al. (2016)

references were sought, along with references from other pertinent studies, including Moore and Wilson (2005), Zirkle (2001), Zirkle (2002a), Zirkle (2002b), Zirkle (2003), Zirkle (2004), Zirkle (2005), and Zirkle, Norris, Winegardner, and Frustaci (2006), among others.

Throughout the review of literature, learner interaction and social engagement were found to be common themes in the development of effective distance education experiences. In this study, learner interaction was defined as an active exchange of activities and information among people (Borokhovski, Tamim, Bernard, Abrami, & Sokolovskaya, 2012). Studies have indicated that social engagement and interaction are beneficial to the learning process (Wong & Fong, 2014). Additional implications in the literature suggest that there is a relationship between student-to-student interaction and student satisfaction (Conaway, Easton, & Schmidt, 2005).

The Murray State University Library database of resources was utilized to locate peer reviewed articles and books on these topics. Based on the review of literature, there was evidence of the importance of student-to-student interaction in distance coursework. There was also evidence contrary to the perceived need or importance of student-to-student interaction. With varied indications about the perceived need for student-to-student interaction in distance education, it was determined that an exhaustive review of the literature would be necessary.

History of Career and Technical Education

Throughout history, an important purpose of schools has been to educate people for citizenship. However, one of the primary purposes for education has included training citizens for the world of work (Provenzo, 1986). Prior to the establishment of formal career and technical training, the formative post-primary education of working class young people happened outside of the public school system (Benavot, 1983). The earliest form of vocational education, or career and technical education, was the organized apprenticeship. Apprenticeships were

practiced commonly by guilds formed in small towns and cities throughout Europe. As towns and cities increased in size, the need for workers grew. The result was the guild system that was in place through 1562 in Europe (Scott, 2014).

Modern career and technical education was influenced by the teachings of Cromenius, who was credited to be the father of modern pedagogy. Cromenius advocated the position that all senses should be applied to the learning process. He also believed that words could be understood when they were connected to familiar objects. The theories of Cromenius are behind educational reform efforts to involve students in authentic learning activities that utilize all of the senses and include integrated curricula (Scott, 2014).

Additional teachings that have impacted career and technical education include those of Otto A. Salomon who was the founder of the Sloyd System of education. This involved the introduction of woodworking into elementary schools to help young people develop mental and physical strength. Its goal was to teach general dexterity with the hands and to teach a love for work. This evolved into a well-organized educational system in Sweden, and later made its way to the United States when Salomon immigrated (Scott, 2014).

The establishment of the American educational system was constructed based on the types of education that evolved in Europe. It imitated ideas such as apprenticeship, manual labor, arts and crafts, the Sloyd System, and manual training based on the Russian system (Scott, 2014). It expanded further as the demand grew for an increase in the education level of the labor force due to industrialization. During this phase, industries, agencies, and towns organized and funded schools that offered technical training for young workers. These systems had powerful backing and virtually replaced apprenticeships as the sole means for educating workers in Europe (Benavot, 1983).

In colonial America, it was the responsibility of the family to provide an education, both basic and vocational, with some reading and writing instruction made possible by the church. Apprenticeship systems, such as those found in Europe, were also in place. The early technical schools of America taught science and mathematics, along with applications to agriculture, manufacturing, and mechanical content (Scott, 2014).

The Land-Grant Act of 1862 was a prominent piece of legislation related to vocational and higher education in America. This promoted agricultural education and innovation by bringing professors of science in higher education institutions together with practicing farmers to develop methods to improve production. It provided post-secondary instruction in agriculture, the mechanical arts, and domestic science (Scott, 2014).

In 1862, President Lincoln signed the Morrill Act which supported post-secondary education and prepared teachers and leaders for agriculture and the mechanical arts. The subsequent Second Morrill Act provided funding for land-grant universities. Trade schools and private business schools emerged following the Civil War. The reconstruction period that followed the Civil War required schools with the ability to help prepare the population for employment in America's expanding industrial economy (Scott, 2014).

The rise of industrialism began to impact education in America during the early 1900s. There was a push by private industry and government officials to implement publicly funded vocational programs (Benavot, 1983). Industrial leaders pressured federal leaders to form work preparation programs in schools, and as a result, the Douglas Commission and the National Society for the Promotion of Industrial Education led to the passage of the 1917 Smith-Hughes Act. This provided incentives to comprehensive high schools for incorporating vocational programs in the curriculum, and it provided federal funds for this purpose (Scott, 2014). The

expansion of vocational education during the early part of the twentieth century through the end of the world wars was an attempt to meet the employment demands for a post-war skilled labor force (Benavot, 1983).

Alternative certification in CTE. According to Zirkle (2005), career and technical education has utilized alternative methods of preparing teachers since 1917 when the Smith-Hughes Vocational Education Act was funded. Individuals in alternative certification programs typically have a wealth of technical knowledge in their particular field, but often lack training in teaching pedagogy. Many teachers in alternative certification programs may be adult, non-traditional learners lacking basic computer literacy skills. As a result, they may have markedly less experience with computer technology—much less than their students. This can be detrimental to alternative certification students pursuing continuing education via today's distance learning alternative licensure programs (Zirkle, 2005).

Recently, teacher educators have had difficulty enticing a sufficient number of individuals to enter the teaching profession (Zirkle, 2002a). While CTE courses help students develop a necessary skill-set for success in college and in our 21st century economy, there are severe shortages in several of the CTE teaching areas (Cardichon, 2017). According to the National Association of State Directors of Career Technical Education Consortium (2010), the United States is facing a deficiency of CTE teachers and faculty members, and it is crucial to train "qualified teachers and instructors who will prepare students to be college and career ready" (p. 1). Teacher shortages in education are made worse by other variables in the field of career and technical education. For instance, many career and technical educators often take pay decreases when they choose to teach (Zirkle, 2002a).

According to Zirkle (2002b), a decrease in the number of CTE teacher education programs at universities and other post-secondary institutions often makes it difficult for potential CTE teachers to meet required preparation requirements and gain certification. To make matters worse, many CTE post-secondary programs have closed due to budget cuts and the loss of teachers and faculty (National Association of State Directors of Career Technical Education Consortium, 2009). Without CTE programs, the country "lacks the infrastructure to prepare students with the skills necessary to meet the demands of a highly competitive global economy" (National Association of State Directors of Career Technical Education Consortium, 2010, p. 4).

According to the National Association of State Directors of Career Technical Education Consortium (2010), career and technical education must lead the way by improving teacher and faculty shortages "through innovative recruitment and retention programs" (p. 4). As a result, many trade and industrial education teachers gain certification through alternative education programs that reward work experience and technical competence (Zirkle, 2002b). While alternative licensure and certification of educators has been in place for many years, recent importance has been placed on the actual path to alternative certification (Zirkle, 2005).

Distance education in CTE. Career and Technical Education students have been participating in distance education since the end of the 19th century. America's rural population utilized correspondence schools. At this time, correspondence schools were developed to provide training to those who:

- did not live near enough to a school to attend class;
- could not attend classes due to demanding work schedules, typically on the farm;
- wanted to receive training beyond their level of completion in public school; and

- did not have a large variety of courses available in their local school (Scott, 2014).

Today, most CTE teachers experience the need to continually meet required educational requirements and must complete additional training or professional development in order to maintain their teaching credentials. With declining numbers of traditional educational programs, post-secondary institutions maintain a willingness to offer courses and degrees through distance education (Zirkle, 2002b). The evolution of distance education provides CTE teachers another way to prepare for careers in teaching. It also allows them to participate in development activities in order to remain current in their field of study (Zirkle, 2002a).

Changes in technology have driven the growth of distance education learning opportunities for many students who are bound by tight schedules due to work or travel conflicts which prohibit them from attending class at a specific time. Students who are "place-bound," as a result of their geographic location, have opportunities to participate in courses or degree programs at their own convenience (Zirkle, 2002b, p. 2).

Changes in technology have placed distance education in a position to construct an ideal prototype for work-integrated learning in CTE teacher education by incorporating interactive activities. Essential skills that can only be developed through interacting with others include networking, team building, and mentoring (Chang & Lee, 2013). According to Chang and Lee (2013), "Teamwork, leadership and conflict management make up the core of team building activities" (p. 986). Online activities that provide students with an opportunity to develop team building skills are necessary competencies for CTE teachers to master prior to incorporating them into their own courses.

Today's CTE programs enjoy the advantages of advances in distance education. Distance education provides accessibility and easier access, which may relieve teacher shortages in

selected fields (Zirkle, 2002a). Historically, career and technical education teacher preparation programs have utilized the services of itinerant teacher educators in off-campus settings. Distance education provides teacher educators the ability to avoid traveling off-site, and provides more time for other faculty responsibilities (Zirkle et al., 2006). According to Rosenberg, as cited in Zirkle et al. (2006), distance education courses are scalable and can be offered to small or large groups of students without incurring significant additional expenses. This may have potential implications for small, struggling CTE teacher education programs, such as business teacher preparation programs that have found themselves in a state of declining enrollment and transition (Zirkle et al., 2006).

History of Distance Education

The history of distance education establishes a plethora of experiences with empirical value. It is also the framework whereby the educational community and the public are able to understand present-day online initiatives (Larreamendy-Joerns & Leinhardt, 2006). Various forms of distance education have existed for approximately 100 years (Moore & Kearsley, as cited in Zirkle, 2002a). Distance education has been known for retreating from the normal conditions in which teaching and learning occur. In order to justify distance education in the early days, educators rationalized it as an "extension of educational opportunities" or an opportunity to encourage "life-long learning" (Larreamendy-Jorns & Leinhardt, 2006, p. 570). While distance education is often considered a new mode of instruction, this could not be further from the truth. In fact, many of the problems that exist with modern distance/online education also existed in the early years of traditional correspondence study (Adams, 2007).

Distance education and online initiatives have typically resulted from the desire for educational outreach to unreached populations, or democratization and the need to increase revenue, and scholarly interest in teaching (Larreamendy-Joerns & Leinhardt, 2006). According

to Sumner (2000), the history of distance education includes three generations: correspondence study, multimedia distance education, and computer-mediated distance education. Distance education technologies have historically facilitated the separation of the teacher and learner. Some technologies enable one-way communication, while others enable two-way communication. In early generations of distance education, learning was not social and provided only acquisition of content material (Sumner, 2000). As technology has developed over time, the potential for interactive communications have developed. Distance learning has become a pervasive practice as a result of the proliferation of the Internet. As a result, the emergence of distance learning and online education has altered the landscape of formal education (Larreamendy-Joerns & Leinhardt, 2006).

The first generation of distance education included correspondence study. This occurred around the time that industrial societies began to develop (Sumner, 2000). This involved asymmetrical modes of instruction, such as reading a textbook, or in later years, watching a video recording of a lecture (Bernard, Abrami, Borokhovski, Wade, Tamim, Surkes, & Bethel, 2009). Historically, correspondence study primarily involved print-based course materials delivered by mail services. The Chautauqua movement led the way for correspondence education in 1882. This influenced distance education in the United States (Sumner, 2000). An impressive number of students were enrolled in collegiate correspondence programs, but the extent to which these initiatives nurtured authentic communities of learners and users was questioned. Teaching and learning arose in the isolation of private correspondence, but it lacked the opportunity to interrelate with peers (Larreamendy-Joerns & Leinhardt, 2006).

In the early 1920s, the University of Minnesota and the University of Wisconsin established educational radio stations (Zirkle, 2002a). World War I and World War II promoted

the growth of distance education. The military utilized correspondence education for soldiers during World War I and for returning soldiers after World War II (Sumner, 2000). Distance education evolved further in 1969 when the Open University was established in Great Britain. The inception of the Open University led to the use of television and other related media as new methods of delivering instruction at a distance (Zirkle, 2002a).

The second generation of distance education embraced the growth of new technologies and the potential for two-way communication (Sumner, 2000). Two-way communication or symmetrical student interaction refers to communication that is equal between the students involved (Bernard et al., 2009). Multimedia distance education began to evolve during the second generation. However, quantity was emphasized more than the quality of learning experiences, specifically in the areas of student interaction and social learning (Sumner, 2000).

According to Duncan (2005), the U.S. Army was one of the early leaders in the development of distance education instruction to train soldiers in 1976. Training materials originated as correspondence courses for thousands of military members. By the 1980s, military leaders had determined that distance education modes of instruction would be less expensive than sending personnel to traditional training in classroom settings. This was met by skepticism of many military commanders. Many did not believe military personnel could effectively be trained without teacher and student interaction in a classroom setting. As a result, distance education met resistance in the military until recent technologies paved the way for quality interaction experiences (Duncan, 2005).

According to Sumner (2000), the third generation, computer-mediated distance education, began near the beginning of the 21st century. It has included utilizing modular coursework, quizzes completed at one's own pace, and information provided by CD-ROM and

web sites. According to Borokhovski et al. (2012), in recent types of distance education, student-to-student interaction has been facilitated through synchronous instructional modes that facilitate simultaneous communication, such as videoconferencing and participating in chats. Presently, asynchronous modes of instruction that do not occur simultaneously, such as discussion boards or email messaging are also common. According to Ertmer, Sadaf, and Ertmer (2011), interactions that occur between students that occur asynchronously in discussions provide a significant way to "facilitate student-content interactions" (p. 158). Blended learning, which includes a combination of face-to-face contact and online learning, supports student-to-student interaction in distance education curricula in the present generation (Borokhovski et al., 2012).

Campbell (2012) described virtual learning environments (VLEs) as being similar to today's learning management systems that were licensed by post-secondary institutions. VLEs expanded as a viable platform for distance education programs delivered in traditional universities. These were often geared toward non-traditional students who were unable to take courses in a more traditional face-to-face format. However, VLEs restricted students from easily engaging with other learners outside of the university's e-learning platform (Campbell, 2012).

According to Campbell (2012), personal learning environments (PLEs) emerged as a set of digital tools and communities that incorporated web-based tools without the confines of a specific university. The PLE platform provided learners with autonomy and an efficient way to access information and technologies. Campbell (2012) concluded that future PLE research provides encouraging insights for a future where "learning and technology are pervasive, seamless, and continuous" (p. 234).

At the inception of distance modes of instruction, positive student and teacher opinions were common. Overall opinions remain positive, and quality distance education courses are typically considered to be comparable to traditional instruction (Adams, 2007). Technological advancements have driven the growth of distance education, and it has encouraged researchers to examine possible benefits in distance education (Zirkle et al., 2006; Sumner, 2000). Course management software enables universities to conduct courses asynchronously, without the need to assemble at the same time. Course management software has become abundant in post-secondary education for use in both online and on-site instruction (Mayadas, Bourne, & Bacsich, 2009).

According to Mayadas et al. (2009), online enrollments are currently dominated by traditional post-secondary institutions, and the public and private institutions that have developed the skills, infrastructure, and the acceptance of faculty to allow them to compete effectively in online educational environments. Today, online learning in traditional, regionally accredited institutions that employ blended coursework with a combination of online and face-to-face content is common. Leaders of post-secondary institutions recognize the strategic benefits of online and blended curriculum, and have begun to make online learning a strategic priority (Mayadas et al., 2009).

According to Larreamendy-Joerns & Leinhardt (2006), universities and companies typically see investments in online technology and development of online programs as "indicators to the outside world that they are up-to-date and on the cutting edge of instructional strategies." As a result, the use of Internet-based technology serves as both a "medium and a message of educational innovation" (p. 571).

As governments have removed funds from educational institutions, distance education has developed a greater appeal to educational institutions in need of funding (Sumner, 2000; Larreamendy-Joerns & Leinhardt, 2006). The income of post-secondary institutions is primarily dependent on students, and the supply of students may decline if institutions do not embrace distance education (Mayadas et al., 2009).

Student-to-Student Interaction in Distance Education

According to Steiner, as cited in Zirkle (2002a), distance education is a type of educational delivery that does not require learners to actually be present in the same location as the teacher. Distance education can be delivered synchronously, simultaneously with student and instructor participation. Examples include videoconferencing, interactive television, and live Internet-based modes of communication. Distance education can also be delivered asynchronously, without immediate student and instructor involvement with such methods as email, listservs, video recorded correspondence, and Internet-based courses that utilize learning management systems (Zirkle, 2002a).

Teaching is a dynamic occupation, regardless of the mode of instruction, and interpersonal interactions are a key to success (Zirkle, 2002a). Teachers must assure that quality instruction and effective learning is occurring within online learning environments. In a study of business teacher educators and distance learning coordinators conducted by Chapman and Henderson (2010), participants considered “rich content” and “interaction” to be very important to meeting e-learning quality assurance benchmarks that “should be included when assessing online courses” (p. 29).

Interaction in online courses can be fostered through various devices. According to Driscoll, Jicha, Hunt, Tichavsky, and Thompson (2012), devices include “discussion boards, chat

rooms, course announcements, online blogs, and standard e-mail" (p. 316). Research suggests that computer conferencing has the potential to achieve greater student interaction for those with the technology and the skills to participate. Computer conferencing allows students to practice reflective thinking, improve critical thinking skills, and practice problem solving. It has been suggested that the group learning experience exemplifies active communication which can take place only with a two-way learning process. Subsequently, effective communication cannot take place during one-way communication (Sumner, 2000). According to Driscoll et al. (2012), asynchronous learning networks provide opportunities for student interaction while maintaining "flexibility of time and place that is such an essential component of online education," and these are crucial to successful online course development (p. 316).

In the present generation of distance education, a connection seems to exist between collaborative student interaction and improved learning outcomes (Borokhovski et al., 2012). Effective collaboration in distance education includes giving and receiving detailed explanations and encouraging understanding in others. While opportunities for collaboration are desired, it is understood that group members that provide little effort or lack effective communication skills can reduce the effectiveness of collaborative strategies (Borokhovski et al., 2012). Another concern is that distance educators often overlook the need to build curricula that effectively utilize collaboration. Many become focused on advertising and sales, or building alliances with companies, rather than in establishing interactive educational environments. While accessibility of technology is important, it does not ensure effective communication. It simply provides the potential for it (Sumner, 2000).

During a literature review for the 2011-2013 Quality Matters (QM) Program, an organization striving to improve online and blended course design, student perceptions were

studied. Swan, as cited in Crews and Wilkerson (2015), found that "clear and concise course design, interaction with instructors, and active discussions with peers were some of the major factors" in the creation of effective learning communities (p. 49). As a result of additional QM research, eight general standards were developed to evaluate the design of online and blended courses. This included:

- course overview and introduction;
- learning objectives/competencies;
- assessment and measurement;
- instructional materials;
- learner interaction and engagement;
- course technology;
- learner support; and
- accessibility (Crews & Wilkinson, 2015).

Graham, Cagiltay, Lim, Craner, and Duffy, as cited in Crews and Wilkinson (2015), developed suggestions for teaching in the online environment. They included providing "clear guidelines for interaction with students" and developing "well-designed discussion assignments facilitating meaningful cooperation among students" (p. 52). Ultimately, good teaching should develop reciprocity and cooperation among learners (Crews & Wilkinson, 2015). By monitoring communications, effective instructors may be able to develop student interventions by encouraging students in a position to help others, or partnering them with other members of the student online community (Stevens, 2013).

The significance of student-to-student interaction in distance education is so rooted in education that it has become important to accrediting organizations, professional educational

policy associations, and providers of online courses (Kellogg & Smith, 2009). According to the Seven Principles for Good Practice in Undergraduate Education, it is important to examine the educational costs of new communication and information technologies. The Seven Principles have been used by institutions to evaluate whether technology encourages cooperation and communication among students and teachers, as well as other students (Chickering & Gamson, 1999).

Student Attitudes and Perceptions

Moore et al. (2016) sought to determine whether the importance of student-to-student interaction cited in previous studies was valid in a pervasive technological climate. As a preface for the study, it was suggested that studies historically focused on traditional face-to-face undergraduate courses of previous decades. The researchers questioned whether student perceptions of student-to-student interaction from previous decades could differ from the perceptions of today's students. The article also suggested that previous studies focused on undergraduate students, not the graduate students surveyed in their study. Researchers inferred that student opinions varied between distance education courses and previous studies pertaining to face-to-face courses (Moore et al., 2016).

In Moore et al. (2016), information was gathered from North Carolina State University (NCSU) students regarding their expectations related to student-to-student interaction in distance education courses. Findings of the study led researchers to believe that "graduate students in agricultural and extension education classes taught at a distance do not desire student-to-student interaction in their classes" (p. 9). None of the subgroups including Millennials, extroverts, and males or females had positive opinions of student-to-student interaction in online coursework (Moore et al., 2016).

According to the Moore et al. (2016) study, student-to-student interaction was not a major expectation of students, and the absence of student-to-student interaction seemed to be preferred by students. There were implications for educators to re-examine their beliefs on the importance of student-to-student interaction in distance education courses. The study indicated that student-to-student interaction in a graduate online course may not need to be a high priority for the educator. Based on the results of the study, students believed that those who desired interaction should have the opportunity to work together. Those without a desire to interact should not be forced to engage in interactive activities in an online format (Moore et al., 2016).

Based on personal experiences within their online courses, Kellogg and Smith (2009) studied whether adult, part-time MBA learners valued student-to-student interaction in an online course. In this study, there was no correlation between student time spent in chat rooms or threaded discussions with other learners and perceived learning or course satisfaction. Feedback suggested that students did not value learning activities involving peers. Another interpretation of the feedback suggests that students valued interaction, but not through specific chat rooms or threaded discussion technologies available to them. Qualitative evidence of the Kellogg and Smith (2009) study indicated that "interactions with other students do not contribute to perceived student learning as much as independent study with required course materials" (p. 446).

In a study of students participating in courses with distance education components, interactions in face-to-face, hybrid, and online instructional environments were studied. Student perceptions regarding student-instructor interaction, student-student interaction, student-content interaction, and student-technology interaction were gathered. Strictly online students rated each of the four interactions slightly higher than face-to-face and hybrid students as a result of teacher commitment to encourage interaction in their online courses (Brannan, 2005).

A study by Kuo, Walker, Belland, and Schroder (2013) investigated the degree to which interaction, Internet self-efficacy, and self-regulation led to student satisfaction in online courses. Based on the findings, it was determined that the extent of interaction between students was less than the interaction between students and instructor, as well as students and content. Another relevant finding was that when student-to-student, student-to-instructor, or student-to-content interaction increased, the level of satisfaction increased. While it was determined by Kuo et al. (2013) that age and marital status had no significant impact on any of the predictor variables of the study, gender and class level "had a significant effect on learner-learner interaction" with females having more learner-learner interaction than males (p. 28). The study also indicated that undergraduate students had significantly less student-to-student interaction than graduate students. Ultimately, the study found that student-to-student, student-to-instructor, and student-to-content interaction were all significantly correlated with learner satisfaction. However, student-to-student interaction was not a reliable predictor of student satisfaction. Instead, interaction between the learner and the content was determined to be the strongest predictor of student satisfaction (Kuo et al., 2013).

In research conducted by Ryan, Hodson-Carlton, and Ali (1999), positive comments about communication and interaction in face-to-face classroom experiences were common. Some common themes in responses included:

- students felt challenged with the immediacy of the interaction and feedback during class discussions;
- students enjoyed sharing professional experiences;
- face-to-face student interaction with peers occurred as a result of class discussions;
- students appreciated verbal and nonverbal communication;

- students felt connected with the class and instructor;
- critical thinking was enabled by the instructor; and
- speaking abilities were improved through practice in the classroom setting (Ryan et al., 1999).

In a study of first-year accounting students' attitudes toward traditional and online methods of delivery, it was determined that there were no significant differences between face-to-face and online educational options and preference for male and female students. Both male and female accounting students placed a high importance on opportunities for social interaction in the learning process. Students who preferred to use online learning technology placed less significance on opportunities for group interaction. However, male students that preferred online educational technology placed less importance on interaction than females (Wong & Fong, 2014).

A study by Bolliger and Wasilik (2012) measured perceived satisfaction of undergraduates enrolled in a number of online courses that did not have an element of interaction in order to measure students' perceived satisfaction. The overwhelming majority of respondents indicated that they would recommend an online course to others, and a majority of respondents indicated that they would enroll in another online course in the future. The online courses that respondents had taken did not include elements of student-to-student interaction, and instructor-to-student interaction was sparse. According to Bolliger and Wasilik (2012), "respondents reported they were satisfied with their online learning experiences" with little to no interaction with peers and the instructor (p. 162).

While researchers have indicated the importance of designing online courses to include interaction due to its positive effect on student learning, this does not mean that students

completely take advantage of the opportunities for interaction. If students communicate and collaborate, it is possible that they do not always do so effectively. As a result, it was determined that student interaction may not be the single factor to assure successful student-to-student interaction (Bernard et al., 2009).

While some research points to positive perceptions, many distance education students develop negative perceptions of online modes of instruction. In a collaborative doctoral agricultural education program with Texas A & M University and Texas Tech University, participants expressed feelings of dissatisfaction related to isolation, resources and materials that were not accessible, the registration process, and the time allotted to complete distance education course requirements (Kelsey, Lindner, & Dooley as cited in Zirkle, 2003).

Student Expectations in Distance Education

When evaluating traditional teaching methods with online instruction, Ryan et al. (1999) determined that respondents felt that in the traditional classroom setting, course content was covered more thoroughly. Students felt that there was increased interaction and participation. They believed instructor preparation and content expertise were more essential than interaction. Ultimately, students believed that the ability to communicate effectively were required to a higher degree in a traditional class. Participants in the study indicated that interaction within the classroom was helpful in understanding the course content more fully (Ryan et al., 1999).

According to Brigance (2011), distance education is a rapidly changing market, and "learners expect quality education and have many choices" (p. 48). According to Mayadas et al. (2009), many distance education students are off-campus learners "with a wide range of ages, work experience, and family circumstances" (p. 86). It is important for post-secondary institutions to be able to accommodate varied schedules and student needs. Mayadas et al.

(2009) also noted that teaching and learning are changing due to the expectations of Millennials. These students have an expectation for mobile learning, and post-secondary institutions that want to attract Millennials must accommodate their expectations.

Advantages of Distance Education

According to Zirkle (2002a), one of the greatest advantages of distance education programs for students is the lack of restrictions in having to attend courses on campus at a specific time. A significant factor in deciding to enroll in distance education classes was determined to be convenience (Moore & Wilson, 2005). Online instruction provides a unique opportunity for students to learn from a distance and on their own schedules (Moore, 2014). Self-paced instruction and being able to complete required work at any time or place is an advantage that benefits many students (Zirkle, 2002a). Distance education courses provide a way for students to attain a degree or certification that might not otherwise be possible. Distance education makes it feasible for students to avoid disruption of their family life and work schedule, while allowing students to utilize their time more wisely (Moore & Wilson, 2005). The prevalent use of technology in online instruction allows students to choose their own pace for viewing instructional media and course materials (Brigance, 2011).

Various types of distance learning methods have proven advantageous. Students who are given the opportunity to create comments through distance learning modes of instruction benefit from the process. Creating comments encourages students to reflect on prior readings of other instructor or student posts, as well as thinking about prior knowledge acquired. Composing streaming comments or blog comments requires students to step back, think, and analyze (Yang & Chang, 2011). In addition, analysis of online responses leads to a high level of critical thinking through application of theory (Ryan et al., 1999). It enables learners to become more introspective and attentive in their work (Yang & Chang, 2011).

Online instruction has the ability to foster communication and interaction, but in different ways than a traditional classroom setting. Themes emerging from a study by Ryan et al. (1999) included the following:

- online instruction can lead to improved participation and less monopolizing of conversations;
- online instruction makes it possible to learn from others as the ideas of classmates are read;
- online instructional methods can lead to thought-provoking interaction;
- students felt that they were required to be more prepared in order to participate;
- students felt that it improved technical skills and writing skills; and
- online instruction provided an opportunity to network with others (Ryan et al., 1999).

According to Yang and Chang (2011), traditional classroom discussion often becomes teacher-student centered. To involve more students in the discussion, it was recommended that using blogs or streaming comments as a vehicle for discussion in distance education ensures that all learners have the ability to speak, and are able to become respected members of the student learning community. Yang and Chang (2011) also noted that cooperative learning and analytical thinking occurs through meaningful discussions and online posts. They recommended peer learning as a type of cooperative learning which increases the significance of the student-to-student interaction (Yang & Chang, 2011).

Yang and Chang (2011) studied dialogs from blogs and streaming comments related to positive attitudes toward student academic achievements in courses that contained online peer interaction, as compared to courses with no peer engagement. The study concluded that

engaging in online exchanges of ideas with peers is associated with positive attitudes toward online student interaction. There was also an indication that online student interaction facilitated positive motivation to learn from classmates (Yang & Chang, 2011).

According to Larreamendy-Joerns and Leinhardt (2006), online instruction can be helpful to faculty members in higher-level institutions with limited resources. Faculty members benefit from online modalities that make instruction available, and provide novel methods of teaching subject matter. As educational institutions struggle to overcome budget cuts, online instruction offers a cost-effective alternative to traditional face-to-face courses (Driscoll et al., 2012). The ultimate potential of online technology to enhance income to higher education institutions "resides less in the technology itself than in the practices and discourses that it prompts individually and institutionally" (Larreamendy-Joerns & Leinhardt, 2006, p. 597).

Barriers to Distance Education

According to Brigance (2011), when traditional face-to-face classes are hastily converted into online formats, a lack of consideration of online pedagogical philosophies and the technology to be used often leads to low-quality web-based courses. Failure to provide the necessary support for faculty members can result in poorly-structured design and can negatively impact student learning. Additionally, professors that are accustomed to making adjustments in their courses as a result of student feedback are at a disadvantage when unable to make changes in an online format (Brigance, 2011).

Many students that participate in distance learning to complete courses and degrees are often considered to be non-traditional students. According to Zirkle (2001), these students are often mature, working adults with the desire to pursue their education close to their homes. Characteristics may also include individuals who are single parents, or older adults looking for job training updates. Students returning to pursue their education after a long absence, as well as

transfer students are typical distance education participants (Zirkle, 2001). There are often various reasons that adult students fail to participate fully in learning activities. These include situational barriers that arise from an individual's situation in life at a given time, institutional barriers or obstacles that are constructed by educational institutions themselves, dispositional barriers that related to student attitudes, self-perceptions, and insecurities, and faculty barriers related to time constraints associated with online instruction (Zirkle, 2001; Zirkle, 2004).

The highest perceived student barrier in a study of business education teacher educators included the ability to learn CTE content via distance learning. Additional concerns regarding isolation from other students and faculty were discussed in the distance education format of learning. The absence of having an instructor present for motivation and to address quality of work issues was also listed as a major concern, along with time constraints associated with job responsibilities (Zirkle et al., 2006). An additional barrier of online instruction is that online learners are unable to request immediate clarification from the instructor as they would in a traditional classroom (Brigance, 2011).

Common institutional barriers include difficulty scheduling or registering for courses, program costs, and lack of faculty experience with online instruction (Zirkle, 2001). A similar study by Zirkle (2002b) indicated that the predominant institutional access barrier was a lack of required courses offered in general education, the arts, and humanities. Without these courses being offered in the online format, it was difficult for students to complete their required educational programs. Additional institutional barriers in this study included difficulty accessing library resources, lack of availability or access to advisors, lack of technical assistance, lack of availability of required course materials, lack of instructor availability, insufficient contact with university personnel after admission, tuition costs, issues with registration, and difficulty

obtaining grades, transcripts, and other course-related records (Zirkle, 2002b). Additional institutional barriers that may be unintentionally put in place by educational institutions include difficulty scheduling or registering for courses, program costs, and lack of faculty experience with online instruction (Zirkle, 2001).

Situational barriers relate to personal issues, including career and home responsibilities (Zirkle, 2001). Student access barriers cited in Zirkle (2002b) included job conflicts, family and time constraints, isolation and lack of interaction with other students, and insufficient feedback or interaction with the instructor. Additional perceived student access barriers included poor assignment clarity, insufficient computer skills, poor Internet quality, inadequate access to technology, lack of course applicability to career goals, insufficient employer support, difficult financial situation, and difficulty utilizing course software (Zirkle, 2002b).

Faculty barriers that emerged in a study of business education teacher educators, included the faculty impression that distance education formats opposed the institutional mission and philosophy of their college or university that honored face-to-face instructional relationships. Concerns included whether pedagogical teaching methods could be taught effectively via distance education. Support, planning, funding, and time needed to develop courses were listed as some of the top barriers in business teacher education programs (Zirkle et al., 2006).

While distance education programs offer many advantages to a variety of student populations, some of the disadvantages of distance education include being isolated from other learners, dealing with the frustration of ineffective communication, and student confusion due to uncertain feedback (Ryan et al., 1999). An asynchronous distance education course design that allows students to access materials online has the potential of making students feel that they are learning the course content on their own without having the opportunity to participate in shared

experiences with their peers (Moore, 2014). In a study of teacher educators, some of the most frequent perceived learner barriers to distance education included:

- the ability to learn career/technical content in a distance format;
- a lack of student motivation and quality of work issues due to the absence of an instructor;
- isolation from other students and faculty;
- time constraints associated with job responsibilities;
- inadequate level of student expertise; and
- the availability of technology (Zirkle, 2004).

Another study indicated that many students, themselves, felt that they were learning less because they were required to do more of the learning independently. This led to student frustration and was a significant obstacle that online learners would need to overcome (Moore, 2014).

Distance instruction can limit the ability of students to engage in reflective conversations with other students, and in many cases, social interaction is missing with courses in an online format (Zirkle, 2001). In a study of graduate students' perceptions by Moore and Wilson (2005), online courses did not compare positively with traditional, on-campus courses in relation to student-to-student and student-to-teacher interaction. While students in the study were pleased with the amount of interaction based on course evaluations, they responded less favorably to questions relating to interaction on the survey instrument. Based on this study, on-campus classes were viewed as stimulating more interaction among students than online modes of instruction (Moore & Wilson, 2005).

Off-campus distance education students may feel isolated from other students, as well as their instructor. This may lead to the perception that they are not as important to the university

as on-campus students (Zirkle, 2002b). Web-based distance education courses may facilitate less interaction than traditional, instructor-led models. This may lead to reduced student effort (Zirkle, 2002a). In another study by Moore and Wilson (2005), graduate students perceived that the opportunity for interaction between students and professors occurred much more often with on-campus courses than online courses. In addition, it was perceived that the opportunity for interaction between students occurred somewhat more in on-campus environments than in distance education courses (Moore & Wilson, 2005).

While many positive perceptions exist about online instruction, a study by Ryan et al. (1999) indicated that some participants conveyed negative feelings regarding the online instructional experience. Concerns included:

- students felt disconnected from the class and the collaboration;
- students felt that the experience lacked interaction and extemporaneous discussion;
- students missed sharing ideas;
- students were concerned about other students reading their posts;
- students had negative feelings about "learning from a computer"
- students missed having the opportunity to put faces with names of classmates;
- students felt uncertain about their class progress;
- students felt alone which made them anxious;
- students felt isolated as a result of the asynchronous communication methods; and
- students felt that since students were online at different times, the communication lacked continuity (p. 276).

A study by Conaway et al. (2005) determined that data suggested that increased interaction online did not result in a correlation with higher grades, learner-to-learner supportive

feedback, or immediacy. While educators often encourage interaction between students, the data indicated that the content of student messages to each other may be more important than the number of posts made. The study found minimal student-to-student affective responses in online modes of communication and somewhat low immediacy scores between learners. However, lower scores for immediacy and inconsistent student interactivity did not impact final grades for the course (Conaway et al., 2005). A study by Mooney, Southard, and Burton (2014), indicated that online discussion board activities are important activities in effective online learning. However, the concern exists that learners who begin posting during the final stages of a discussion board exercise are not typically going to experience the complete depth of the educational process.

Despite improvements, perceived barriers exist in the ability of distance education students to successfully complete specific courses and degree programs. The potential for successful completion of courses and programs is lower in distance modes of instruction when compared with more conventional instructional methods (Zirkle, 2002b).

Student Characteristics

Many of today's online students are off-campus learners (Mayadas et al., 2009). Today's e-learning students include a wide range of age groups, broad areas of work experience, and diverse family circumstances (Zirkle, 2004). Many students using distance education to complete courses and degrees are considered to be "non-traditional" (Zirkle, 2001, p. 39). Non-traditional students that were targeted by early online educational opportunities in traditional universities would have been unable to return to university studies for a variety of reasons if it had not been for the availability of online courses (Campbell, 2012). According to Allen and Seaman (2009), "Online courses typically attract students who might otherwise have not been

able to attend traditional on-campus instruction, either because of work, family, or other obligations" (p. 13).

Approximately half of online students are considered to be full-time traditional college students who are drawn to online instruction due to its convenience or their specific scheduling needs. These are students who have grown up with computer technology and expect the convenience of its use in education. Millennials are changing the way teaching and learning must be approached (Mayadas et al., 2009).

Qualitative evidence from a study of Masters of Business Administration (MBA) students conducted by Kellogg and Smith (2009) indicated that a majority of working adult students in an online course reported learning little from online interactions with their classmates. In addition to complaints that some students do not fully participate in group activities, some students suggested that learning activities involving peers do not provide sufficient value relative to the monetary cost of the course. Since many adult learners have established family or professional relationships, the need for socioemotional connections with other students may be less significant to some adult learners (Kellogg & Smith, 2009).

Best Practices in Distance Education

Research indicates that advances in distance/online education continue to fall short of providing the student interaction necessary for effective discussion, social learning, and the ability to develop valuable communication skills (Sumner, 2000). According to Olcott (2005), "distance education is at a crossroads" and "does not know where it's going" (p. 37). According to Larreamendy-Joerns and Leinhardt (2006), leaders and educators must "engage in the practice of online education in a thoughtful fashion" (p. 567). Educators must understand that present-day online education has emerged from previous origins of education. Larreamendy-Joerns and

Leinhardt (2006) also warn that educators must understand that there are "social, political, economic, and ethical assumptions and implications in what appear to be simple actions of design and instruction" (p. 567). Such is the case with the implementation of distance/online educational designs.

The excess in availability of digital devices available to today's learners has amplified the opportunity for learning outside the limitations of the traditional classroom. A challenging task facing course designers is the adoption of efficacious approaches for implementing innovative technological systems and solutions to meet educational needs in today's rapidly changing information age (Campbell, 2012). While various forms of distance education have been prevalent for decades, Brigance (2011) stated that "today's evolving education market requires a more concerted move toward online education" (p. 44).

While the basic principles of quality educational pedagogy are consistent, regardless of whether courses are taught in an online or face-to-face medium, converting the necessary elements into an online environment can be a challenge (Driscoll et al., 2012). According to Larreamendy-Joerns and Leinhardt (2006), supporters of distance education have historically been expected to exhibit that distance teaching and learning were at least as effective as face-to-face education. However, after over a century of distance education at the college level, arguments for and against distance education have changed very little (Larreamendy-Joerns & Leinhardt, 2006).

According to Murray, Perez, Geist, and Hedrick (2012), quality online classes enable and give emphasis to interaction between student, teacher, and course content, and "interaction between students and content has been shown to be particularly crucial" (p. 137). Studies point to the importance of peer interactions in online education. In a study by Chang and Lee (2013), it

was determined that students in an online business-planning course achieved a significantly higher performance through collaborative activities than through activities such as “competition, accommodation, compromise, or avoidance” (p. 995). Interaction and dialogue among peers promote critical thinking and force learners to actively participate with course material at higher levels of learning. In addition, knowledge and understanding occurs in the social realm where learners can benefit from the insights and teaching of others (Driscoll et al., 2012). Researchers recommended that educators encourage students to implement collaborative learning strategies by clearly outlining their importance before implementation of cooperative activities. It was also advised that educators encourage learners to develop transformational leadership skills, along with collaborative strategies, in order to improve the effectiveness of group activities (Chang & Lee, 2013).

While Kuo et al. (2013) determined that learner-content interaction had a bigger influence on student learning outcomes in asynchronous course settings than learner-learner interaction, the importance of student interaction in online learning was confirmed. Collaborative activities and utilization of online resources were recommended in online courses in order to increase student interaction with the course content. Another study that associated student satisfaction with online education aligns satisfaction with the student’s final grade, rather than any process (Murray et al., 2012).

In contrast, another study suggested that students often receive fewer practical benefits through peer interactions in an online mode of delivery than traditional face-to-face delivery (Johnson, Cascio, & Massiah, 2014). According to Larreamendy-Joerns and Leinhardt (2006), many concerns regarding distance/online education have focused on limitations of various technologies of delivery when trying to replicate critical aspects of classroom instruction such as

"social interaction, prompt feedback, engaging activities, instructional flexibility, the dynamism of a knowledgeable scholar, and adaptation to individual needs" (p. 579).

Without a doubt, members of underserved populations have benefited from distance education programs. According to Larreamendy-Joerns and Leinhardt (2006), the diversity of students who utilize distance education has been substantial with "working professionals whose daily obligations interfere with attendance at on-campus courses to faculty members who want to keep informed of the advances in their discipline" (p. 582). The challenge has been reaching a wide audience without compromising quality of instruction. According to Brigance (2011), effective leadership will be important in the ever-changing distance education market where "faculty and multimedia converge with diverse learners" (p. 48).

The Seven Principles for Good Practice in Undergraduate Education identified a list of seven effective practices. The principles included encouraging contact between students and instructors, and developing interchange and cooperation among students (Chickering & Gamson, 1987). The principles have been developed and adapted over time to include collaboration as a marker of quality instruction (Chickering & Gamson, 1999).

In an online mode of instruction, instructors must adjust from being mere providers of knowledge (Johnson et al., 2014) to being facilitators that monitor student interaction and provide comments to encourage peer learning and collaboration (Conaway et al., 2005). Attaining the proper balance of instruction and interaction can make it possible to sustain the proper focus on effective pedagogy (Adams, 2007). This can be maintained by instructors through demonstration of acceptable behaviors, leading online dialogue, summarizing discussion points, and providing quality feedback. Instructors must develop course content that includes immediacy in the course by requesting students to respond with personal examples (Conaway et

al., 2005). When implementing discussion board activities in an online course, findings of Mooney et al. (2014) suggested that it is important to pace the release of information provided by the instructor. This sparks student interest in the topic of the discussion board post and encourages students to begin exercises sooner.

According to Drummond (2008), distance education courses or programs must be delivered in an environment that inspires student-instructor and student-student feedback and interaction. Technological advances and interaction are likely less significant than developing quality learning experiences with all of the traditional elements of successful pedagogy. A well-rounded course would include building a learning environment that realizes the maximum student-to-instructor and student-to-student feedback and interaction (Drummond, 2008). The quality of educational practices involves sensible use of technological potential, but most importantly, it requires learner engagement, a clear visualization of what students need and should learn, and the teachers' understanding of the subject matter (Larreamendy-Joerns & Leinhardt, 2006). It is also important for faculty to foster a sense of community in online instruction when there are no opportunities for face-to-face interaction between learners. Faculty must create a sense of social presence in order to combat the isolation that online students may feel (Brigance, 2011).

According to Moore and Wilson (2005), distance educators should consider utilization of chat rooms, bulletin boards, email, and listservs. Educators should also consider using web cameras and arranging office hours at specific times in order for students to connect with students using web cams for spoken and visual course interaction (Moore & Wilson, 2005). However, it must always be remembered, that a course must be delivered in a culture and

environment that promotes student-instructor and student-student communication and feedback (Drummond, 2008).

According to Moore (2014), instructors must find new ways to develop a sense of community for their online students. This allows learners to connect to their teachers, peers, and to the content. In the online environment, where the instructor and students are separated geographically, varied presentation methods are required to assure that expectations are understood. This is important in order to overcome student feelings of isolation that may impact their perceptions of learning, as well as their ability to be successful in the course. This can be done by providing an adequate orientation to the class. This will create feelings of security with the course content, processes, and technical applications of the online course (Ryan et al., 1999). Overcoming student attitudes and fears of the online learning process is an important step to improving the students' perception of their ability to achieve learning successfully. Students with open minds to the online learning process could become more successful in the course (Moore, 2014).

Course designers and instructors must incorporate activities into online classes that encourage a sense of community (Moore, 2014). Those developing online content must have a firm foundation in theories of instruction, utilize research to guide best practices, be knowledgeable in multimedia and online educational formats, be committed to life-long learning, and be open to challenges (Brigance, 2011). Personal contact leads to effective interaction, which allows learners to evaluate their own attainment of content by assessing the responses and presentations of others (Ryan et al., 1999). According to Moore (2014), community is created in face-to-face interactions. According to Larreamendy-Joerns and Leinhardt (2006), online education incorporates a visualization of "knowledge as practice and of learning as emerging

participation in a disciplinary community" (p. 591). As a result, there are arguments for incorporating interactive communication in distance education. Instructors must be creative in building an environment for student participation, interaction, and socialization within the class (Ryan et al., 1999). Methods for developing a sense of community might also include adding face-to-face office hour meetings with the instructor, or scheduling a getting acquainted visit at the beginning of the course (Moore, 2014).

Online learning environments that provide an avenue for social interaction are a positive step in course development. However, course designers must be careful when assuming that social interaction is automatically conducive to learning simply because student-to-student interaction and student-to-instructor exchanges take place. Instead, online instruction should focus on introducing learners to the deeper issues of the discipline being taught in a way that is productive and generative (Larreamendy-Joerns & Leinhardt, 2006). A study by Ertmer et al. (2011) indicated that instructors of online courses should attempt to "go beyond the recall or comprehension level by describing underlying relationships or by making connections among ideas" when designing their courses (p. 174). This study also suggests that it is important for instructors to carefully plan discussion questions in order to engage students at the higher levels of Bloom's Taxonomy. Consequently, it is important for educators to study and modify discussion prompts in order to encourage higher-level thinking in students (Ertmer et al., 2011).

Teacher preparation programs in CTE areas should include experience and preparation in distance education methods in order for CTE teachers to be able to effectively conduct distance education courses themselves (Zirkle, 2002b). Research indicates that some courses in teacher preparation programs are more likely to be taught via distance learning than others. Courses pertaining to teaching pedagogy were less likely than content courses to be taught

through distance learning modes of instruction (Zirkle et al., 2006). Finally, it is important for academic circles, the business community, and the government to work more closely than in the past to better manage the infinite power of distance education (Duncan, 2005).

According to Olcott (2005), "the best teachers, by nature, are innovative and creative and always searching for better ways to teach, better ways for students to learn, and better ways to measure and assess the degree to which the teaching has produced the learning" and "technology does not make average teachers good teachers . . . it makes good teachers great teachers and facilitators" (p. 37).

According to Brigance (2011), skilled instructional designers are necessary for appropriate development of online courses in a setting where professors and instructors may be inexperienced in the development of their own online content. Many faculty members are often expected to choose or create the instructional strategies, learning strategies, course materials, and assessments for their online courses. While professors and instructors would like to maintain their autonomy regarding design of their courses, many are not familiar with course design and/or may be uncomfortable with technology. For this purpose, strong collaborative leadership of an instructional designer is necessary to successfully work with educators to develop effective course content (Brigance, 2011).

According to Driscoll et al. (2012), the thoughtful use of technology in online course development can enrich the learning process, but misuse of multimedia elements can be distracting and reduce actual learning. While technology is an important part of online courses, its use should consistently be content-driven. Ultimately, effective online courses should be developed around strong pedagogical standards, instead of focusing only on new, more complex modes of instruction (Driscoll et al., 2012).

Leadership in Distance Education

According to Larreamendy-Joerns and Leinhardt (2006), it is possible to speculate about future innovations that may impact online education and post-secondary education. Guesswork can be mitigated by envisioning the present backdrop of online learning as both an opportunity for technological and pedagogical innovation and a reenactment of historical promises and concerns about distance education. It will be important for educators to pay attention to the new innovations and challenges and learn from the history of distance education if it is to reach its full potential in the future (Larreamendy-Joerns & Leinhardt, 2006).

According to Brigance (2011), in order to lead effectively and develop successful online learning opportunities in educational institutions, administrators must create a culture of learning that provides the necessary resources to faculty members and fosters continual learning. In a study of online education that surveyed over 2,500 colleges and universities, it was determined that 19% of all institutions surveyed did not provide training or mentoring to faculty members teaching online courses. Of the respondents, 59% of institutions with online offerings provided informal mentoring, 40% provided formal mentoring programs, and only 15% provided training by utilizing an external course (Allen & Seaman, 2009).

The successful educational institution has a vision that incorporates a collaborative online course design approach that encourages faculty members and course designers to bring their expertise together. The institution's vision of online instruction should also be aligned with the university's overarching vision (Brigance, 2011).

In a study of students in a business-planning course conducted by Chang and Lee (2013), results indicated that instructors involved in designing online courses should incorporate transformational leadership in order to increase the interest of followers and improve their desire

to uphold the interests of all members of an online team or group. Transformational leadership motivates members of online groups to move beyond their own concerns and focus on the interests of the group as a whole (Chang & Lee, 2013).

Educators must engage in research and development in the area of personal learning environments (PLEs). According to Campbell (2012), PLEs make up one of the more advanced movements regarding "redefining the teacher-learner relationship, reducing learner isolation, and transitioning the teaching role to one of facilitation of learning" (p. 236). This could lead to autonomy for learners, and a setting where the learner guides the stream of information and manages the learning process. This format for distance education contrasts with the previous, more traditional learning environments characterized by dependence on the instructor for all information (Campbell, 2012).

Chapter 3: Methodology

Research Design

Information about the perceptions of occupationally based career and technical education (CTE) teachers who were working toward completion of requirements to obtain a teaching certificate was gathered. The study was descriptive in design. The study included CTE teaching professionals who were pursuing, or had pursued, alternative teaching certifications by completing courses offered in the online format. Students from post-secondary institutions in Kentucky, Missouri, and West Virginia participated in the study.

A similar study was conducted with graduate students by Moore, Warner, and Jones (2016). The Moore et al. (2016) survey instrument was used with permission. The survey instrument had been field tested previously, and was deemed to possess content validity prior to administration by Moore et al. (2016). The instrument included 18 Likert-type statements designed to gain insights into student perceptions of student-to-student interaction within distance coursework. Two qualifying questions were added to the instrument to be certain that survey respondents were pursuing/had pursued alternative certification and that they had completed at least some of their coursework in the online/distance education format. The electronic instrument was emailed to CTE teachers/students who were enrolled in occupationally based CTE teaching programs leading to certification (see Appendix A).

An advance notice was sent to recipients via email (see initial recruitment email in Appendix B), and the link to the instrument was sent via email 24 hours later (see Appendix C). A reminder email was sent 10 days after this in order to increase the response rate (see Appendix D). The research consent letter was attached to email communications (see Appendix G).

Respondents completed the survey instrument prepared through Survey Monkey. Responses were determined and statistical analysis was completed after 15 days.

Purpose of the Study

The purpose of the study was to add to the distinctive body of literature regarding occupationally based CTE teachers' perceived need for student-to-student interaction in distance education. The study would have the potential to contribute to the wider body of literature on the topic of post-secondary student perceptions of student-to-student interaction in distance education, as well as career and technical education student perceptions of student-to-student interaction in distance education. Implications for the body of research on adult learners' perceptions of student-to-student interaction in distance education could also be discovered.

Research Questions

The study focused on understanding the perceived need for student-to-student interaction among CTE occupationally based teachers. The teachers were from alternative certification teacher education programs offered in the online format. Two research questions were addressed:

1. What are the expectations of distance education occupationally based teachers regarding student-to-student interaction in distance education classes?
2. Is there a difference in the expectations of distance education occupationally based teachers regarding student-to-student interaction in distance education classes, according to the following dependent variables:
    - gender;
    - personality type;
    - work status;

- student status;
- generational classification; and
- number of distance education courses taken.

Description of Population

The study included a sample population of CTE teachers/students from occupationally based teacher education programs with online components in their induction programs. The sample included students from post-secondary institutions in Kentucky, Missouri, and West Virginia that were working or had worked toward their CTE teaching certification.

Data Collection and Data Analysis

Data was collected using the Moore et al. (2016) survey instrument. Minor modifications were made to the instrument for the study's specific population. Two qualifying questions were also added to be certain that survey respondents were pursuing/had pursued alternative certification and that they had completed at least some of their coursework in the online/distance education format. The instrument was formatted using Survey Monkey and distributed to the population of occupationally based career and technical education teachers who participated in distance/online coursework in order to attain a CTE teaching certification (see Appendix A). The Murray State University Institutional Review Board (IRB) application was submitted and approved (see Appendix E).

The survey was formatted using Survey Monkey by the Murray State University Technology Support and Consulting Services Coordinator. The online survey instrument was completely anonymous, and a record of respondent identities was not gathered. The online survey was tested prior to emailing it to the population. Upon confirmation that the Survey Monkey instrument functioned as intended, the test responses were cleared and the process of

distributing the survey link to the population began. Survey Monkey security measures included password protection and data encryption (Survey Monkey, 2017). Survey Monkey results were formatted using Excel spreadsheets and later imported into IBM SPSS Statistics Version 22 (SPSS) for analysis. Upon completion of the study, the data was destroyed.

Student email contacts were made through the CTE departments of participating post-secondary institutions with these programs in place. Permission to utilize subjects of two institutions outside of Kentucky was granted (see Appendix F). The researcher had difficulty accessing a complete list of email addresses specifically for students enrolled in CTE alternative certification programs in Kentucky, and significant cooperation by the specific coordinators of the alternative certification programs could not be attained directly. As a result, email contact information for all CTE teachers in Kentucky was accessed via the Kentucky Office of Career and Technical Education web site. Due to this, it was necessary to add two qualifying questions to the survey instrument to be certain that the appropriate population's responses would be gathered. The first question was to assure that respondents were entering the classroom directly from industry, and that they had pursued/were pursuing alternative teaching certification. It was also necessary to add a question to make sure that all respondents had taken distance/online courses in pursuit of their teacher certification. The Murray State University IRB application was amended and subsequently approved (see Appendix E). If respondents did not meet the two qualifications specified in the added questions, they were directed out of the remainder of the survey. The complete study sample included CTE teachers/students in certification programs that utilized distance coursework from Kentucky, Missouri, and West Virginia.

The existing survey instrument was deemed to have content validity (Moore et al., 2016). The instrument had been field tested and a similar study using the existing instrument was

previously conducted. In order to assess the internal consistency of the survey instrument, the original researchers calculated Cronbach's alpha on the field test results, and the resulting coefficient was .95 which indicated a high degree of internal consistency (Moore et al., 2016). As a result, the researcher considers the Moore et al. (2016) instrument to possess content validity. Minor changes were suggested by experts to assure understandability of specific questions. After changes were made and approved by the Murray State University IRB, the revised instrument was field tested by experts in the field of CTE.

An initial explanatory recruitment email was sent to all students in the population (see Appendix B). A link to the survey instrument was emailed to the population 24 hours later (see Appendix C). After 10 days, a reminder email was sent to non-respondents (see Appendix D). An informed consent letter was attached to email communications (see Appendix G). Results were calculated after 15 days.

Chapter 4: Data Analysis

Introduction

This study was designed to contribute to the body of literature regarding occupationally based career and technical education (CTE) teachers' expectations and perceived need for student-to-student interaction in online/distance education coursework. Broader contributions to the literature have included perceptions of post-secondary students and adult learners regarding the importance of student-to-student interaction in distance education. The results are outlined in this chapter.

The study was guided by the following research questions:

1. What are the expectations of distance education occupationally based teachers regarding student-to-student interaction in distance education classes?
2. Is there a difference in the expectations of distance education occupationally based teachers regarding student-to-student interaction in distance education classes, according to the following dependent variables:
    - gender;
    - personality type;
    - work status;
    - student status;
    - generational classification; and
    - number of distance education courses taken.

Participants involved in the study included occupationally based CTE teachers that participated in alternative programs designed to help participants attain teaching certification via

online/distance coursework. The population included respondents from post-secondary institutions in Kentucky, Missouri, and West Virginia.

Procedures

Moore, Warner, & Jones (2016) conducted a similar study with a different post-secondary population. Their existing Likert-type survey instrument was utilized with permission (see Appendix A). Research supports the use of Likert-type survey items when attempting to measure concepts that are not concrete, such as student expectations (Sullivan & Artino, Jr., 2013). The original survey instrument was previously determined to have content validity (Moore et al., 2016). The original researchers had field tested and assessed the internal consistency of the survey instrument using Cronbach's alpha. The resulting coefficient was .95 which indicated a high degree of internal consistency for the survey instrument. Permission was granted to make minor changes to the instrument based on the specific population. In order to insure validity of the revised instrument, it was field tested by CTE professionals with experience in online educational formats. Suggestions were made by the CTE experts for improvement or clarification of questions in order to increase respondent understanding of each item. The approved survey instrument was formatted using Survey Monkey (see Appendix A).

The researcher obtained approval from the Murray State University Institutional Review Board (IRB), and began to contact the CTE programs offering alternative certification utilizing online/distance education pedagogy similar to that of programs in Kentucky (see Appendix E). Similar programs were determined to be in five universities in Kentucky, one university in Missouri, and one university in West Virginia.

Only one of the five alternative certification programs in Kentucky expressed interest in participating in the study. As a result, it was determined by the researcher and her committee

chairperson that an alternative method for contacting participants in Kentucky would be necessary. As a result, email addresses for Kentucky CTE teachers were accessed by utilizing the public information found on the Kentucky Office of Career and Technical Education web site. Using this technique, surveys were emailed directly to CTE teachers. Since this method would include the entire population of CTE teachers in Kentucky, two qualifying questions were added to the instrument to be certain that survey respondents were pursuing/had pursued alternative certification and that they had completed at least some of their coursework in the online/distance education format. The changes were approved by the Murray State University Institutional Review Board (IRB) (see Appendix E).

Data Collection

After receiving IRB approval for the amended survey instrument (see Appendix E), the researcher emailed the survey instrument (see Appendix A) directly to each recipient in Kentucky. Undeliverable emails were revisited by the researcher to determine the correct email addresses online, and individual schools were contacted by phone for email address corrections when necessary.

Program coordinators of the two CTE alternative certification programs in Missouri and West Virginia agreed to forward the survey instrument directly to students in their programs after gaining approval from the Internal Review Boards and/or appropriate authorities of their respective institutions. Approval was attained, and the survey instrument was forwarded to students in their alternative CTE certification programs via email (see documentation of permission to use subjects in Appendix F).

Procedures for dissemination of the survey instrument included an initial explanatory email that was sent to all recipients (see Appendix B). It has been recommended that notifying

participants about a study in advance with a personal invitation may increase the response rate (Boynton, 2004). This theory was supported in a study where recipients who received an initial personal contact responded at a higher rate than those who were not contacted in advance of the survey (Edwards, Roberts, Clarke, DiGuiseppi, Pratap, Wentz, & Kwan, 2002). Following the initial email, an email with a link to the Survey Monkey instrument was emailed to the population approximately 24 hours later (see Appendix C). After 10 days, a reminder email was sent to non-respondents (see Appendix D). A research consent letter was attached to the email communications (see Appendix G). Results were calculated after 15 days.

The total study population included 936 CTE teachers from various backgrounds. This included 81 students who were pursuing alternative certification in Missouri and 105 in West Virginia. Due to the fact that direct participation by alternative certification university programs was limited in Kentucky, the entire population of CTE teachers was surveyed by email contacts provided on a public web site. Two additional qualifying questions were incorporated into the instrument to assure that respondents had participated in online/distance education coursework, and that they had pursued or were presently pursuing alternative certification. The amended instrument was approved by the Murray State University IRB (see Appendix E).

Respondent Data

The total number of respondents included 166 CTE teachers. This resulted in an 18% response rate. Of the entire group of respondents, 77.1% (N=128) indicated that they had taken courses online in pursuit of teacher certification, and 22.9% (N=38) had not taken online courses. From the total population of respondents, 82.5% (N=137) indicated that they entered the classroom directly from industry and were required to complete additional coursework in order to complete certification requirements.

Based on the qualifying questions, 69 respondents did not meet the qualifications or complete the remaining questions beyond the two qualifying questions on the survey instrument. As a result, the total number of qualifying respondents included 10.4% (N=97) of the total population of CTE teachers. Of the qualifying respondents, 53.7% (N=51) were male, 46.3% (N=44) were female, and two respondents did not respond to the question about gender. The average age of respondents was 47.6 years old.

Respondents indicated having a wide variety of previous degrees and certifications prior to entering the teaching field. Based on responses of the highest degree earned, 14% (N=14) indicated having previously earned an associate's degree, 35% (N=34) indicated having earned a bachelor's degree, and 17% (N=16) indicated having earned a master's degree. Those that identified another type of industry certification included 8% (N=8) of respondents, and 26% (N=25) did not respond to the question. Respondents that indicated having a background in health occupations totaled 32.3% (N=31), 12.5% (N=12) had a background in automotive, 10.4% (N=10) had a background in computer technology, 9.4% (N=9) had a background in construction sciences, 7.3% (N=7) had a background in business, and 28.1% (N=27) selected "other."

When asked to identify the state where respondents had completed online or distance coursework toward certification, 68.8% of qualified respondents (N=66) indicated pursuing their education in Kentucky, 25.0% (N=24) pursued their education in West Virginia, 2.1% (N=2) pursued their education in Missouri, and 4.2% (N=4) indicated taking courses in another state. Additional demographic data of qualifying respondents is presented in Tables 2 and 3.

Results According to Research Questions

Question 1: What are the expectations of distance education occupationally based teachers regarding student-to-student interaction in distance education classes?

In general, the results were evenly divided. Many respondents did not have high expectations for student-to-student interaction in distance education classes. Several respondents indicated that they valued student-to-student interaction in their face-to-face courses, but this was not necessarily an expectation in online/distance education courses. Other respondents indicated that they were not in favor of required or forced student-to-student interaction when taking courses in the online/distance education format. Results were varied. As a result, the grand mean score for the 18 statements on the survey instrument regarding expectations in student-to-student interaction was 3.047 which falls in the range of *neither agree nor disagree* scale on the instrument.

The results seemed to support the findings of Moore et al. (2016) that indicated that "respondents did not value student-to-student interaction in distance education classes" (p. 5). In the Moore et al. (2016) study, it was determined that there was a grand mean score of 2.66 for the survey items, and only five questions received a rating over 3.0 which was the mid-point on the Likert scale. In the present study, eight of the same questions received a rating over 3.0. While the results of the present study were barely over the mid-point of the scale with an average grand mean of 3.047, this was a slight increase over the results of the Moore et al. (2016) study, but not significantly different from the midpoint score of 3.0 on the Likert scale.

Data analysis. Data from the Survey Monkey Likert-type survey instrument were imported to Microsoft Excel. The spreadsheet data was later imported into IBM SPSS Statistics Version 22 (SPSS) software in order to perform the necessary data analysis for the research.

***One sample t-tests*.** It was determined that a series of parametric t-tests would be appropriate to analyze the data from the Likert-type survey. Research indicated that nonparametric tests were not as powerful as parametric tests, and they typically required larger

sample sizes in order to have the same power as parametric tests to determine differences between groups, as well as the size of a potential difference (Sullivan & Artino, Jr., 2013). A study by de Winter and Dodou indicated that when comparing two groups of five-point data, it does not matter whether you use the parametric t-test or the nonparametric Mann-Whitney test, both consistently provide protection against false negatives and false positives (Frost, 2016). According to Norman (as cited in Sullivan & Artino, Jr., 2013), parametric tests, such as the t-test, are robust and provide unbiased answers that are sufficiently close to "the truth" when evaluating Likert scale responses (p. 542).

The one sample t-tests were performed in SPSS to address the first research question. In order to analyze the expectations of distance education occupationally based teachers regarding student-to-student interaction in distance education classes, one-sample t-tests were performed for each of the 18 expectations-related survey items/questions. According to Sullivan and Artino, Jr. (2013), experts have argued that "the median should be used as the measure of central tendency for Likert scale data" (p. 541).

A one sample t-test was conducted to determine if a statistically significant difference in expectations existed between a score of 3.0, the average normal score, from a population of occupationally based CTE teachers pursuing their alternative teaching certification in the online/distance education format. The mean and standard deviation for each survey item regarding student expectations of distance education were reported. Table 1 outlines which of the factors regarding expectations and the importance of student-to-student interaction were thought to be significantly important or unimportant by the CTE teachers.

Table 1

Expectations of Occupationally Based CTE Teachers Regarding Student-to-Student Interaction in Distance Education Classes (N=97)

Statement	SD	D	Neither A or D	A	SA	M (SD)
I think student-to-student interaction should be a high priority for a distance education class.	5	18	29	33	12	*3.30* (1.07)*
I have better things to do with my time than spending it interacting with other students in the class.	17	26	26	21	7	2.74 (1.19)*
I feel I learn more in a course when I have the opportunity to engage with my peers.	5	16	33	28	15	*3.33* (1.09)*
I am more concerned about the course content than participating in a classroom community.	6	13	19	41	16	*3.51* (1.12)*
It is important for me to connect with and find occupational similarities with the other students in the class.	8	25	30	27	6	2.98 (1.07)
I think the value of cooperative learning (students in small groups learning from each other) is overblown in distance education classes.	7	20	32	28	10	*3.14* (1.09)
The relationships I have established with other online or distance education students have continued after the class is over.	22	33	15	20	6	2.53 (1.23)*
I enjoy participating in online forums, discussion boards, Google hangouts, Skype and other such approaches that promote student-to-student interaction.	20	27	20	27	3	2.65 (1.18)*

*sig < .05

Table 1 continues

Table 1 continued

Statement	SD	D	Neither A or D	A	SA	M (SD)
I prefer to work alone on assignments.	3	5	28	42	19	*3.71* (.95)*
It is important for me to feel connected to others in my online or distance education courses.	16	29	34	13	4	2.58 (1.05)*
I only participate in discussion board exchanges if they are a graded component of the course.	4	17	23	39	14	*3.43* (1.07)*
I gain a lot from interacting with my classmates.	8	21	27	35	6	*3.10* (1.08)
I would prefer not having "group work" in distance education classes.	3	10	23	30	30	*3.77* (1.10)*
I care about knowing and interacting with other students in my online or web-based courses.	15	22	30	27	3	2.80 (1.10)
I like the chance to read and comment on my classmates' discussion board posts.	10	15	39	31	2	3.00 (.99)
I desire a substantial amount of student-to-student interaction in my online or distance education courses.	18	39	23	15	2	2.42 (1.03)*
It is important for me to feel as if I belong to my classroom community.	16	26	33	17	5	2.68 (1.10)*
Interaction with other students enhances my learning of the content.	11	15	26	36	9	3.18 (1.16)
Grand Mean						3.047

*sig < .05

The one sample t-tests revealed that 12 survey items were statistically significantly different (see Table 1). Nine survey items had mean scores higher than the normal score of 3.0. The three survey items regarding a strong expectation for student-to-student interaction that received the highest rating were "I would prefer not having group work in distance education classes," "I prefer to work alone on assignments," and "I am more concerned about the course content than participating in a classroom community."

The three lowest ratings were between the Likert scale points of *disagree* with a rating of 2.0 and *neither agree nor disagree* with a rating of 3.0. The lowest rating was "I desire a substantial amount of student-to-student interaction in my online or distance education courses." Other low ratings included "The relationships I have established with other online or distance education students have continued after the class is over" and "It is important for me to feel connected to others in my online or distance education courses."

Question 2: Is there a difference in the expectations of distance education occupationally based teachers regarding student-to-student interaction in distance education classes, according to the following dependent variables:

- *gender;*
- *personality type;*
- *work status;*
- *student status;*
- *generational classification; and*
- *number of distance education courses taken.*

Independent samples t-tests. One sample t-tests were utilized to analyze the data for Research Question 1. However, because the Likert-type questions designed to provide an

answer to Research Question 2 involved more than one factor, independent samples t-tests were used for survey items where it would be necessary to compare two factors. According to Laerd Statistics (2017), in order to analyze the data from questions where means must be compared between different groups that are not related on the same continuous, dependent variable, the independent samples t-test would be appropriate. After completing the independent samples t-test for each applicable survey question, the mean scores were compared in order to determine if the difference in each factor's mean score was significant. The independent samples t-test was used to analyze each of the data items relating to gender and student status.

***Expectations compared by gender*.** Independent samples t-tests were conducted to compare each expectation item regarding student-to-student interaction from the survey instrument based on gender (male vs. female). Each of the mean scores was compared to the normal score of 3.0. In cases where the mean score was greater than 3.0, this indicates an increased expectation for the particular survey item. The results of the independent samples t-tests are detailed in Table 2.

Table 2

Expectations by Gender as Indicated by Survey Items

Survey Item	Males (M, SD)	Females (M, SD)
I think student-to-student interaction should be a high priority for a distance education class.	(M=3.29, SD=.986)	(M=3.34, SD=1.14)
I have better things to do with my time than spending it interacting with other students in the class.	(M=2.73, SD=1.20)	(M=2.75, SD=1.20)
I feel I learn more in a course when I have the opportunity to engage with my peers.	(M=3.39, SD=1.07)	(M=3.27, SD=1.11)
I am more concerned about the course content than participating in a classroom community.	(M=3.55, SD=.99)	(M=3.49, SD=1.26)
It is important for me to connect with and find occupational similarities with the other students in the class.	(M=3.08, SD=.944)	(M=2.89, SD=1.17)
I think the value of cooperative learning (students in small groups learning from each other) is overblown in distance education classes.	(M=3.10, SD=1.01)	(M=3.18, SD=1.17)
The relationships I have established with other online or distance education students have continued after the class is over.	(M=2.51, SD=1.10)	(M=2.55, SD=1.39)
I enjoy participating in online forums, discussion boards, Google hangouts, Skype and other such approaches that promote student-to-student interaction.	(M=2.65, SD=1.11)	(M=2.66, SD=1.26)

*sig < .05

Table 2 continues

Table 2 Continued

Expectations by Gender as Indicated by Survey Items

Survey Item	Males (M, SD)	Females (M, SD)
I prefer to work alone on assignments.	(M=3.61, SD=.92)	(M=3.82, SD=.97)
It is important for me to feel connected to others in my online or distance education courses.	(M=2.73, SD=.874)	(M= 2.44, SD=1.22)
I only participate in discussion board exchanges if they are a graded component of the course.	(M=3.39, SD=1.04)	(M=3.50, SD=1.11)
I gain a lot from interacting with my classmates.	(M=3.22, SD=.99)	(M=3.00, SD= 1.14)
I would prefer not having "group work" in distance education classes.	(M=3.80, SD=1.08)	(M=3.84, SD=1.05)
I care about knowing and interacting with other students in my online or web-based courses.	(M=2.80, SD=1.0)	(M=2.82, SD=1.21)
I like the chance to read and comment on my classmates' discussion board posts.	(M=3.08, SD=.89)	(M=2.93, SD=1.07)
I desire a substantial amount of student-to-student interaction in my online or distance education courses.	(M=2.43, SD=.81)	(M=2.41, SD=1.23)
It is important for me to feel as if I belong to my classroom community.	(M=2.69, SD=1.01)	(M=2.68, SD=1.20)
Interaction with other students enhances my learning of the content.	(M=3.33, SD=.99)	(M=3.02, SD=1.29)

*sig < .05

None of the survey items as displayed in Table 2, when compared by gender, were statistically significant. As a result, there was no significant difference in the expectations of males and females on this topic.

***Expectations compared by student status*.** Independent samples t-tests were conducted to analyze the expectations of occupationally based CTE teachers regarding student-to-student interaction from the survey instrument based on student status (full-time vs. part-time). The results of the independent samples t-tests are detailed in Table 3.

Table 3

Expectations by Student Status as Indicated by Survey Items

Survey Item	Full-time (M, SD)	Part-time (M, SD)
I think student-to-student interaction should be a high priority for a distance education class.	(M=3.80, SD=1.10)	(M=3.21, SD=1.09)
I have better things to do with my time than spending it interacting with other students in the class.	(M=2.00, SD=1.73)	(M=2.80, SD=1.20)
I feel I learn more in a course when I have the opportunity to engage with my peers.	(M=3.60, SD=1.14)	(M=3.32, SD=1.09)
I am more concerned about the course content than participating in a classroom community.	(M=2.75, SD=1.50)	(M=3.59, SD=1.11)
It is important for me to connect with and find occupational similarities with the other students in the class.	(M=3.40, SD=.89)	(M=3.00, SD=1.09)

*sig < .05

Table 3 continues

Table 3 Continued

Expectations by Student Status as Indicated by Survey Items

Survey Item	Full-time (M, SD)	Part-time (M, SD)
I think the value of cooperative learning (students in small groups learning from each other) is overblown in distance education classes.	(M=3.20, SD=1.30)	(M=3.11, SD 1.13)
The relationships I have established with other online or distance education students have continued after the class is over.	(M=4.00, SD=1.23)	(M=2.57, SD=1.21)
I enjoy participating in online forums, discussion boards, Google hangouts, Skype and other such approaches that promote student-to-student interaction.	(M=3.00, SD=1.87)	(M=2.72, SD=1.12)
I prefer to work alone on assignments.	(M=3.20, SD=1.30)	(M=3.73, SD=.99)
It is important for me to feel connected to others in my online or distance education courses.	(M=3.00, SD=1.58)	(M= 2.63, SD=1.07)
I only participate in discussion board exchanges if they are a graded component of the course.	(M=3.20, SD=1.10)	(M=3.58, SD=1.00)
I gain a lot from interacting with my classmates.	(M=3.40, SD=1.52)	(M=3.10, SD= 1.03)
I would prefer not having "group work" in distance education classes.	(M=3.60, SD=1.14)	(M=3.79, SD=1.08)
I care about knowing and interacting with other students in my online or web-based courses.	(M=3.60, SD=1.52)	(M=2.77, SD=1.10)

*sig < .05

Table 3 continues

Table 3 Continued

Expectations by Student Status as Indicated by Survey Items

Survey Item	Full-time (M, SD)	Part-time (M, SD)
I like the chance to read and comment on my classmates' discussion board posts.	(M=3.00, SD=1.41)	(M=3.01, SD=.98)
I desire a substantial amount of student-to-student interaction in my online or distance education courses.	(M=3.20, SD=1.64)	(M=2.39, SD=.98)
It is important for me to feel as if I belong to my classroom community.	(M=3.20, SD=1.48)	(M=2.66, SD=1.11)
Interaction with other students enhances my learning of the content.	(M=3.80, SD=1.64)	(M=3.18, SD=1.11)

*sig < .05

As indicated in Table 3, there was not a significant difference in scores for any of the survey instrument items about student-to-student interaction based on full-time or part-time student status. Each of the mean scores was compared to the normal score of 3.0. In cases where the mean was greater than 3.0, this indicates an increased expectation for the particular survey item. The results of the independent samples t-tests are detailed in Table 2.

One-way ANOVA. On several survey questions, it would be necessary to compare the means of multiple factors per item. In cases where there were more than two factors to compare per item, it was necessary to use the alternative inferential procedure, one-way ANOVA. This method was chosen since the one-way ANOVA provides the same results as the t-test (Seltman, 2012). According to Patel, Naik, and Patel (2014), ANOVA analytical methods have proven to be reliable, and were found to be the "most frequently used statistical method" in a study of

existing medical research (p. 255). By analyzing the data using the one-way ANOVA, the researcher was seeking to determine if there was a difference in at least one of the means. The null assumption was that all of the means within the survey question were the same, or that the patterns of mean parameters corresponded to "no interesting effects" (Seltman, 2012, p. 152). The alternative assumption was that there was at least one mean that was different within each survey question. If the test was found to be significant, and at least one mean was different, a Tukey post hoc analysis was conducted. Survey data relating to personality type, work status (years of teaching experience and years of non-teaching experience), generational classification, and number of distance education classes taken were analyzed using the one-way ANOVA and Tukey post hoc analysis. This made it possible to compare the effects of these factors on student expectations regarding student-to-student interaction in online/distance education.

Expectations compared by personality type. Respondents chose the personality type that most matched their own personality. Options on the survey instrument included introvert, extrovert, and ambivert. An analysis of variance was conducted for each survey item to determine if there was a difference in at least one of the means. The null assumption was that all of the means were the same. If the ANOVA indicated that the test was significant, and at least one mean was different, a Tukey post-hoc analysis was used to compare each factor.

The survey question, *I think student-to-student interaction should be a high priority for a distance education class,* was analyzed. An analysis of variance showed that the effect of personality type on expectations of student-to-student interaction in distance courses was not significant, $F(2, 91) = .568$, $p = .569$.

The survey question *I have better things to do with my time than spending it interacting with other students in the class* was analyzed. An analysis of variance showed that the effect of

personality type on expectations of student-to-student interaction in distance courses was not significant, F (2, 91) = .541, p = .584.

The survey question, *I feel I learn more in a course when I have the opportunity to engage with my peers,* was analyzed. An analysis of variance showed that the effect of personality type on expectations of student-to-student interaction in distance courses was not significant, F (2, 91) =.048, p = .953.

The survey question, *I am more concerned about the course content than participating in a classroom community,* was analyzed. An analysis of variance showed that the effect of personality type on expectations of student-to-student interaction in distance courses was not significant, F (2, 89) =.444, p = .643.

The survey question, *It is important for me to connect with and find occupational similarities with the other students in the class,* was analyzed. An analysis of variance showed that the effect of personality type on expectations of student-to-student interaction in distance courses was not significant, F (2, 91) =.460, p = .633.

The survey question, *I think the value of cooperative learning (students in small groups learning from each other) is overblown in distance education classes,* was analyzed. An analysis of variance showed that the effect of personality type on expectations of student-to-student interaction in distance courses was not significant, F (2, 91) = 2.090, p = .130.

The survey question, *the relationships I have established with other online or distance education students have continued after the class is over,* was analyzed. An analysis of variance showed that the effect of personality type on expectations of student-to-student interaction in distance courses was not significant, F (2, 90) =.955, p = .389.

The survey question, *I enjoy participating in online forums, discussion boards, Google hangouts, Skype and other such approaches that promote student-to-student interaction,* was analyzed. An analysis of variance showed that the effect of personality type on expectations of student-to-student interaction in distance courses was not significant, F (2, 91) =.388, p = .680.

The survey question, *I prefer to work alone on assignments,* was analyzed. An analysis of variance showed that the effect of personality type on expectations of student-to-student interaction in distance courses was not significant, F (2, 91) =.117, p = .890.

The survey question, *it is important for me to feel connected to others in my online or distance education courses,* was analyzed. An analysis of variance showed that the effect of personality type on expectations of student-to-student interaction in distance courses was not significant, F (2, 90) =.389, p = .679.

The survey question, *I only participate in discussion board exchanges if they are a graded component of the course,* was analyzed. An analysis of variance showed that the effect of personality type on expectations of student-to-student interaction in distance courses was not significant, F (2, 91) =.656, p = .521.

The survey question, *I gain a lot from interacting with my classmates,* was analyzed. An analysis of variance showed that the effect of personality type on expectations of student-to-student interaction in distance courses was not significant, F (2, 91) =.363, p = .697.

The survey question, *I would prefer not having group work in distance education classes,* was analyzed. An analysis of variance showed that the effect of personality type on expectations of student-to-student interaction in distance courses was not significant, F (2, 90) =2.871, p = .062.

The survey question, *I care about knowing and interacting with other students in my online or web-based courses,* was analyzed. An analysis of variance showed that the effect of personality type on expectations of student-to-student interaction in distance courses was not significant, F (2, 91) =.039, p = .962.

The survey question, *I like the chance to read and comment on my classmates' discussion board posts,* was analyzed. An analysis of variance showed that the effect of personality type on expectations of student-to-student interaction in distance courses was not significant, F (2, 91) =.408, p = .666.

The survey question, *I desire a substantial amount of student-to-student interaction in my online or distance education courses,* was analyzed. An analysis of variance showed that the effect of personality type on expectations of student-to-student interaction in distance courses was not significant, F (2, 91) =.159, p = .853.

The survey question, *it is important for me to feel as if I belong to my classroom community,* was analyzed. An analysis of variance showed that the effect of personality type on expectations of student-to-student interaction in distance courses was not significant, F (2, 91) =.160, p = .853.

The survey question, *interaction with other students enhances my learning of the content,* was analyzed. An analysis of variance showed that the effect of personality type on expectations of student-to-student interaction in distance courses was not significant, F (2, 91) =.086, p = .917.

Expectations compared by work status: Years teaching experience. Respondents chose from a range of years for which they had been teaching. Options on the survey instrument included:

- 0 – 6 months;
- 6 – 12 months;
- 1 year;
- 2 years;
- 3 years;
- 4-5 years;
- 6-10 years;
- 11-20 years; and
- 21 years or more.

An analysis of variance was conducted for each survey item to determine if there was a difference in at least one of the means. The null assumption was that all of the means were the same. If the ANOVA indicated that the test was significant, and at least one mean was different, a Tukey post-hoc analysis was used to compare each factor.

The survey question, *I think student-to-student interaction should be a high priority for a distance education class,* was analyzed. An analysis of variance showed that the effect of years teaching experience on expectations of student-to-student interaction in distance courses was not significant, $F(7, 87) = 1.006$, $p = .433$.

The survey question *I have better things to do with my time than spending it interacting with other students in the class* was analyzed. An analysis of variance showed that the effect of years teaching experience on expectations of student-to-student interaction in distance courses was not significant, $F(7, 87) = .592$, $p = .760$.

The survey question, *I feel I learn more in a course when I have the opportunity to engage with my peers,* was analyzed. An analysis of variance showed that the effect of years

teaching experience on expectations of student-to-student interaction in distance courses was not significant, F (7, 87) =1.088, p = .378.

The survey question, *I am more concerned about the course content than participating in a classroom community,* was analyzed. An analysis of variance showed that the effect of years teaching experience on expectations of student-to-student interaction in distance courses was not significant, F (7, 85) =.483, p = .845.

The survey question, *it is important for me to connect with and find occupational similarities with the other students in the class,* was analyzed. An analysis of variance showed that the effect of years teaching experience on expectations of student-to-student interaction in distance courses was not significant, F (7, 86) =.826, p = .569.

The survey question, *I think the value of cooperative learning (students in small groups learning from each other) is overblown in distance education classes,* was analyzed. An analysis of variance showed that the effect of years teaching experience on expectations of student-to-student interaction in distance courses was not significant, F (7, 87) = .971, p = .458.

The survey question, *the relationships I have established with other online or distance education students have continued after the class is over,* was analyzed. An analysis of variance showed that the effect of years teaching experience on expectations of student-to-student interaction in distance courses was not significant, F (7, 86) =1.600, p = .146.

The survey question, *I enjoy participating in online forums, discussion boards, Google hangouts, Skype and other such approaches that promote student-to-student interaction,* was analyzed. An analysis of variance showed that the effect of years teaching experience on expectations of student-to-student interaction in distance courses was not significant, F (7, 87) =.667, p = .699.

The survey question, *I prefer to work alone on assignments,* was analyzed. An analysis of variance showed that the effect of years teaching experience on expectations of student-to-student interaction in distance courses was not significant, F (7, 87) =.377, p = .914.

The survey question, *it is important for me to feel connected to others in my online or distance education courses,* was analyzed. An analysis of variance showed that the effect of years teaching experience on expectations of student-to-student interaction in distance courses was not significant, F (7, 86) =.608, p = .748.

The survey question, *I only participate in discussion board exchanges if they are a graded component of the course,* was analyzed. An analysis of variance showed that the effect of years teaching experience on expectations of student-to-student interaction in distance courses was not significant, F (7, 87) =.423, p = .885.

The survey question, *I gain a lot from interacting with my classmates,* was analyzed. An analysis of variance showed that the effect of years teaching experience on expectations of student-to-student interaction in distance courses was not significant, F (7, 87) =.646, p = .717.

The survey question, *I would prefer not having group work in distance education classes,* was analyzed. An analysis of variance showed that the effect of years teaching experience on expectations of student-to-student interaction in distance courses was not significant, F (7, 86) =.361, p = .922.

The survey question, *I care about knowing and interacting with other students in my online or web-based courses,* was analyzed. An analysis of variance showed that the effect of years teaching experience on expectations of student-to-student interaction in distance courses was not significant, F (7, 87) =.710, p = .663.

The survey question, *I like the chance to read and comment on my classmates' discussion board posts,* was analyzed. An analysis of variance showed that the effect of years teaching experience on expectations of student-to-student interaction in distance courses was not significant, F (7, 87) =.702, p = .670.

The survey question, *I desire a substantial amount of student-to-student interaction in my online or distance education courses,* was analyzed. An analysis of variance showed that the effect of years teaching experience on expectations of student-to-student interaction in distance courses was not significant, F (7, 87) =.501, p = .832.

The survey question, *it is important for me to feel as if I belong to my classroom community,* was analyzed. An analysis of variance showed that the effect of years teaching experience on expectations of student-to-student interaction in distance courses was not significant, F (7, 87) =.640, p = .721.

The survey question, *interaction with other students enhances my learning of the content,* was analyzed. An analysis of variance showed that the effect of years teaching experience on expectations of student-to-student interaction in distance courses was not significant, F (7, 87) =1.053, p = .401.

Expectations compared by work status: Years non-teaching experience. Respondents chose from a range of years of work experience outside of teaching. Options on the survey instrument included:

- 1 – 5 years;
- 6 – 10 years;
- 11 – 15 years;
- 16 – 20 years;

- 21 – 30 years; and
- 30 years or more.

An analysis of variance was conducted for each survey item to determine if there was a difference in at least one of the means. The null assumption was that all of the means were the same. If the ANOVA indicated that the test was significant, and at least one mean was different, a Tukey post-hoc analysis was used to compare each factor.

The survey question, *I think student-to-student interaction should be a high priority for a distance education class,* was analyzed. An analysis of variance showed that the effect of years non-teaching experience on expectations of student-to-student interaction in distance courses was not significant, $F(5, 90) = .705$, $p = .621$.

The survey question, *I have better things to do with my time than spending it interacting with other students in the class,* was analyzed. An analysis of variance showed that the effect of years non-teaching experience on expectations of student-to-student interaction in distance courses was not significant, $F(5, 90) = 1.097$, $p = .073$.

The survey question, *I feel I learn more in a course when I have the opportunity to engage with my peers,* was analyzed. An analysis of variance showed that the effect of years non-teaching experience on expectations of student-to-student interaction in distance courses was not significant, $F(5, 90) = 1.608$, $p = .166$.

The survey question, *I am more concerned about the course content than participating in a classroom community,* was analyzed. An analysis of variance showed that the effect of years non-teaching experience on expectations of student-to-student interaction in distance courses was significant, $F(5, 88) = 2.612$, $p = .030$. However, a subsequent post-hoc analysis revealed that

there was not a significant piece-wise difference among the categories for years of non-teaching experience.

The survey question, *it is important for me to connect with and find occupational similarities with the other students in the class,* was analyzed. An analysis of variance showed that the effect of years non-teaching experience on expectations of student-to-student interaction in distance courses was significant, $F (5, 89) = 2.804$, $p = .021$. However, a subsequent post-hoc analysis revealed that there was not a significant piece-wise difference among the categories for years of non-teaching experience.

The survey question, *I think the value of cooperative learning (students in small groups learning from each other) is overblown in distance education classes,* was analyzed. An analysis of variance showed that the effect of years non-teaching experience on expectations of student-to-student interaction in distance courses was significant, $F (5, 90) = 2.506$, $p = .036$. However, a subsequent post-hoc analysis revealed that there was not a significant piece-wise difference among the categories for years of non-teaching experience.

The survey question, *the relationships I have established with other online or distance education students have continued after the class is over,* was analyzed. An analysis of variance showed that the effect of years non-teaching experience on expectations of student-to-student interaction in distance courses was significant, $F (5, 89) = 2.425$, $p = .041$. However, a subsequent post-hoc analysis revealed that there was not a significant piece-wise difference among the categories for years of non-teaching experience.

The survey question, *I enjoy participating in online forums, discussion boards, Google hangouts, Skype and other such approaches that promote student-to-student interaction,* was

analyzed. An analysis of variance showed that the effect of years of non-teaching experience on expectations of student-to-student interaction in distance courses was significant, F (5, 90) =.3710, p = .004. A subsequent post-hoc analysis revealed that there was a significant difference between Group 4 (16-20 years of non-teaching work experience) and Group 6 (30 years or more of non-teaching work experience) (p=.006). There was also a significant difference between Group 3 (11-15 years of non-teaching work experience) and Group 6 (30 years or more of non-teaching work experience) (p=.005).

The survey question, *I prefer to work alone on assignments*, was analyzed. An analysis of variance showed that the effect of years non-teaching experience on expectations of student-to-student interaction in distance courses was not significant, F (5, 90) = 1.206, p = .313.

The survey question, *it is important for me to feel connected to others in my online or distance education courses,* was analyzed. An analysis of variance showed that the effect of years non-teaching experience on expectations of student-to-student interaction in distance courses was not significant, F (5, 89) = 1.899, p = .102.

The survey question, *I only participate in discussion board exchanges if they are a graded component of the course,* was analyzed. An analysis of variance showed that the effect of years non-teaching experience on expectations of student-to-student interaction in distance courses was not significant, F (5, 90) = 1.909, p = .101.

The survey question, *I gain a lot from interacting with my classmates,* was analyzed. An analysis of variance showed that the effect of years non-teaching experience on expectations of student-to-student interaction in distance courses was significant, F (5, 90) = 2.428, p = .041. However, a subsequent post-hoc analysis revealed that there was not a significant piece-wise difference among the categories for years of non-teaching experience.

The survey question, *I would prefer not having group work in distance education classes,* was analyzed. An analysis of variance showed that the effect of years of non-teaching experience on expectations of student-to-student interaction in distance courses was significant, $F(5, 89) = 2.549$, $p = .033$. A subsequent post-hoc analysis revealed that there was a significant difference between Group 3 (11-15 years of non-teaching work experience) and Group 6 (30 years or more of non-teaching work experience) ($p=.016$). This was the only piece-wise comparison found to be significant.

The survey question, *I care about knowing and interacting with other students in my online or web-based courses,* was analyzed. An analysis of variance showed that the effect of years non-teaching experience on expectations of student-to-student interaction in distance courses was significant, $F(5, 90) = 2.765$, $p = .023$. A subsequent post-hoc analysis revealed that there was a significant difference between Group 4 (16-20 years of non-teaching experience) and Group 6 (30 or more years of non-teaching work experience) ($p=.020$). This was the only piece-wise comparison found to be significant.

The survey question, *I like the chance to read and comment on my classmates' discussion board posts,* was analyzed. An analysis of variance showed that the effect of years non-teaching experience on expectations of student-to-student interaction in distance courses was not significant, $F(5, 90) = 1.872$, $p = .107$.

The survey question, *I desire a substantial amount of student-to-student interaction in my online or distance education courses,* was analyzed. An analysis of variance showed that the effect of years non-teaching experience on expectations of student-to-student interaction in distance courses was significant, $F(5, 90) = 2.594$, $p = .031$. However, a subsequent post-hoc

analysis revealed that there was not a significant piece-wise difference among the categories for years of non-teaching experience.

The survey question, *it is important for me to feel as if I belong to my classroom community*, was analyzed. An analysis of variance showed that the effect of years non-teaching experience on expectations of student-to-student interaction in distance courses was significant, $F(5, 90) = 4.305$, $p = .001$. A subsequent post-hoc analysis revealed that there was a significant piece-wise difference between Group 3 (11-15 years of non-teaching work experience) and Group 6 (30 years or more of non-teaching work experience) ($p=.012$). There was also a significant piece-wise difference between Group 4 (16-20 years of non-teaching work experience) and Group 6 (30 years or more of non-teaching work experience) ($p=.007$).

The survey question, *interaction with other students enhances my learning of the content*, was analyzed. An analysis of variance showed that the effect of years of non-teaching experience on expectations of student-to-student interaction in distance courses was not significant, $F(5, 90) = 2.250$, $p = .056$.

Expectations compared by generational status. Respondents were asked to provide their age. When the results were analyzed, responses were organized by generational status. Millennials were 18-37 years old (Merriam Webster Dictionary, 2017c), members of Generation X were 38-57 years old (Merriam Webster Dictionary, 2017b), and Baby Boomers were 58-72 years old (Merriam Webster Dictionary, 2017a). An analysis of variance was conducted for each survey item to determine if there was a difference in at least one of the means. The null assumption was that all of the means were the same. If the ANOVA indicated that the test was significant, and at least one mean was different, a Tukey post-hoc analysis was used to compare each factor.

The survey question, *I think student-to-student interaction should be a high priority for a distance education class,* was analyzed. An analysis of variance showed that the effect of generational status on expectations of student-to-student interaction in distance courses was not significant, F (2, 92) =.195, p = .823.

The survey question, *I have better things to do with my time than spending it interacting with other students in the class,* was analyzed. An analysis of variance showed that the effect of generational status on expectations of student-to-student interaction in distance courses was not significant, F (2, 92) = .849, p = .431.

The survey question, *I feel I learn more in a course when I have the opportunity to engage with my peers,* was analyzed. An analysis of variance showed that the effect of generational status on expectations of student-to-student interaction in distance courses was not significant, F (2, 92) =2.015, p = .139.

The survey question, *I am more concerned about the course content than participating in a classroom community,* was analyzed. An analysis of variance showed that the effect of generational status on expectations of student-to-student interaction in distance courses was not significant, F (2, 90) =2.190, p = .118.

The survey question, *it is important for me to connect with and find occupational similarities with the other students in the class,* was analyzed. An analysis of variance showed that the effect of generational status on expectations of student-to-student interaction in distance courses was not significant, F (2, 91) =.008, p = .992.

The survey question, *I think the value of cooperative learning (students in small groups learning from each other) is overblown in distance education classes,* was analyzed. An analysis

of variance showed that the effect of generational status on expectations of student-to-student interaction in distance courses was not significant, F (2, 92) = .682, p = .508.

The survey question, *the relationships I have established with other online or distance education students have continued after the class is over,* was analyzed. An analysis of variance showed that the effect of generational status on expectations of student-to-student interaction in distance courses was not significant, F (2, 91) =.106, p = .899.

The survey question, *I enjoy participating in online forums, discussion boards, Google hangouts, Skype and other such approaches that promote student-to-student interaction,* was analyzed. An analysis of variance showed that the effect of generational status on expectations of student-to-student interaction in distance courses was not significant, F (2, 92) =.115, p = .892.

The survey question, *I prefer to work alone on assignments,* was analyzed. An analysis of variance showed that the effect of generational status on expectations of student-to-student interaction in distance courses was not significant, F (2, 92) =.419, p = .659.

The survey question, *it is important for me to feel connected to others in my online or distance education courses,* was analyzed. An analysis of variance showed that the effect of generational status on expectations of student-to-student interaction in distance courses was not significant, F (2, 91) =.710, p = .495.

The survey question, *I only participate in discussion board exchanges if they are a graded component of the course,* was analyzed. An analysis of variance showed that the effect of generational status on expectations of student-to-student interaction in distance courses was not significant, F (2, 92) = 2.022, p = .138.

The survey question, *I gain a lot from interacting with my classmates,* was analyzed. An analysis of variance showed that the effect of generational status on expectations of student-to-student interaction in distance courses was not significant, F (2, 92) =1.207, p = .304.

The survey question, *I would prefer not having group work in distance education classes,* was analyzed. An analysis of variance showed that the effect of generational status on expectations of student-to-student interaction in distance courses was not significant, F (2, 91) =.340, p = .712.

The survey question, *I care about knowing and interacting with other students in my online or web-based courses,* was analyzed. An analysis of variance showed that the effect of generational status on expectations of student-to-student interaction in distance courses was not significant, F (2, 92) = 2.467, p = .090.

The survey question, *I like the chance to read and comment on my classmates' discussion board posts,* was analyzed. An analysis of variance showed that the effect of generational status on expectations of student-to-student interaction in distance courses was not significant, F (2, 92) =1.548, p = .218.

The survey question, *I desire a substantial amount of student-to-student interaction in my online or distance education courses,* was analyzed. An analysis of variance showed that the effect of generational status on expectations of student-to-student interaction in distance courses was not significant, F (2, 92) = 1.573, p = .213.

The survey question, *it is important for me to feel as if I belong to my classroom community,* was analyzed. An analysis of variance showed that the effect of generational status on expectations of student-to-student interaction in distance courses was statistically significant,

F (2, 92) = 3.540, p = .033. A subsequent post-hoc analysis revealed that the comparison between Group 1 (Millennials) and Group 2 (Generation X) was the only piece-wise comparison found to be significant (p=.025).

The survey question, *interaction with other students enhances my learning of the content*, was analyzed. An analysis of variance showed that the effect of generational status on expectations of student-to-student interaction in distance courses was not significant, F (2, 92) =.438, p = .647.

***Expectations compared by number of distance education classes taken*.** Respondents indicated the number of online/distance education courses previously taken. Survey categories included the following three categories: one or two, three or four, and five or more. An analysis of variance was conducted for each survey item to determine if there was a difference in at least one of the means. The null assumption was that all of the means were the same. If the ANOVA indicated that the test was significant, and at least one mean was different, a Tukey post-hoc analysis was used to compare each factor.

The survey question, *I think student-to-student interaction should be a high priority for a distance education class*, was analyzed. An analysis of variance showed that the effect of number of online courses taken on expectations of student-to-student interaction in distance courses was significant, F (2, 92) =3.241, p = .044**.** A subsequent post-hoc analysis revealed that the comparison between Group 2 (three to four online courses) and Group 3 (five or more online courses) was the only piece-wise comparison found to be significant (p=.039).

The survey question, *I have better things to do with my time than spending it interacting with other students in the class*, was analyzed. An analysis of variance showed that the effect of

number of online courses taken on expectations of student-to-student interaction in distance courses was not significant, F (2, 92) = .580, p = .562.

The survey question, *I feel I learn more in a course when I have the opportunity to engage with my peers,* was analyzed. An analysis of variance showed that the effect of number of online courses taken on expectations of student-to-student interaction in distance courses was not significant, F (2, 92) =2.891, p = .061.

The survey question, *I am more concerned about the course content than participating in a classroom community,* was analyzed. An analysis of variance showed that the effect of number of online courses taken on expectations of student-to-student interaction in distance courses was not significant, F (2, 90) = 2.354, p = .101.

The survey question, *it is important for me to connect with and find occupational similarities with the other students in the class,* was analyzed. An analysis of variance showed that the effect of number of online courses taken on expectations of student-to-student interaction in distance courses was not significant, F (2, 91) =2.343, p = .102.

The survey question, *I think the value of cooperative learning (students in small groups learning from each other) is overblown in distance education classes,* was analyzed. An analysis of variance showed that the effect of number of online courses taken on expectations of student-to-student interaction in distance courses was not significant, F (2, 92) = 2.217, p = .115.

The survey question, *the relationships I have established with other online or distance education students have continued after the class is over,* was analyzed. An analysis of variance showed that the effect of number of online courses taken on expectations of student-to-student interaction in distance courses was significant, F (2, 91) =3.723, p = .028. However, a post-hoc

analysis revealed that there was not a significant piece-wise difference among the categories for number of online/distance education courses taken.

The survey question, *I enjoy participating in online forums, discussion boards, Google hangouts, Skype and other such approaches that promote student-to-student interaction,* was analyzed. An analysis of variance showed that the effect of number of online courses taken on expectations of student-to-student interaction in distance courses was not significant, $F(2, 92) = .613$, $p = .544$.

The survey question, *I prefer to work alone on assignments,* was analyzed. An analysis of variance showed that the effect of number of online courses taken on expectations of student-to-student interaction in distance courses was significant, $F(2, 92) = 4.630$, $p = .012$. A subsequent post-hoc analysis revealed that the comparison between Group 1 (those who had taken one or two online courses) and Group 3 (those who had taken five or more online courses) was the only piece-wise comparison found to be significant ($p=.036$).

The survey question, *it is important for me to feel connected to others in my online or distance education courses,* was analyzed. An analysis of variance showed that the effect of number of online courses taken on expectations of student-to-student interaction in distance courses was not significant, $F(2, 91) = 1.171$, $p = .315$.

The survey question, *I only participate in discussion board exchanges if they are a graded component of the course,* was analyzed. An analysis of variance showed that the effect of number of online courses taken on expectations of student-to-student interaction in distance courses was not significant, $F(2, 92) = .315$, $p = .730$.

The survey question, *I gain a lot from interacting with my classmates,* was analyzed. An analysis of variance showed that the effect of number of online courses taken on expectations of student-to-student interaction in distance courses was not significant, F (2, 92) =2.805, p = .066.

The survey question, *I would prefer not having group work in distance education classes,* was analyzed. An analysis of variance showed that the effect of number of online courses taken on expectations of student-to-student interaction in distance courses was not significant, F (2, 91) =.898, p = .411.

The survey question, *I care about knowing and interacting with other students in my online or web-based courses,* was analyzed. An analysis of variance showed that the effect of number of online courses taken on expectations of student-to-student interaction in distance courses was not significant, F (2, 92) = 1.431, p = .244.

The survey question, *I like the chance to read and comment on my classmates' discussion board posts,* was analyzed. An analysis of variance showed that the effect of number of online courses taken on expectations of student-to-student interaction in distance courses was not significant, F (2, 91) =.896, p = .412.

The survey question, *I desire a substantial amount of student-to-student interaction in my online or distance education courses,* was analyzed. An analysis of variance showed that the effect of number of online courses taken on expectations of student-to-student interaction in distance courses was not significant, F (2, 92) =1.916, p = .153.

The survey question, *it is important for me to feel as if I belong to my classroom community,* was analyzed. An analysis of variance showed that the effect of number of online courses taken on expectations of student-to-student interaction in distance courses was significant, F (2, 92) =3.121, p = .049. However, a post-hoc analysis revealed that there was not

a significant piece-wise difference among the categories for number of online/distance education courses taken.

The survey question, *interaction with other students enhances my learning of the content,* was analyzed. An analysis of variance showed that the effect of number of online courses taken on expectations of student-to-student interaction in distance courses was significant, $F(2, 92) = 4.440$, $p = .014$. A subsequent post-hoc analysis revealed that the comparison between Group 2 (respondents who had taken three to four online courses) and Group 3 (respondents who had taken five or more online courses) was the only piece-wise comparison found to be significant ($p=.016$).

Participant Comments

Respondents were asked an open-ended question asking if they had any comments they would like to share about online, web-based, or distance education classes. Comments varied, but the majority of remarks indicated that respondents did not appreciate forced student-to-student interaction in online courses. Examples of such comments included the following:

- *"The requirement to co-work with classmates puts an added strain on my already over-extended obligations. This is the reason I prefer to work alone, submit my completed assignments without the need to interact with others or consider time frames convenient to others."*
- *"Web-based classes are a means to an end. I like to take classes that fit my schedule. I think that the people that come to education from industry already have pretty full lives and the necessity of having to do a lot of interaction with others in online classes, for the most part, will be the last I have with them."*

- *"I had a class that tried to do a group project, and I never want to do another one!"*
- *"The discussion boards seem to be a big thing right now, but every online student I have talked to hate doing the discussions, and only do it because we are made to. We chose online classes because we like to work independently. Others choose to go to classrooms if they want to interact with other students."*
- *Online courses work really well while juggling the full-time responsibilities of teaching. However, participation in the classes which required mandatory discussion boards and group assignments was not beneficial to me. Sometimes I would attempt to do group assignments only to find out that other members of the group would wait really close to the midnight deadline to post their assignment which holds up other members of the group, as well as wasting my precious time! This is especially annoying for non-traditional students who are managing a household, family, church, and a full-time job."*

A few respondents had more positive comments regarding distance/online instruction. However, some still were not in favor of required student-to-student interaction in online courses. Examples of such comments are as follows:

- *"Project-based learning and simulated workplace are the greatest two items for students in the classroom."*
- *"Online courses fit well within the framework of an otherwise busy life. One can use a level of self-discipline to fit the work in otherwise. We that are rather far removed from an active classroom environment, while we were undergraduates, would have difficulty fitting in a classroom timetable and commute."*

- *"I don't like group work or discussion boards. I do like when the professors have video components and/or lecture via video to summarize the weekly information. I also like discussion posts to ask questions of the professor or other students, then having them answered where others can see in case they have the same question(s). I also think posting project work for others to see is a great idea (i.e. PowerPoints), but not necessarily commenting on them. It seems there are always just repeated comments."*
- *"I don't mind the discussion board connection, but I hate having to try and do full/ongoing projects with my peers from who knows where. Very difficult to manage."*
- *"I enjoy the classes I have taken so far, and I have learned more since I began teaching, than when I was a substitute."*
- *"The web-based discussions must be monitored and administered by the instructor. Assigning the number of posts a student must make and not engaging with the student online is not instructing. Using a web-based video conference by the instructor allows us to have a lecture with a PowerPoint. A view of the instructor's screen greatly enhances online learning. . . I have taken classes from several online instructors . . .the best was an instructor that used a WebX session every other week, issued templates for us to use when developing our content, checked the content and emailed us directly with positive feedback, or posed another question or angle to think and discuss the topic. This instructor was engaged with our learning and it was apparent."*

Some respondents indicated that they did not believe student-to-student interaction could happen effectively in a distance education setting. Examples of such comments are as follows:

- *"Student-to-student interaction in distance education is an oxymoron. If student-to-student interaction is an important goal of a course, it should not be an online course. I have found interactions with peers in education courses to be frustrating and negative—almost like the people there are punching a clock—rather than being there to learn."*
- *"Achieving a degree by completing classes 100% online is a discredit to the students in the program, as well as the students we will have in our own school settings . . . human face-to-face interaction is essential to the process. While online learning is convenient and a money maker for colleges and universities, in my opinion it is a detriment to turning out educators that are truly qualified in the subject matter they are obtaining degrees in."*
- *"Distance education and online education requires the student to be more independent and self-motivated. A student who is weak in academics struggles with this type of learning."*

Chapter 5: Summary

Introduction

The preceding chapters have detailed the need for the study focusing on occupationally based career and technical education (CTE) teachers' perceived need for student-to-student interaction in distance coursework as they pursued attainment of teaching certification. A comprehensive literature review, a description of the methodology utilized for the study, and details of the data analyses for the study have been provided. Chapter 5 provides a summary of the study, discussion about the findings for each research question, and conclusions and recommendations for future study. Assumptions and limitations of the study are also detailed in Chapter 5.

Summary

This study addressed the paucity of literature, as well as discrepancies in literature that pertain to CTE occupationally based teachers' perceived need for student-to-student interaction in the distance education courses taken to gain teaching certification. A comprehensive literature review in Chapter 2 revealed studies that indicated that interaction among students is a vital part of the distance education learning process. Two examples of such studies include Yang and Chang (2011) and Conaway, Easton, Schmidt (2005). Other studies indicated that interaction among students in distance education is not desired or perceived necessary by distance education students themselves (Moore, Warner, & Jones, 2016). Some studies indicated that student-to-student interaction leads to greater confidence and achievement (Moore, 2014), while others found that student interaction does not change the level of student success in a course (Bernard, Abrami, Borokhovski, Wade, Tamim, Surkes, & Bethel, 2009).

The purpose of the study was to contribute to the unique body of literature regarding occupationally based CTE teachers' perceived need for student-to-student interaction in distance education. In addition, the study contributed to the broader body of research on the topic of post-secondary student perceptions of student-to-student interaction in online/distance education, as well as CTE student perceptions of student-to-student interaction in online/distance education. Other contributions to the literature relate to the perceptions of adult learners and the importance of student-to-student interaction in distance education courses.

Information for the descriptive study was gathered from occupationally based CTE teachers that participated in programs designed to achieve teaching certification via distance coursework. As a result, CTE teachers pursuing alternative teaching certifications using the online/distance education format were utilized in the study. Participants from post-secondary institutions in Kentucky, Missouri, and West Virginia were included.

The study was based on a previous study by Moore et al. (2016), and the survey instrument was utilized with permission. The instrument had been deemed to possess content validity, had been field tested, and had been previously administered. The survey instrument was revised slightly based on the specific CTE teacher population, and it was field tested by experts in the field of career and technical education (see Appendix A). Two qualifying questions were added to the instrument to make certain that all of the CTE teachers responding to the online instrument met the qualifications of:

- having taken courses online in pursuit of gaining teacher certification; and
- having entered the classroom directly from industry, being required to complete courses toward certification.

Participants in the study were accessed in Missouri and West Virginia through the respective university coordinators of the alternative certification programs. The survey and study correspondence were forwarded via email to the CTE teachers participating in each of the programs by the program coordinators. (See Appendix F for documentation of permission to use subjects.) Kentucky participants were accessed via email addresses listed on the Kentucky Office of Career and Technical Education web site. Any participant that did not meet the qualifications of having taken courses online and entering the workforce directly from industry to pursue alternative teaching certification was directed out of the survey by answering the first two qualifying questions. All potential participants received an initial email explaining the study and requesting their participation (see Appendix B). A second email was sent approximately 24 hours later that contained the link to the online survey instrument (see Appendix C). To address non-respondents and to increase the response rate, a reminder email was sent after approximately 10 days to encourage survey completion (see Appendix D). The research consent letter was attached to email communications (see Appendix G).

The research questions that guided the study were:

1. What are the expectations of distance education occupationally based teachers regarding student-to-student interaction in distance education classes?
2. Is there a difference in the expectations of distance education occupationally based teachers regarding student-to-student interaction in distance education classes, according to the following dependent variables:
    - gender;
    - personality type;
    - work status;

- student status;
- generational classification; and
- number of distance education courses taken.

The total number of respondents included 166 CTE teachers. Of the entire group of respondents, 77.1% (N=128) indicated that they had taken courses online in pursuit of teacher certification. Respondents who had not taken courses online totaled 22.9% (N=38) of all respondents. From the total population of respondents, 82.5% (N=137) indicated that they entered the classroom directly from industry, and were required to complete additional coursework in order to complete certification requirements. Based on the qualifying questions, 69 respondents did not meet the qualifications or complete the remaining questions beyond the two qualifying questions on the survey instrument. As a result, the total number of qualifying respondents included 10.4% (N=97) of the total population of CTE teachers.

Of the qualifying respondents, 53.7% (N=51) were male, 46.3% (N=44) were female, and two respondents did not respond to the question about gender. Respondents indicated having had a wide variety of previous degrees and certifications prior to entering the teaching field. Degrees included associate degrees, bachelor degrees, and master degrees from a varied array of career areas. Respondents indicated having a wide-ranging list of additional certifications. Detailed demographic data of qualifying respondents is presented in Chapter 4 (Table 2).

In order to address Research Question 1, a series of one sample t-tests were performed using SPSS software to analyze the data from each of the 18 Likert-type survey items regarding CTE teacher expectations of student-to-student interaction in online/distance education courses. One sample t-tests were conducted to determine if a statistically significant difference in expectations existed between a score of 3.0, the average normal score, from the population of

occupationally based CTE teachers pursuing their alternative teaching certification in the online/distance education format. The mean and standard deviation for each survey item were also reported. Respondents' views of the importance of student-to-student interaction, as it related to each survey item were detailed. Those that were thought to be significantly important or unimportant by the responding CTE teachers are detailed in Chapter 4 (Table 1).

For Research Question 2, independent samples t-tests were used for survey items that involved comparing more than one factor. For items that involved comparing multiple factors per item, the alternative inferential procedure, one-way ANOVA was utilized. Detailed results are provided in Chapter 4.

Discussion

Research Question 1: What are the expectations of distance education occupationally based teachers regarding student-to-student interaction in distance education classes?

Overall, survey respondents did not indicate high expectations or particularly positive feelings regarding student-to-student interaction in online/distance education courses. The grand mean score for the 18 survey statements pertaining to expectations of student-to-student interaction was 3.047. This aligns with the *neither agree nor disagree* range on the survey instrument scale. This may be due to the fact that students enrolling in distance education courses did not necessarily expect interaction with other students when taking courses in the online format.

The highest positive ratings in favor of student-to-student interaction included responses for the survey items, "*I feel I learn more in a course when I have the opportunity to engage with my peers"* (M=3.33, SD=1.09) and "*I think student-to-student interaction should be a high priority for a distance education class"* (M=3.30, SD=1.07). While some respondents rated

these items favorably, others did not seem to place a priority on student-to-student interaction in online/distance education courses. As a result, the average rating for these items fell within the *neither agree nor disagree* range. Few respondents seemed to have high expectations for student-to-student interaction in online/distance education courses.

Conversely, the highest negative ratings pertaining to student-to-student interaction included responses for the survey items, *"I would prefer not having group work in distance education classes"* (M=3.77, SD=1.10), *"I prefer to work alone on assignments"* (M=3.71, SD=.95), *"I am more concerned about the course content than participating in a classroom community"* (M=3.51, SD=1.12), and *"I only participate in discussion board exchanges if they are a graded component of the course"* (M=3.43, SD=1.07). The higher mean scores for items related to negative feelings about student-to-student interaction indicated stronger feelings against requiring student-to-student interaction in online/distance coursework. This seems to support the findings of Moore et al. (2016).

Based on the highest rated negative and positive statements on the survey instrument, it was apparent that respondents did not expect extensive student-to-student interaction, nor did they desire it. This lack of desire for interaction may explain why this particular group of students chose to pursue courses in the online format, instead of in a more traditional mode of instruction. Additional factors that may have impacted respondents' feelings regarding student-to-student interaction in online courses included the fact that they were not traditional college students. They were working adults with a variety of career and home responsibilities. In addition to pursuing courses for achievement of their teaching certification, this particular group of respondents may not have valued interaction with other students, as a result of their own commitments and time constraints.

Research Question 2a: Is there a difference in the expectations of distance education occupationally based teachers regarding student-to-student interaction in distance education classes based on gender?

Independent samples t-tests were conducted for the survey items containing two factors, as was the case with the survey item regarding gender. After conducting the t-tests, mean scores were compared to determine if the difference in each factor's mean score (male vs. female) was significant. Overall, 53.7% of respondents were male (N=51) and 46.3% were female (N=44). As indicated in Chapter 4, Table 2, there was no significant difference between male and female respondents regarding expectations for student-to-student interaction in online/distance education courses. As a result, gender did not seem to play a major role in influencing respondent expectations.

While some studies have focused on whether gender plays a role in the amount of desired communication, clear differences have not been widely evident (Tatum, Schwartz, Schimmoeller, Perry, 2013). The present study determined that male and female respondents had a similar neutral expectation or desire for student-to-student interaction in online coursework. This may be because the male and female populations were made up of adults who pursued teaching certification in the online format while working, caring for families, and often working part-time in industry while teaching. As a result, their extracurricular responsibilities and time constraints were not defined by gender, and gender did not seem to significantly impact the population's expectations of student-to-student interaction.

Research Question 2b: Is there a difference in the expectations of distance education occupationally based teachers regarding student-to-student interaction in distance education classes based on personality type?

Respondents were asked to classify themselves as an introvert, extrovert, or ambivert. Introverts comprised 21.3% of respondents (N=20), extroverts comprised 27.7% of respondents (N=26), and ambiverts comprised 51.1% of respondents (N=48). An analysis of variance was conducted for each survey item to determine if there was a difference in at least one of the means. The null assumption was that all of the means were the same. If the ANOVA determined that the test was significant, the Tukey post-hoc analysis was used to compare the factors for each survey item. The analyses of variance indicated that there were not statistically significant differences for any of the survey items based on personality type. As a result, the Tukey post-hoc analysis was not necessary.

Based on the data, a larger number of respondents considered themselves to be ambiverts (51.1%), rather than introverts or extroverts. The larger percentage of respondents that rated themselves somewhere between an introvert and extrovert could have impacted/skewed the mean scores. However, since there was not a significant difference in any of the specific questions/items, no further analysis was necessary.

Research Question 2c: Is there a difference in the expectations of distance education occupationally based teachers regarding student-to-student interaction in distance education classes based on work status?

Survey respondents were asked to indicate their years of teaching experience. The following categories were used on the survey instrument. Of the total respondents (N=95), 5.3% had 6-12 months teaching experience (N=5), 3.2% had 1 year of teaching experience (N=3), 11.6% had 2 years teaching experience (N=11), 22.1% had 3 years of teaching experience (N=21), 14.7% had 4-5 years of teaching experience (N=14), 13.7% had 6-10 years of teaching

experience (N=13), 27.4% had 11-20 years of teaching experience (N=26), and 2.1% had 21 years or more of teaching experience (N=2).

An analysis of variance was conducted for each survey item to determine if there was a difference in at least one of the means for years of teaching experience. The null assumption was that all of the means were the same. None of the 18 Likert-type survey items were statistically significant. Therefore, the post-hoc analysis was not necessary for the comparison of teaching experience with each survey item. Detailed statistics are provided in Chapter 4. Overall, there was no statistically significant difference in any of the survey questions when compared to years of teaching experience and no further analysis was necessary.

Survey respondents were asked to choose from a range of years of non-teaching work experience. Of the responses, 6.3% indicated having 1-5 years of non-teaching work experience (N=6), 15.6% indicated having 6-10 years of non-teaching work experience (N=15), 12.5% indicated having 11-15 years of non-teaching work experience (N=12), 25.0% indicated having 16-20 years of non-teaching work experience (N=24), 28.1% indicated having 21-30 years of non-teaching work experience (N=27), and 12.5% indicated having 30 years or more of non-teaching work experience (N=12).

An analysis of variance was conducted for each survey item to determine if there was a difference in at least one of the means based on non-teaching work experience. The null assumption was that all of the means were the same. If the ANOVA indicated significance, and at least one mean was different, a Tukey post-hoc analysis was used to compare each factor. Four survey items were determined to be significantly statistically different.

The survey question, *"I enjoy participating in online forums, discussion boards, Google hangouts, Skype and other such approaches that promote student-to-student interaction"* was

analyzed. An analysis of variance showed that the effect of years of non-teaching experience on expectations of student-to-student interaction in distance courses was significant, $F(5, 90) = .3710$, $p = .004$. A post-hoc analysis indicated a significant difference between Group 4, with 16-20 years of non-teaching work experience (M=2.25), and Group 6, with 30 or more years of non-teaching work experience (M=3.67) (p=.006). There was also a significant difference between Group 3, with 11-15 years of non-teaching work experience (M=2.00), and Group 6, with 30 or more years of non-teaching work experience (M=3.67) (p=.005).

The group with 16-20 years of non-teaching work experience seemed to have less appreciation for online forums (M=2.25) than the more mature group of respondents with 30 or more years of non-teaching work experience (M=3.67). Similarly, the group with 11-15 years of non-teaching work experience (M=2.00) seemed to have less appreciation for online forums than the group of respondents with 30 or more years of non-teaching work experience (M=3.67).

It is possible that this indicates that the more mature group of respondents with more years of non-teaching work experience appreciated the opportunity to interact with others via online forums. The group of respondents with less non-teaching work experience was likely more comfortable with online modes of instruction and may not have felt that they needed the interaction with other students as much as the more mature students with more non-teaching experience.

The survey question, *"I would prefer not having group work in distance education,"* was analyzed. An analysis of variance showed that the effect of years of non-teaching experience on expectations of student-to-student interaction in distance courses was significant, $F(5, 89) = 2.549$, $p = .033$. A post-hoc analysis indicated a significant difference between Group 3, with 11-15 years of non-teaching work experience (M=4.33), and Group 6, with 30

years or more of non-teaching work experience (M=2.92) (p =.016). This was the only piece-wise comparison found to be significant for this survey item when compared to years of non-teaching work experience.

Respondents from Group 3 with 11-15 years of non-teaching experience (M=4.33) did not prefer group work in online courses. Respondents from Group 6 with 30 or more years of non-teaching experience (M=2.92) responded more favorably to group work in online courses. Based on these responses, respondents with 30 or more years of non-teaching experience reacted more favorably to participating in group work in online courses than respondents with less previous work experience.

It is possible that the group with 30 or more years of non-teaching work experience is more comfortable in educational settings that promote student interaction, since their past educational experiences were more traditional in format. It is also believed that the more mature students with 30 or more years of experience in industry prior to entering the teaching field seemed to appreciate the interaction with other students as they learned to utilize the required technology for their online courses. It is thought that since these students were not digital natives and did not grow up using computer technology, interaction with other students in their online courses provided them with needed support as they became familiar with learning management systems, specialized software, video capture devices, and other technology tools necessary for success in an online course. The group with 11-15 years of non-teaching experience may likely have had more experience with technology throughout their education and work in industry.

The survey question, *"I care about knowing and interacting with other students in my online or web-based courses,"* was analyzed. An analysis of variance showed that the effect of

years of non-teaching experience on expectations of student-to-student interaction in distance courses was significant, F (5, 90) = 2.765, p = .023. A post-hoc analysis indicated a significant difference between Group 4, with 16-20 years of non-teaching work experience (M=2.38), and Group 6, with 30 years or more of non-teaching work experience (M=3.58) (p = .020). This was the only piece-wise comparison found to be significant for this survey item when compared to years of non-teaching work experience.

Respondents from Group 6 with 30 or more years of non-teaching work experience (M=3.58) seemed to care about knowing other students in their online courses more than others surveyed. This may indicate that older, more experienced learners prefer to have personal interactions with other students in their courses. This could be a result of students' need for support from other learners, as well as their past experience of interacting with classmates in more traditional settings. Respondents from Group 4 with 16-20 years of non-teaching work experience (M=2.38) cared least about knowing the other students in online courses. It is believed that members of Group 4 likely had more previous experience using computer technology, based on their probable age range. It is also suspected that, in addition to teaching and working toward their certification via college coursework, this group of students may have been more likely to have been raising families and possibly working in industry. The scope of their extracurricular commitments and time constraints may have impacted their feelings on the importance of student-to-student interaction.

The survey question, *"It is important for me to feel as if I belong to my classroom community,"* was analyzed. An analysis of variance showed that the effect of years of non-teaching experience on expectations of student-to-student interaction in distance courses was significant, F (5, 90) = 4.305, p = .001. A post-hoc analysis indicated a significant piece-wise

difference between Group 3, with 11-15 years of non-teaching work experience (M=2.17), and Group 6, with 30 years or more of non-teaching work experience (M=3.58) (p = .012). There was also a significant piece-wise difference between Group 4, with 6-20 years of non-teaching work experience (M=2.29), and Group 6, with 30 years or more of non-teaching work experience (M=3.58) (p = .007).

Group 3 with 11-15 years of non-teaching work experience (M=2.17) and Group 6 with 30 or more years of non-teaching experience (M=3.58) were significantly different. Group 4 with 16-20 years of non-teaching experience (M=2.29) and Group 6, with 30 or more years of non-teaching experience (M=3.58) were significantly different. This may reinforce the theory that older, more experienced learners may appreciate interaction and belonging in their classroom community, even as members of online classes. The emotional and technological support that more mature respondents received from student-to-student interaction seemed to be vital to the older group with more experience in industry prior to pursuing a teaching career. Younger students with only 11-15 years of non-teaching experience in industry may have preferred less interaction due to busy lives, family obligations, and comfort level with online pedagogy.

Research Question 2d: Is there a difference in the expectations of distance education occupationally based teachers regarding student-to-student interaction in distance education classes based on student status?

Of all of the respondents, 93.4% (N=71) were part-time students that completed less than nine hours per semester. Full-time students that completed more than nine hours per semester made up 6.6% (N=5) of the respondents. Independent samples t-tests were conducted to analyze the expectations of occupationally based CTE teachers regarding student-to-student interaction in

online/distance education courses by examining the survey item results that dealt with student status (full-time vs. part-time).

Results indicated that none of the 18 Likert-type survey items were statistically significantly different based on student status. Specific data for each survey item is provided in Chapter 4, Table 3. Trends that have emerged based on student status have been revealed by the highest rated mean scores for both full-time and part-time students.

The highest rated items for full-time students that completed nine or more hours per semester included:

- *The relationships I have established with other online or distance education students have continued after the class is over* (M=4.0, SD=1.23);
- *I think student-to-student interaction should be a high priority for distance education class* (M=3.80, SD=1.10); and
- *Interaction with other students enhances my learning of the content* (M=3.80, SD=1.64).

The highest rated items for part-time students that completed fewer than nine hours per semester included:

- *I would prefer not having group work in distance education classes* (M=3.79, SD=1.08)*;*
- *I prefer to work alone on assignments* (M=3.73, SD=1.00)*; and*
- *I am more concerned about the course content than participating in a classroom community* (M=3.59, SD=1.11).

An observed trend in the data included the fact that full-time students taking more than nine credit hours per semester seemed to place higher importance on student-to-student

interaction. This was based on respondents' highest mean scores for each positive question. Part-time students taking fewer than nine credit hours per semester seemed to place less importance on student-to-student interaction. This was based on respondents' highest mean scores for each negative question.

Research Question 2e: Is there a difference in the expectations of distance education occupationally based teachers regarding student-to-student interaction in distance education classes based on generational classification?

Survey respondents were asked to provide their age. When results were analyzed, responses were organized by the following generational statuses as indicated by Merriam Webster Dictionary (2017c; 2017b; 2017a):

- Millennials (18-37 years old);
- Generation X (38-57 years old); and
- Baby Boomers (58-72 years old).

Of the respondents that provided their age (N=95), 20% (N=19) were considered Millennials, 69.5% (N=66) were from Generation X, and 10.5% (N=10) were considered Baby Boomers. An analysis of variance was conducted for each survey item to determine if there was a difference in at least one of the means. The null assumption was that all of the means were the same. If the ANOVA indicated that the test was significant, and at least one mean was different, a Tukey post-hoc analysis was conducted to compare each factor.

The analyses of variance indicated that there was only one of the 18 Likert-type survey items that indicated statistically significant differences based on generational status. The item, *"It is important for me to feel as if I belong to my classroom community,"* indicated statistical significance $F(2, 92) = 3.540$, $p = .033$. The Tukey post-hoc analysis indicated that the

comparison between Group 1, Millennials (M=2.11) and Group 2, Generation X (M=2.85) was the only piece-wise comparison found to be significant (p=.025). Members of Group 1, Millennials, were 18-31 years old (N=19), members of Group 2, Generation X, were 38-57 years old (N=66), members of Group 3, Baby Boomers, were 58 or older (N=10). There was no significant difference between Group 1 (Millennials) and Group 3 (Baby Boomers) or Group 2 (Generation X) and Group 3 (Baby Boomers).

The highest mean response for the survey item about the importance of belonging to one's classroom community illustrates the Generation X group of respondents' (M=2.85) feelings about this topic. While this mean score still falls below the average score of 3.0 for the survey item, it may indicate that members of Generation X value belonging and interaction more than the younger group of Millennials (M=2.11). Based on this question, the more mature Generation X group (ages 38-57) seemed to feel that it was more important to belong to a classroom community than did the group of Millennials (ages 18-37). It is believed that, while members of Generation X may have technology experience, their previous educational experiences were primarily more traditional. The fact that Millennials are considered to be digital natives, and have had experience with technology throughout their entire lives, may have impacted this response. As a result, Millennials are often accustomed to communicating solely in an online format.

Research Question 2f: Is there a difference in the expectations of distance education occupationally based teachers regarding student-to-student interaction in distance education classes based on the number of distance education courses taken?

Respondents indicated the number of online/distance education courses previously taken by selecting one of three categories. Categories included one or two, three or four, and five or

more courses. An analysis of variance was conducted for each of the survey items to understand if there was a difference in at least one of the means. The null assumption was that all of the means were the same. If the ANOVA determined that the test was significant, and at least one mean was different, a Tukey post-hoc analysis was used to compare each factor. Of the 18 Likert-type survey items, three survey items were found to have statistically significant differences.

The question, *"I think student-to-student interaction should be a high priority for a distance education class,"* was analyzed. An ANOVA revealed that the effect of the number of online courses taken on the expectations for student-to-student interaction was statistically significant, $F(2, 92) = 3.241$, $p = .044$. A post-hoc analysis indicated that the comparison between Group 2, respondents that have had three to four online courses (M=3.79, SD=.787), and Group 3, respondents that have had five or more online courses (M=3.11, SD=1.091), was the only piece-wise comparison found to be significant (p=.039) for this item.

Based on the data, the higher mean of Group 2 (M=3.79) may suggest that students having less experience with online coursework may crave the kind of student-to-student interaction experienced in traditional courses. In addition, student interaction in an online course may be the primary method that Group 2 students who are newer to online instruction will gain experience and competence in the use of required educational technologies. Group 3 (M=3.11) may not feel that interaction should be as high of a priority because they have more web-based instructional experience, are comfortable with online modes of instruction, and have gained sufficient experience after taking five or more courses in the online format.

The question, *"I prefer to work alone on assignments,"* was analyzed. An ANOVA revealed that the effect of the number of online courses taken on the expectations for student-to-

student interaction was statistically significant, F (2, 92) = 4.630, p = .012. A post-hoc analysis indicated that the comparison between Group 1, who had taken one or two online courses, (M=3.18, SD=1.250) and Group 3, who had taken five or more online courses, (M=3.92, SD=.853) was the only piece-wise comparison found to be significant (p=.036) for this item.

Based on the data, students who may be new to online instruction, and have only taken one or two online courses (M=3.18) may enjoy student interaction in the form of group work more than students who have taken five or more online courses (M=3.92). This supports the indication that students with less distance education experience appreciate the support and reinforcement from other students as they are acclimating to online instruction. More experienced students may prefer to stay focused on a task independently and work alone since they are more comfortable with the requirements of online coursework.

The question, *"Interaction with other students enhances my learning of the content,"* was analyzed. An ANOVA revealed that the effect of the number of online courses taken on the expectations for student-to-student interaction was statistically significant, F (2, 92) = 4.440, p = .014. A post-hoc analysis indicated that the comparison between Group 2, who had taken three to four online courses, (M=3.74, SD=.991) and Group 3, who had taken five or more online courses, (M=2.92, SD=1.150) was the only piece-wise comparison found to be significant (p=.016) for this item.

The group whose responses had the highest mean was Group 2, the group who had taken three to four online courses. The group whose responses had the lowest mean was Group 3, the group who had taken five or more online courses. Based on the question about interaction enhancing learning of content, the middle group with three to four classes, seemed to believe student-to-student interaction helped them learn course content. More experienced students, who

had completed more online courses, did not seem to perceive as much of a link between interaction and enhanced learning. This affirms the impression that learners new to the online instructional environment may crave interaction with other students because this interaction helps them gain the required technology skills to be successful. Once they have an understanding of the technology and how to use it, many students prefer to work independently without as much interaction.

Conclusions

1. Occupationally based CTE teachers who pursued their teaching certification via online coursework did not indicate high expectations or a desire for student-to-student interaction in their online courses.
2. There was not a statistically significant difference in expectations regarding student-to-student interaction in online courses based on gender, student status, or personality type for occupationally based CTE teachers who pursued their teaching certification via online coursework.
3. While a statistically significant difference in expectations was lacking, full-time occupationally based novice CTE teachers seemed to have higher expectations for student-to-student interaction in online courses than part-time students.
4. The number of years of teaching experience achieved by occupationally based CTE teachers that pursued teaching certification via online coursework did not significantly impact expectations for student-to-student interaction in online courses.
5. More experienced occupationally based CTE teachers with more non-teaching work experience appreciated interaction and belonging in their classroom community in online courses more than those with less prior non-teaching work experience.

6. Occupationally based CTE teachers that had taken five or more online courses placed a lower priority on student-to-student interaction than students newer to web-based learning, and they did not particularly associate student-to-student interaction to increased learning.

Assumptions

It was assumed that participants in the study would be truthful and open as they shared their perceptions and feelings about previous distance education experiences. It was also assumed that participants would have access to computer technology and an accessible email account for survey distribution.

Much like the Moore et al. (2016) study, the theoretical framework for this study was derived from Vroom's Expectancy Theory (Vroom, 1964). Based on this theory, if CTE students enrolled in distance education courses expecting significant amounts of interaction with other students, and they did not have this experience, they would have less motivation to perform well in the course. If students' expectations of the experience were not met, they may leave the class prematurely, and potentially drop out of the teacher education program. If student expectations were met for student-to-student interaction, students would likely achieve at a higher level in the course (Moore et al., 2016).

Limitations

Limitations of the study included a lack of existing literature on the topic of distance education, specifically in the field of career and technical education. Previous studies on student-to-student interaction in distance education have yielded mixed results, and the empirical data that supported the assertion that interaction between students is essential in distance education could be questioned (Moore et al., 2016).

An additional limitation included difficulty accessing email addresses specifically for students enrolled in CTE alternative certification programs in Kentucky. Significant cooperation by the specific coordinators of the alternative certification programs could not be attained directly. As a result, email contact information for all CTE teachers in Kentucky was accessed via the Kentucky Office of Career and Technical Education web site. Since this included all CTE teachers in Kentucky, and not those specifically pursuing alternative certification, it was necessary to add two qualifying questions to the survey instrument to be certain that the appropriate population's responses would be gathered. The first question was to assure that respondents were entering the classroom directly from industry, and that they had pursued/were pursuing alternative teaching certification. It was also necessary to add a question to make sure that all respondents had taken distance/online courses in pursuit of their teacher certification. If respondents did not meet the two qualifications, they were directed out of the remainder of the survey. This may have led to a reduced response rate of 10.4% (N=97) when the respondents who did not meet the qualification for the study were subtracted (N=69). If surveys had been distributed via alternative certification program coordinators only, it is believed that a more targeted population would have been reached, and perhaps the response rate would have increased.

Implications

Online education is a developing field that is connected to past achievements in distance education, human-computer interaction, instructional technology, and the science of learning and instruction (Larreamendy-Joerns & Leinhardt, 2006). Much can be learned to advance the scholarship of teaching from the contributions of research and best practices in online education. With online learning and blended learning becoming more prevalent in all educational venues,

there are implications to advance the scholarship of teaching in general (Larreamendy-Joerns & Leinhardt, 2006). This study has added to the body of research that has the potential to advance online pedagogical practices throughout educational circles.

CTE teacher certification programs have been facing many challenges at universities throughout the country due to budget constraints. According to Mitchell and Leachman (2015), "support for higher education remains well below pre-recession levels" and financial support "remains below what it was in 2008, at the onset of the Great Recession" in most states (p. 1). Nonetheless, CTE teachers are in high demand, but educational institutions have had difficulty attracting capable candidates. The shortage of qualified CTE teachers in the United States is a noteworthy problem with documented shortages throughout the country (Wilkin & Nwoke, 2011). Rather than eliminating post-secondary CTE teacher education programs entirely, alternative certification programs, such as those found in Kentucky, Missouri, and West Virginia may be a viable option for universities where traditional on-campus certification programs are not available due to fiscal concerns.

Because online instruction goes hand-in-hand with the needs of occupationally based practicing teachers working toward attaining their teaching certification while working full-time, findings of this study are timely. Teacher educators of alternative certification programs must be familiar with best practices in web-based instruction in order to assure that cohort members are well-prepared for their teaching positions. In order to discern which teaching methods are best suited for online instruction, particularly for adult practicing teachers, it is important to consider the opinions of learners. This study provides information that can be valuable in designing alternative certification programs that best meet the needs of occupationally based CTE teachers seeking alternative certification. There are additional implications of this research for adult

learners, post-secondary learners in other academic areas, and for online instruction in general. Insights from this study may be applied to broader audiences and curriculum areas.

Recommendations for Future Research

1. Researchers should consider replicating this study in other states that have alternative certification programs by utilizing CTE alternative certification program coordinators at universities that offer alternative certification programs/cohorts.
2. It is recommended that researchers replicate this study in other post-secondary curriculum areas.
3. In order to address the purveyance of online instruction in high school settings, it is recommended that researchers replicate this study by surveying secondary students. It would be important to understand this population's unique views on student-to-student interaction in web-based instruction.
4. Teacher educators in post-secondary institutions should analyze available research in order to best prepare teachers of the future for effective use of online/web-based instructional activities. These activities should encourage student-to-student interaction in ways that increase student skill attainment. Activities involving student interaction should provide learning and meaning. Students should not feel that their time has been wasted by such activities.

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Appendix A: Survey Instrument and Moore Approval to Utilize Instrument

Career & Technical Education (CTE)
DISTANCE EDUCATION/WEB-BASED INSTRUCTION SURVEY

Have you taken courses online to pursue teacher certification?

- Yes
- No

Did you enter the classroom directly from industry, and have to complete course work toward certification?

- Yes
- No

Career & Technical Education (CTE)
DISTANCE EDUCATION/WEB-BASED INSTRUCTION SURVEY

Please select the answer that best represents your views. Please remember these responses are only for distance, online, or web-based education classes—not live on-campus classes. We are interested in your honest opinions.

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
I think student-to-student interaction should be a high priority for a distance education class.	○	○	○	○	○
I have better things to do with my time than spending it interacting with other students in the class.	○	○	○	○	○
I feel I learn more in a course when I have the opportunity to engage with my peers.	○	○	○	○	○
I am more concerned about the course content than participating in a classroom community.	○	○	○	○	○
It is important for me to connect with and find occupational similarities with the other students in the class.	○	○	○	○	○
I think the value of cooperative learning (students in small groups learning from each other) is overblown in distance education classes.	○	○	○	○	○
The relationships I have established with other online or distance education students have continued after the class is over.	○	○	○	○	○
I enjoy participating in online forums, discussion boards, Google hangouts, Skype and other such approaches that promote student-to-student interaction.	○	○	○	○	○
I prefer to work alone on assignments.	○	○	○	○	○
It is important for me to feel connected to others in my online or distance education courses.	○	○	○	○	○
I only participate in discussion board exchanges if they are a graded component of the course.	○	○	○	○	○
I gain a lot from interacting with my classmates.	○	○	○	○	○
I would prefer not having "group work" in distance education classes.	○	○	○	○	○
I care about knowing and interacting with other students in my online or web-based courses.	○	○	○	○	○
I like the chance to read and comment on my classmates' discussion board posts.	○	○	○	○	○
I desire a substantial amount of student-to-student interaction in my online or distance education courses.	○	○	○	○	○
It is important for me to feel as if I belong to my classroom community.	○	○	○	○	○
Interaction with other students enhances my learning of the content	○	○	○	○	○

Career & Technical Education (CTE)
DISTANCE EDUCATION/WEB-BASED INSTRUCTION SURVEY

What is your age?

What is your gender?

- Male
- Female

Have you earned any previous degrees or certificates? (If so, please specify.)

In what state is the university where you have completed online or distance course work toward your certification?

- Kentucky
- Missouri
- Oklahoma
- West Virginia
- Other (please specify)

In what curricular areas do you teach? (Please mark all that apply)

- Agriculture
- Automotive
- Business
- Computer Technology
- Construction Sciences
- Other (please specify)
- Family & Consumer Science—Childcare
- Family & Consumer Science—Culinary Arts
- Family & Consumer Science—Clothing
- Health Occupations
- Welding

Years of teaching experience?

- ◯ 0-6 months
- ◯ 6-12 months
- ◯ 1 year
- ◯ 2 years
- ◯ 3 years
- ◯ 4-5 years
- ◯ 6-10 years
- ◯ 11-20 years
- ◯ 21 years +

When you were hired to teach, were you informed of certification requirements?

- ◯ Yes
- ◯ No

When you were hired, did you know that you would be required to take classes in order to continue teaching?

- ◯ Yes
- ◯ No

Do you receive financial support from the district in which you teach for your classes/training?

- ◯ Yes
- ◯ No

If you receive financial support from your district, approximately how much of your tuition is covered by your district?

- ◯ 100%
- ◯ 75%
- ◯ 50%
- ◯ 25%
- ◯ 24% or less

How many course hours are required to renew your teaching certificate annually?

Do you annually meet or exceed this number?

- ◯ Yes
- ◯ No

How many years of non-teaching work experience do you have in the field in which you teach?

- ◯ 1-5 years
- ◯ 6-10 years
- ◯ 11-19 years
- ◯ 16-20 years
- ◯ 21-30 years
- ◯ 30 + years

How many distance, online, or web-based education classes have you taken to date?

- ◯ 1 or 2
- ◯ 3 to 4
- ◯ 5 or more

What is your "student" status?

- ◯ Full-time student (take 9 or more hours a semester)
- ◯ Part-time student (take less than 9 hours a semester)

Career & Technical Education (CTE)
DISTANCE EDUCATION/WEB-BASED INSTRUCTION SURVEY

Personality Type:

Which of the following descriptions is most like you?

Introvert – an introvert is someone who is more reserved, shy and quiet type. Maybe they like to read or relax at home.
Extrovert – an extrovert is someone who is outgoing and more lively, maybe more daring and likes to be around a lot of people.
Ambivert – in between these two options

Choose the choice most like you:

- ◯ I tend to be more of an introvert
- ◯ I tend to be more of an extrovert
- ◯ I tend to be in between (an ambivert)

If you have any comments you want to share with us about online, web-based, or distance education classes or specifically about student-to-student interaction in distance education classes, we would welcome them.

Adapted from an instrument utilized with permission in the following study:

Moore, G., Warner, W. and Jones, D. (2016). Student-to-student interaction in distance education classes: what do graduate students want? Journal of Agricultural Education, *57*(2), 1-13.

RacerMail
email | calendar | drive

Tina Barger <tbarger1@murraystate.edu>

Question Regarding Your Study

3 messages

Tina Barger <tbarger1@murraystate.edu> Mon, Oct 17, 2016 at 6:47 AM
To: gary_moore@ncsu.edu

Dr. Moore:

I am a doctoral student at Murray State University in Murray, KY. I am working with Dr. Kemaly Parr to complete a dissertation study entitled "*Occupationally Based Novice Career and Technical Education Teachers' Perceived Need for Student-to-Student Interaction in Distance Coursework to Gain Teaching Certification.*"

Your research on student-to-student interaction in distance education with graduate students has been very helpful as I have moved forward with research for our specific population of CTE occupationally based teachers. I am writing to seek permission to utilize the survey instrument you used in your study. We might need to modify the instrument slightly to meet our specific study's goals, but the majority of the instrument seems to fit our study perfectly.

Thank you for your consideration of allowing me to utilize your survey instrument. I look forward to hearing from you soon.

Sincerely,

Tina Barger, Doctoral Student
Murray State University
tbarger1@murraystate.edu
618.922.7370

Gary Moore <gmoore@ncsu.edu> Mon, Oct 17, 2016 at 2:37 PM
Reply-To: gary_moore@ncsu.edu
To: Tina Barger <tbarger1@murraystate.edu>

You are welcome to use the instrument.
[Quoted text hidden]
--
Gary Moore
Web Page
Director of Graduate Programs
Agricultural and Extension Education
Department of Agricultural and Human Sciences
North Carolina State University
Box 7607, Room 201 Ricks Hall
Raleigh, NC 27695
919-515-1756 phone
919-280-7047 cell
919-513-1169 fax

Appendix B: Initial Recruitment Email

SUBJECT: Study Involving CTE Teachers in Alternative Certification Programs

Hello, my name is Tina Barger. I am a doctoral student at Murray State University in Murray, KY pursuing a Doctorate of Education in P-20 Education and Community Leadership. As a career and technical education (CTE) teacher myself, I am interested in conducting research on CTE teachers who are pursuing or have pursued their alternative certification in one of the CTE areas. Since many of the alternative certification programs involve online or distance education instruction, this study focuses on student (CTE teacher) perceptions of the need for student-to-student interaction in online/distance instruction.

Participation in this research involves completing an online survey regarding your perceptions on the importance of student-to-student interaction in the courses you have taken in the online or distance education format. The online survey should take less than 10 minutes to complete. The survey instrument will be sent to you in a future email.

Participation in the research study is completely voluntary. There will be no specific benefits or risks for participants, but responses will contribute to the body of research to help us understand students' perceived desire for student-to-student interaction in online/distance coursework.

Thank you in advance for your consideration of participation in this research study. If you have any questions regarding the study, please feel free to contact me, or my advisor and faculty sponsor, Dr. Kemaly Parr. Please find our contact information below.

Investigator:
Tina Barger, Doctoral Student
P-20 & Community Leadership Doctoral Student
& Adjunct Instructor
Murray State University
3241 Alexander Hall
Murray, KY 42071
(618)922-7370
tbarger1@murraystate.edu

Faculty Sponsor:
Kemaly Parr, PhD
Director of Career & Technical Education
Murray State University
Department of Adolescent, Career and Special Education
3241 Alexander Hall
Murray, KY 42017
(270)809-2854
kparr@murraystate.edu

Appendix C: Email with Survey Link

SUBJECT: Study Involving CTE Teachers in Alternative Certification Programs

Hello, my name is Tina Barger. You received a previous email from me regarding a study involving CTE Teachers. I am a doctoral student at Murray State University in Murray, KY pursuing a Doctorate of Education in P-20 Education and Community Leadership.

As a career and technical education (CTE) teacher myself, I am interested in conducting research on CTE teachers who are pursuing or have pursued their alternative certification in one of the CTE areas. Since many of the alternative certification programs involve online or distance education instruction, my study focuses on student (CTE teacher) perceptions of the need for student-to-student interaction in online/distance instruction.

Participation in this research involves completing an online survey regarding your perceptions on the importance of student-to-student interaction in the courses you have taken in the online or distance education format. The online survey should take less than 10 minutes to complete. Please consider taking a few minutes to complete the survey of CTE teachers who have completed or are currently pursuing alternative certification. If you are willing to participate, please complete the survey by **April 26, 2017**. The survey can be accessed by clicking the link below.

https://www.surveymonkey.com/r/17-090

Participation in the research study is completely voluntary. There will be no specific benefits or risks for participants, but responses will contribute to the body of research to help us understand students' perceived desire for student-to-student interaction in online/distance coursework.

Thank you in advance for your consideration of participation in this research study. If you have any questions regarding the study, please feel free to contact me, or my advisor and faculty sponsor, Dr. Kemaly Parr. Please find our contact information below, as well as the attached research consent letter.

Investigator:
Tina Barger, Doctoral Student
P-20 & Community Leadership Doctoral Student
& Adjunct Instructor
Murray State University
3241 Alexander Hall
Murray, KY 42071
(618)922-7370
tbarger1@murraystate.edu

Faculty Sponsor:
Kemaly Parr, PhD
Director of Career & Technical Education
Murray State University
Department of Adolescent, Career and Special Education
3241 Alexander Hall
Murray, KY 42017
(270)809-2854
kparr@murraystate.edu

Appendix D: Follow-up Email Request

SUBJECT: Follow-Up on Study Involving CTE Teachers in Alternative Certification Programs

Hello, my name is Tina Barger. I am a doctoral student at Murray State University in Murray, KY pursuing a Doctorate of Education in P-20 Education and Community Leadership. I am sending this email as a follow-up to a survey instrument sent out to CTE teachers approximately 10 days ago. The study focuses on the perceptions of alternatively certified CTE teachers or those pursuing their alternative certification. I am interested in learning about your perceptions in relation to online/distance instruction in completion of certification.

In order to maintain anonymity of study participants, the names of study participants that have already responded are not linked to their submissions. Therefore, if you have already completed this survey, thank you very much and please disregard the remainder of this email.

If you have not yet had time to complete the survey, please consider completing it this week. Participation in this research involves completing an online survey regarding your perceptions on the importance of student-to-student interaction in the courses you have taken in the online or distance education format. The online survey should take less than 10 minutes to complete. The link is below:

https://www.surveymonkey.com/r/17-090

Participation in the research study is completely voluntary. There will be no specific benefits or risks for participants, but responses will contribute to the body of research to help us understand students' perceived desire for student-to-student interaction in online/distance coursework.

Thank you in advance for your consideration of participation in this research study. If you have any questions regarding the study, please feel free to contact me, or my advisor and faculty sponsor, Dr. Kemaly Parr. Please find our contact information below.

Investigator:
Tina Barger, Doctoral Student
P-20 & Community Leadership Doctoral Student
& Adjunct Instructor
Murray State University
3241 Alexander Hall
Murray, KY 42071
(618)922-7370
tbarger1@murraystate.edu

Faculty Sponsor:
Kemaly Parr, PhD
Director of Career & Technical Education
Murray State University
Department of Adolescent, Career and Special Education
3241 Alexander Hall
Murray, KY 42017
(270)809-2854
kparr@murraystate.edu

Appendix E: IRB Application and Approval

MSU USE ONLY
IRB Log No.:_____
MSU Proposal No.

Murray State University

Institutional Review Board (IRB)
Application for Approval of Investigations Involving Human Participants

This form is the official documentation of the formal design or plan of a research activity submitted to the IRB for review. Failure to provide all required information will result in return of your application for correction prior to review. It is to be filled out on-line and then the appropriate parts are to be printed for submission. Do not submit pages that do not apply to your research protocol. **NOTE: You must submit the signed form as a pdf document and the appropriate materials that support that request as editable *Word* documents to msu.irb@murraystate.edu.**

PART A

I. Project Title: Occupationally Based Novice Career and Technical Education (CTE) Teachers' Perceived Need for Student-to-Student Interaction in Distance Coursework to Gain Teaching Certification

Principal Investigator(s): Tina Barger

Department: Educational Studies, Leadership and Counseling Telephone: (618)922-7370

Campus Address: (n.a.) 19442 Lupus St., Marion, IL 62959 Email address: tbarger1@murraystate.edu

Status: ☐ Undergraduate Student ☒ Graduate Student ☐ Faculty ☒ Other (Specify: Adjunct Instructor

If PI is an Undergraduate or Graduate Student, all IRB communications will be sent to the faculty mentor:

Faculty Mentor: Kemaly Parr, PhD Telephone: (270)809-2854 Email address: kparr@murraystate.edu

Department: Adolescent, Career and Special Education Campus Address: 3241 Alexander Hall, Murray, KY 42071

Will any other university personnel or students be assisting with this data collection:
☐Yes ☒ No
If yes, who are they and what position do they hold at the university?

Please check which is appropriate: ☐Class Project ☐Research Project ☒Thesis

If this research is for a thesis or senior project, who are the faculty members on your thesis or project committee?
**The research is for completion of my dissertation in fulfillment of the requirements for the Doctor of Education in P-20 and Community Leadership. Faculty members on my committee include: Kemaly Parr, PhD, Randal Wilson, PhD, and Barbara Washington, PhD.

Project Period From: 1/30/17 To: 12/31/17

The designated project period must include all project activities involving humans, with the start date no earlier than the date of IRB approval. The IRB can approve a project for a maximum of 12 months. However, the IRB may decide that more frequent review is necessary. Protocols with project periods longer than 12 months or those that the IRB feels necessitate more frequent review will require a continuing review (use the Project Update and Closure form).

Is a proposal for funding support being submitted? ☒ No ☐ Yes
If *yes*: ☐ Internal ☐ External

Agency or Sponsor: Deadline:

8/5//08

Will this protocol require review by another IRB? If yes, name of other IRB:	☒ No	☐ Yes

RESPONSIBILITIES OF THE PRINCIPAL INVESTIGATOR: Any additions or changes in procedures in the protocol will be submitted to the IRB for written approval prior to these changes being put into practice. Any problems connected with the use of humans once the project has begun must be brought to the attention of the IRB Coordinator. The principal investigator and his or her designee are responsible for retaining Informed Consent Documents in a secure location for a period of three years after the completion of the project or until a minor reaches one year past the age of majority, whichever is longer. Should the faculty investigator or sponsor leave the university before this time, s/he must notify the IRB and provide the exact location for the future storage of these materials.

ASSURANCE STATEMENT: I have read and understand Murray State University's *Procedures and Guidelines* for the Protection of Human Subjects and I agree: (1) the information provided herein does strictly apply to the proposed research; (2) to accept responsibility for the scientific and ethical conduct of this study; (3) to obtain IRB approval prior to revising or altering the research protocol or the approved Informed Consent form; and (4) to immediately report to the IRB any serious adverse reactions and/or unanticipated effects on subjects which occur as a result of this study. I certify that I will conduct my study in an ethical manner that complies with all relevant MSU policies and procedures.

This form is the official documentation of the formal design or plan of a research activity submitted to the IRB for review. Failure to provide all required information will result in return of your application for correction prior to review.

Tina Barger
Principal Investigator

4/18/17
Date

Statement of Approval by Faculty Mentor (required for all students):
I have read and do confirm the accuracy of this application, and I accept responsibility for the conduct of this activity, the supervision of participants, and the maintenance of informed consent documentation as required by the IRB. I certify that my student(s) will conduct this study in an ethical manner that complies with all relevant MSU policies and procedures.

Kenealy Pam
Faculty Mentor

1/18/17
Date

REQUIRED INFORMATION (Applies to all levels of review)
In order for the IRB to evaluate your application, the following required materials must be provided with this application (one original for Level 1 review, one original and one copy for Level 2 review and one original and eight copies for level 3 review). Protocols will be returned if incomplete or if an insufficient number of copies are submitted.

YES☒ NA☐	A copy of all interview or survey questions, evaluation instruments (including standardized questionnaires), and data collection forms to be used (If copyright agreements forbid photocopying of a standardized instrument, include an original with a note requesting that it be returned to the investigator.)
YES ☒ NA☐	Informed consent document(s), either a consent form or cover letter, or parental/guardian permission and minor assent document(s), if necessary
YES ☒ NA☐	Letter of approval from cooperating institutions (includes gathering data at a site)
YES ☐ NA☒	Scripts of statements or questions to be read to subjects which should include the following information: participant time commitment, course credit procedures to be used, voluntary nature of the study and that subjects are free to discontinue participation at any time without prejudice from the investigator, how data will be handled - anonymous or confidential.
YES☒ NA☐	A copy of any advertisement, recruitment letter, sign-up folder, etc. that will be used to obtain participants
YES☐ ON☒ FILE	A copy of the required training certification (the IRB will not review any protocol until all principal investigators, faculty mentors, university personnel and others who will be assisting with the data collection have completed the required training and submitted a certificate or score to the IRB Coordinator)
YES☒	A *pdf* copy of the signed, completed *Application for Review* sent to the IRB via email at msu.irb@murraystate.edu and one paper copy sent to the IRB office
YES☒	An editable *Word* document copy of all attachments (surveys, consent documents, recruitment materials, data collection forms, etc.) sent to the IRB via email at msu.irb@murraystate.edu and one paper copy sent to the IRB office

This form is the official documentation of the formal design or plan of a research activity submitted to the IRB for review. Failure to provide all required information will result in return of your application for correction prior to review.

LEVEL OF REVIEW
Activities involving no more than minimal risk to participants and in which the only involvement of humans will be in one or more of the categories defined in Section 6.1 and 6.2 of the *Procedures and Guidelines* as Level 1 or Level 2 research will be reviewed by the IRB as a Level 1 or 2 application. "Minimal risk" means the probability and magnitude of harm or discomfort anticipated in the research are not greater in and of themselves from those ordinarily encountered in daily life or during the performance of routine physical or psychological examination or tests (45 CFR 46.102 (I)). These categories do not apply to research involving prisoners, fetuses, pregnant women, or human in vitro fertilization. Activities involving those populations and/or more than minimal risk will be reviewed as a a Level 3 application. The investigator is responsible for initially identifying the category he/she feels is appropriate.
For continuing activities, investigators should use the *Project Update and Closure* form.

After reading Section 6 of the MSU *Procedures and Guidelines*, state the category that you feel best applies to your research project: (Level 1, 2, or 3) 1

Note: The final determination of the appropriate level of review will be made by the IRB Coordinator.

PART B

1. Does this study involve deception (i.e., withholding from or giving false or misleading information to subjects which would reasonably affect their decision of whether or not to participate)? ☐YES ☒NO

2. Will procedures cause any degree of physical or emotional discomfort greater than normally encountered in everyday life, risk of physical injury, invasion of privacy, threat to dignity, harassment, or otherwise present potential harm to subjects? ☐YES ☒NO

3. Other than on consent forms, will the subjects be identified (i.e., names, case identifiers, audio or video recordings, photographs, or other information gathered on people or institutions that would allow subjects to be identified) ***and*** could their participation in this research lead to personal harm to themselves or their reputation? ☐YES ☒NO

4. Are subjects from any of the categories listed below?
   a. Minors (less than 18 years of age) ☐YES ☒NO
   b. Prisoners or persons who are under criminal sanctions ☐YES ☒NO
   c. Persons with diminished mental capacity (e.g., mental retardation, neurological, psychiatric, or related disability) ☐YES ☒NO
   d. Persons in a residential program (e.g., hospital, developmental center, group home, etc.) ☐YES ☒NO
   e. Current clients of a human service program (e.g., counseling center, clinic, etc.) or clients who have **not** given permission for their unidentified clinical data to be used in research studies ☐YES ☒NO
   f. Pregnant women ☐YES ☒NO
   g. Traumatized, terminally ill or comatose patients ☐YES ☒NO

If your research falls into one of the categories listed under Level 1 review and if you answered NO to all parts of questions 1-4, complete Part C for Level 1 review.

If your research does not fall into one of the categories listed under Level 1 or you answered YES to any part of questions 1-4, complete Part D for Level 2 or 3 review.

Part C

Level 1 Review

I. PROJECT SIGNIFICANCE: As part of its risk-benefit analysis, the IRB must have information on the purpose of the research, why the research is necessary, what outcomes are expected from it (both general and specific), and in what way those outcomes will add to or benefit generalizeable knowledge.

The study will contribute to the unique body of literature regarding occupationally based novice CTE teachers' perceived need for student-to-student interaction in distance education. The study will contribute to the broader body of literature on the topic of post-secondary student perceptions of student-to-student interaction in distance education, as well as CTE student perceptions of student-to-student interaction in distance education. Implications for the body of research on adult learners' perceptions of student-to-student interaction in distance education will also be discovered.

II. PARTICIPANT SELECTION:

a) Does this research involve the use of existing data, documents, records, pathological or diagnostic specimens?	☐YES	☒NO	
b) Will participants be less than 18 years of age?	☐YES	☒NO	☐NA
c) Will participants be students at Murray State University?	☒YES	☐NO	☐NA
d) Will any participants be unable to speak, read or understand English?	☐YES	☒NO	☐NA
e) Will you be specifically recruiting members of any minority population? If *yes*, specify the population(s):	☐YES	☒NO	☐NA

Describe how participants will be selected, enlisted or recruited. You must attach a copy of any recruitment materials used in this study including a copy of a script that will be used to invite people to be part of the study. One additional copy of these items must be submitted with the protocol via e-mail to msu.irb@murraystate.edu.

The population will include students from occupationally based teacher education programs with online components in their induction programs. The sample will include post-secondary institutions in Kentucky, and may potentially include institutions in Oklahoma, Missouri, or West Virginia.

III. PROCEDURES/METHODS:

Answer the following questions to provide an explanation of why this research needs to be conducted using the specific methodology, participants, and procedures proposed in this protocol:

a. What is your research question or hypothesis?

Two research questions will be addressed:

1. What are the expectations of distance education novice occupationally based teachers regarding student-to-student interaction in distance education classes?

2. Is there a difference in the expectations of distance education novice occupationally based teachers regarding student-to-student interaction in distance education classes, according to the following dependent variables?

- gender;
- personality type;

- work status;
- student status;
- generational classification; and
- number of distance education courses taken.

b. Describe the specific procedures and methodology that will be used in the study, including the frequency, duration and location of each procedure and the materials that support that methodology.

Information about the perceptions of occupationally based novice Career and Technical Education (CTE) teachers who are working toward completion of requirements to obtain a teaching certificate will be gathered. The study will be descriptive in design. The study will include CTE teaching professionals who are pursuing alternative teaching certifications offered in the online or distance format. Students from Kentucky will paraticipate in the study. Students in Oklahoma, Missouri, and West Virginia may also participate in the study.

A similar study was conducted with graduate students by Moore, Warner and Jones (2016). The Moore et al. (2016) survey instrument will be used with permission. The survey instrument had been field tested previously, and was deemed to possess content validity prior to administration by Moore et al. (2016). In order to assess the internal consistency of the survey instrument, the original researchers calculated Cronbach's alpha on the field test results, and the resulting coefficient was .95 which indicated a high degree of internal consistency (Moore et al., 2016). As a result, the researcher considers the Moore et al. (2016) instrument to possess content validity.

Minor changes were made to the instrument in order to customize for the specific population of this study. Following the revisions, the instrument was piloted by experts in the field. Revisions were made when deemed necessary. The instrument was formatted using Survey Monkey and will be distributed to the population of occupationally based novice career and technical education teachers who participate in distance course work in order to attain a CTE teaching certification. Student emails will be attained through CTE leaders of the states with the alternative certification programs in place. The study sample will include novice CTE teachers in certification programs that utilize distance course work from Kentucky. Students from Oklahoma, Missouri, and West Virginia may also be included in the sample.

The instrument will include 18 Likert-type statements designed to gain insights into student perceptions of student-to-student interaction within distance course work and 16 demographic questions. The electronic instrument will be emailed to students enrolled in an occupationally based novice CTE teaching program that leads to certification. An advance notice will be sent to recipients via email, and the instrument will be sent via email 24 hours later. A reminder email will be sent 10 days after this in order to increase the response rate. Respondents will complete the survey instrument prepared through Survey Monkey. Responses will be determined and statistical analysis will be completed after 15 days.

Moore, G., Warner, W. and Jones, D. (2016). Student-to-student interaction in distance education classes: What do graduate students want? Journal of Agricultural Education, 57(2), 1-13.

c. Describe any compensation that participants will receive in return for their participation.

n.a.

IV. INFORMED CONSENT PROCESS: Describe the informed consent process and attach a copy of all consent and/or assent documents. The informed consent document is NOT the process. It is the evidence that shows that your subjects have been given the information that they need to make an informed decision about whether or not to participate in your research project. You must be explicit. You must give a step-by-step description of how you intend to inform your subjects of the details of their involvement in your research activity. It is the principal investigator's responsibility to insure that the consent and/or assent documents are written at a level that can be easily understood by the subject population. One additional copy of these items must be submitted with the protocol via e-mail to msu.irb@murraystate.edu.

An email will be sent to the preattained list of occupationally based novice career and technical education teachers working toward teaching certification in an online/distance education format. It will briefly describe the study and explain that the information will be kept confidential and no responses will be linked to specific respondents. A link will be provided to the informed consent letter. The email will state that completion of the survey is voluntary and may be stopped at any time prior to submission. It will also state that completion and submission of the survey indicates consent to participate.

The principal investigator's information will be given:

Tina Barger, P-20 & Community Leadership Doctoral Student
& Adjunct Instructor
Department of Adolescent, Career & Technical Education
Murray State University
3241 Alexander Hall
Murray, KY 42071
tbarger1@murraystate.edu
(618)922-7370

The Committee Chairperson's information will be given for contact regarding conduct:

Kemaly Parr, PhD
Director, Career and Technical Education
Assistant Professor
Murray State University
Department of Adolescent, Career and Special Education
3241 Alexander Hall
Murray, KY 42071
kparr@murraystate.edu
(270)809-2854

V. CONFIDENTIALITY AND ANONYMITY: Describe how participants' privacy will be maintained and confidentiality be guaranteed [including how long confidential documents and information will be retained after the end of the study and the specific building address where they will be retained and what will be done with the materials at the end of the retention time. (Federal regulations require that these materials be retained for at least three years after the study is closed.) If this study involves using a sign-

up folder for recruitment of participants, explain how this document will be handled when the recruitment is finished (will it be kept with the confidential study materials, shredded, etc.).

Participant anonymity will be maintained. Responses will not be directly linked to specific participants in the study. Responses will only be linked to participants for follow-up purposes with non-respondents. Data from the Survey Monkey survey instrument will be maintained for the required period of three years. After three years, the data will be deleted.

VI. CONFLICTS OF INTEREST and/or PROBLEMS OF UNDUE INFLUENCE:
Describe any possible issues about which the IRB should be aware concerning these matters.

a. During the project period, will any of your subjects include students enrolled in classes taught by you or your faculty mentor? ☒Yes ☐No

If "Yes," please answer the following questions. If "No," please go to section 'b.'

1. During the project period, is participation in research a course requirement for any courses taught by you or your faculty mentor? ☐Yes ☒No

1a. If *yes*, is there an equitable alternative available for students to complete the requirement other than by participating in research studies? ☐Yes ☐No

If the answer to question 1a above is *no* (i.e., there is no equitable alternative to complete the course requirement), then this research cannot use any of the students in any of your or your faculty mentor's classes that have a research participation requirement. Explain how you will ensure that students in those classes do not participate in this research:

Survey data will be submitted anonymously by my students who may choose to participate. Student participation will be completely voluntary.

If the answer to question 1a is *yes* (i.e., there is an equitable alternative to complete the course requirement), describe the equitable alternative:

2. During the project period, will you or the faculty mentor offer extra credit to any of the students in your or your faculty mentor's classes in exchange for participation in this research study?
☐Yes ☒No

2a. If *yes*, is there an equitable alternative available to get extra credit for students who choose not to participate in the study?
☐Yes ☐No

If the answer to 2a is *no* (i.e., there is no equitable alternative to get extra credit), then the research cannot use as subjects any of the students in your or your faculty mentor's classes where extra credit is offered for research participation. Explain how you will ensure that students in those classes do not participate in this research:

No students will be offered extra credit for participation in the study.

If the answer to 2a is *yes*, (i.e., there is an equitable alternative available to receive extra credit) describe the equitable alternative:

b. Are you using people with whom you otherwise interact in a work environment?
☐Yes ☒No

c. If you plan to conduct research at an off-campus site, are you also employed at that site?
☐Yes ☒No ☐Not applicable

d. Do any members of the subject population work for you or any member of your family?
☐Yes ☒No

e. Do you have any financial interest in the outcome of this research?
☐Yes ☒No

f. Are you using family members or close friends in your research?
☐Yes ☒No

If you answered *yes* to b, c, d, e or f or if you have another conflict of interest or problem of undue influence, you must describe how you will handle the situation so that the rights of the subject population will be protected.

- **Copy only the pages of the forms that apply to your research (i.e., Parts A, B, and C for Level 1).**
- **For Level 1, submit a signed *pdf* copy of the protocol approval form and an editable *Word* file of all supporting materials (cover letter, consent form, surveys, recruitment fliers, data collection instrument, etc.) to the IRB via email at msu.irb@murraystate.edu.**

MURRAY STATE UNIVERSITY

Institutional Review Board

328 Wells Hall
Murray, KY 42071-3318
270-809-2916• msu.irb@murraystate.edu

TO: Kemaly Parr
Education Leadership and Counseling

FROM: Institutional Review Board
Jonathan Baskin, IRB Coordinator

DATE: 2/16/2017

RE: Human Subjects Protocol I.D. – IRB # 17-090

The IRB has completed its review of your student's Level 1 protocol entitled *Occupationally Based Novice Career and Technical Education (CTE) Teachers' Perceived Need for Student-to-Student Interaction in Distance Coursework to Gain Teaching Certification.* After review and consideration, the IRB has determined that the research, as described in the protocol form, will be conducted in compliance with Murray State University guidelines for the protection of human participants.

The forms and materials that have been approved for use in this research study are attached to the email containing this letter. These are the forms and materials that must be presented to the subjects. Use of any process or forms other than those approved by the IRB will be considered misconduct in research as stated in the MSU IRB Procedures and Guidelines section 20.3.

This Level 1 approval is valid until 2/15/2018.

If data collection and analysis extends beyond this time period, the research project must be reviewed as a continuation project by the IRB prior to the end of the approval period, 2/15/2018. You must reapply for IRB approval by submitting a Project Update and Closure form (available at murraystate.edu/irb). You must allow ample time for IRB processing and decision prior to your expiration date, or your research must stop until such time that IRB approval is received. If the research project is completed by the end of the approval period, then a Project Update and Closure form must be submitted for IRB review so that your protocol may be closed. It is your responsibility to submit the appropriate paperwork in a timely manner.

The protocol is approved. You may begin data collection now.

MSU USE ONLY
IRB Log No.: _____
MSU Proposal No: _____

Institutional Review Board (IRB)
Application for Amendment to a Previously Approved Protocol
For Investigations Involving Human Participants
Murray State University

It is the principal investigator's responsibility to obtain IRB approval *PRIOR* to revising or altering the approved research protocol or Informed Consent documents *IN ANY WAY*. If the principal investigator is a student, it is the faculty sponsor's responsibility to ensure that IRB written approval is obtained *PRIOR* to revising or altering the approved research protocol or Informed Consent documents. You must submit the signed form as a pdf document and the appropriate materials that support that request as *Word* documents to msu.irb@murraystate.edu.

Principal Investigator's Name: Tina Barger
Faculty Sponsor's Name: Dr. Kemaly Parr
IRB Protocol Number: 17-090
Project Title: Occupationally Based Novice Career & Technical Education (CTE) Teachers' Perceived Need for Student-to-Student Interaction in Distance Coursework to Gain Teaching Certification

Description of the change being requested to an approved protocol or informed consent document: Addition of three questions to the survey instrument.

1. Did you enter the classroom directly from industry, and have to complete coursework toward certification? _____ Yes _____ No

2. Have you taken courses online to pursue teacher certification? _____ Yes _____ No

3. In what state is the university where you have completed online or distance course work toward your certification?

_____ Kentucky

_____ Missouri

_____ Oklahoma

_____ West Virginia

_____ Other (Please specify) _____

**Note: Clarification of some of the language of the methodology on the initial IRB Application has been made. Please see highlighted areas on the attached revised IRB Application document.

Reason for the change: The two qualifying questions were added to verify that all respondents are occupationally based novice career & technical education teachers, and that they have taken online/distance education coursework in pursuit of their certification.

The additional question regarding location was added to provide additional descriptive demographic information about various CTE programs in other states.

**Clarifications of the methodology have been made on the attached IRB Application form, as a result of issues accessing email contacts for the specified population. The highlighted revisions were made to clarify the methodology for contacting participants and other miscellaneous methodological details.

Please attach a copy of the current approved consent form. If you are requesting permission to alter this form, please attach a copy of the revised form that you wish to use with the requested changes highlighted on it.

You may not implement any changes to the approved protocol or informed consent documents without prior written approval of the IRB. You must submit this signed form and the appropriate supporting documents via email to msu.irb@murraystate.edu.

Assurance Statement: I certify that to the best of my knowledge, the changes that I am requesting will not alter the risk/benefit ratio as presented in the originally approved protocol. If the changes that I am requesting will alter this ratio, I understand that I MUST resubmit the full protocol with the request for alteration or revision to the IRB for a complete review.

A. Tina Barger 3/16/2017
Principal Investigator Date

Approval by faculty sponsor (required for all students):
I have read and do confirm the accuracy of this application, and I accept responsibility for the conduct of this activity.

B. Kenneth Pan 3/16/17
Faculty Sponsor Date

MURRAY STATE UNIVERSITY

Institutional Review Board

328 Wells Hall
Murray, KY 42071-3318
270-809-2916• msu.irb@murraystate.edu

TO: Kemaly Parr
Education Leadership and Counseling

FROM: Institutional Review Board
Jonathan Baskin, IRB Coordinator

DATE: 3/29/2017

RE: Amendment to Human Subjects Protocol I.D. – IRB # 17-090

The IRB has completed its review of the amendment submitted for your student's Level 1 protocol entitled *Occupationally Based Novice Career and Technical Education (CTE) Teachers' Perceived Need for Student-to-Student Interaction in Distance Coursework to Gain Teaching Certification.* After review and consideration, the IRB has determined that the changes, as described in the amendment application, will be conducted in compliance with Murray State University guidelines for the protection of human participants.

The updated forms and materials that have been approved for use in this research study are attached to the email containing this letter. These are the forms and materials that must be presented to the subjects. It is your responsibility to ensure that only the updated materials are used from this point forward. Use of any process or forms other than those approved by the IRB will be considered misconduct in research as stated in the MSU IRB Procedures and Guidelines section 20.3.

This amended Level 1 protocol is valid until 2/15/2018.

If data collection and analysis extends beyond this time period, the research project must be reviewed as a continuation project by the IRB prior to the end of the approval period, 2/15/2018. You must reapply for IRB approval by submitting a Project Update and Closure form (available at murraystate.edu/irb). You must allow ample time for IRB processing and decision prior to your expiration date, or your research must stop until such time that IRB approval is received. If the research project is completed by the end of the approval period, then a Project Update and Closure form must be submitted for IRB review so that your protocol may be closed. It is your responsibility to submit the appropriate paperwork in a timely manner.

You may begin data collection using the approved changes.

RacerMail
email | calendar | drive

Tina Barger <tbarger1@murraystate.edu>

Question Re: IRB Protocol 17-090

3 messages

Tina Barger <tbarger1@murraystate.edu> Tue, Oct 3, 2017 at 10:39 AM
To: Jonathan Baskin <jbaskin@murraystate.edu>
Cc: Kemaly Parr <kparr@murraystate.edu>, Randal Wilson <rwilson6@murraystate.edu>, Barbara Washington <bwashington@murraystate.edu>

Jonathan,

I met with my chairperson, Dr. Kemaly Parr yesterday regarding my dissertation, and she believes it would be best to remove the word "Novice" from my title since it turns out that this term isn't really representative of the majority of survey participants who responded to my survey. This would make my title:

Occupationally Based Career & Technical Education (CTE) Teachers' Perceived Need for Student-to-Student Interaction in Distance Coursework to Gain Teaching Certification

The word "novice" would be removed from the title and in my paper. She mentioned that she spoke to you yesterday, but asked me to email you with all of the details. Could you confirm for me that this would be acceptable with the IRB?

Thank you for the information.

Tina Barger, Doctoral Student
Protocol 17-090

Jonathan Baskin <jbaskin@murraystate.edu> Tue, Oct 3, 2017 at 11:12 AM
To: Tina Barger <tbarger1@murraystate.edu>
Cc: Kemaly Parr <kparr@murraystate.edu>, Randal Wilson <rwilson6@murraystate.edu>, Barbara Washington <bwashington@murraystate.edu>

Tina,

That will be fine. I'll make a note of the change in my records. You can remove the word "novice" from your study title in any document that references it.

Two minor notes - moving forward, all communication regarding an active student protocol will need to come from your faculty advisor. This is to make sure that they are in the loop on what's going on with the protocol since they are ultimately responsible for it. Also, to assist with recordkeeping, please send any protocol specific emails to the msu.irb@murraystate.edu. My personal one is fine for general questions or comments, though.

Thanks for checking!

[Quoted text hidden]

--

Jonathan S. Baskin
Institutional Review Board Coordinator
Office of the Provost/VPAA
Murray State University
Office: (270) 809-2916

Appendix F: Permission to Use Subjects

UNIVERSITY OF CENTRAL MISSOURI
LEARNING TO A GREATER DEGREE

Office of Sponsored Programs and Research Integrity
Administration 315
Warrensburg, MO 64093
Office 660-543-4264
Grants/Contracts: osp@ucmo.edu
Compliance: researchreview@ucmo.edu

Exempt Review
4/13/2017
Protocol Number: 510

Dear Michelle Conrad:

Your research project, 'Occupationally Based Novice Career and Technical Education (CTE)', was approved by the University of Central Missouri Human Subjects Review Committee on 4/12/2017.

If an adverse event (such as harm to a research participant) occurs during your project, you must IMMEDIATELY stop the research unless stopping the research would cause more harm to the participant. If an adverse event occurs during your project, notify the committee IMMEDIATELY at researchreview@ucmo.edu.

The following will help to guide you. Please refer to this letter often during your project.

- If you wish to make changes to your study, submit an "Amendment" through Blackboard under the "Amendment and Renewals" tab. **You may not implement changes to your study without prior approval of the UCM Human Subjects Review Committee.**
- If the nature or status of the risks of participating in this research project change, submit an "Amendment" through Blackboard under the "Amendment and Renewals" tab. **You may not implement changes to your study without prior approval of the UCM Human Subjects Review Committee**.
- **When you have completed your collection of data, please submit the "Final Report" found on Blackboard under the "Final/Renewal Report" tab.**

If you have any questions, please feel free to contact me at researchreview@ucmo.edu.

Sincerely,

Kathy Schnakenberg

Kathy Schnakenberg
Program Administrator/Research Compliance Officer
Office of Sponsored Programs and Research Integrity
University of Central Missouri

cc: tbarger1@murraystate.edu

RacerMail
email | calendar | drive

Tina Barger <tbarger1@murraystate.edu>

Question About Potentially Administering Surveys to CTE Students at WVU

12 messages

Tina Barger <tbarger1@murraystate.edu> Tue, Apr 25, 2017 at 4:49 PM
To: brenda.tuckwiller@mail.wvu.edu, David Yost <David.Yost@mail.wvu.edu>, Kemaly Parr <kparr@murraystate.edu>, Jonathan Baskin <jbaskin@murraystate.edu>, Lilo Ast <Lilo.Ast@mail.wvu.edu>

Dr. Tuckwiller:

I am a doctoral student at Murray State University in Murray, KY. I am working under the supervision of my Chairperson, Dr. Kemaly Parr, CTE Director at Murray State University. I am conducting research toward my dissertation on Occupationally Based Novice Career and Technical Education (CTE) Teachers' Perceived Need for Student-to-Student Interaction in Distance Coursework to Gain Teaching Certification.

I have been in contact with Dr. David Yost and the IRB Office of WVU to determine if Dr. Yost might be able to make my survey instrument available to the CTE students working toward their teaching certification at WVU. (I understand that he would not be able to encourage students to participate in the survey, and would only be able to "make it available to them" via a forwarded email from me.) He indicated that he would be willing to do this if the IRB Office approves. Lilo Ast, of the IRB Office, has indicated in a previous email that, since there would be no "recruiting" of students, I would simply need administrative approval from a Department Chair or Dean. (I believe Dr. Yost may have forwarded you the email thread of this conversation.) Dr. Yost indicated that I should contact you to seek this approval.

I am attaching a MS Word document of the survey instrument that I would be using. (The actual instrument would be a Survey Monkey link found in the attached emails.) I am also attaching my Murray State University IRB letter of approval for my study, a copy of my IRB application for Murray State, and copies of the content of the email communications that I would be asking Dr. Yost to forward to his students.

Could you please advise me as to whether it would be possible for Dr. Yost to make my survey instrument available to your students via a forwarded email? Thank you for your consideration. Please let me know if I can provide any additional information.

Sincerely,

Tina Barger, Doctoral Student
& Adjunct Instructor
Murray State University
P-20 Education and Community Leadership
3241 Alexander Hall
Murray, KY 42071
618.922.7370
tbarger1@murraystate.edu

7 attachments

CTE DISTANCE EDUCATION SURVEY INSTRUMENT_FINAL_Revised 3_16_17.docx
20K

irb_application_RV_3_16_17.doc
161K

IRB Application_Signatures_RV_3_16_17.pdf
750K

17-090_tbarger_IRB approval_amendment 1.pdf
112K

Recruitment Email_2_13_17_FINAL.docx
13K

Survey Distribution Email_FINAL_with Link and Due Date.docx
14K

Ten Day Follow-up Email_FINAL_WITH SURVEY LINK.docx
14K

BLTuckwiller <BLTuckwiller@mail.wvu.edu> Wed, Apr 26, 2017 at 4:21 AM
To: Tina Barger <tbarger1@murraystate.edu>, brenda.tuckwiller@mail.wvu.edu, David Yost <David.Yost@mail.wvu.edu>, Kemaly Parr <kparr@murraystate.edu>, Jonathan Baskin <jbaskin@murraystate.edu>, Lilo Ast <Lilo.Ast@mail.wvu.edu>

Ms. Barger,

I will be pleased to make your survey available to the beginning West Virginia Career and Technical Education Teachers. Dr. David Yost will continue to be your direct contact as your instrument becomes ready for distribution as described in your attached e-mail.

Best wishes as you gather and analyze your data.

Brenda L. Tuckwiller, Ed.D.
Chair, Career and Technical Education
Director, WV CTE Teacher Prep and Certification Program
West Virginia University Institute of Technology
3415 Orndorff Hall
Montgomery, WV 25136
[Quoted text hidden]

Tina Barger <tbarger1@murraystate.edu> Wed, Apr 26, 2017 at 1:42 PM
To: BLTuckwiller <BLTuckwiller@mail.wvu.edu>
Cc: David Yost <David.Yost@mail.wvu.edu>, Kemaly Parr <kparr@murraystate.edu>

Dr. Tuckwiller,

Thank you so much for your assistance. I will send the first email to Dr. Yost today for distribution.

Sincerely,

Tina Barger
[Quoted text hidden]

Appendix G: Informed Consent for Participants

Research Consent Letter

Study Title: Occupationally Based Novice Career and Technical Education (CTE) Teachers' Perceived Need for Student-to-Student Interaction in Distance Coursework to Gain Teaching Certification

Investigator: Tina Barger, P-20 & Community Leadership Doctoral Student
Faculty Sponsor Information for Information Regarding Conduct:
Kemaly Parr, PhD, Director Career and Technical Education, Murray State University, Department of Adolescent, Career and Special Education, 3241 Alexander Hall, Murray, KY 42071, (270)809-2854, kparr@murraystate.edu

You are being invited to participate in a research study conducted through Murray State University. In order to comply with federal regulations, your agreement to participate in this project is necessary. You must be at least 18 years of age to participate. The investigator will explain to you in detail the purpose of the project, the procedures to be used, and the potential benefits and possible risks of participation. You may ask him/her any questions you have to help you understand the project. A basic explanation of the project is written below. Please read this explanation and discuss with the investigator any questions you may have. You will be given a copy of this form to keep.

1. **Nature and Purpose of the Project:** The purpose of this study is to contribute to the unique body of literature regarding occupationally based novice CTE teachers' perceived need for student-to-student interaction in distance education. The study will contribute to the broader body of literature on the topic of post-secondary student perceptions of student-to-student interaction in online or distance education, as well as CTE student perceptions of student-to-student interaction in distance education. Implications for the body of research on adult learners' perceptions of student-to-student interaction in online or distance education will also be discovered.
2. **Explanation of Procedures:** The procedures will involve surveying occupationally based novice career and technical education teachers' perceived need for student-to-student interaction in online coursework. This research activity will take approximately 10 minutes to complete.
3. **Discomforts and Risks:** No known risks or discomforts.
4. **Benefits:** None for participants, but responses will help us to understand students' perceived desire for student-to-student interaction in online/distance coursework.
5. **Confidentiality:** All of your responses will remain anonymous. (No one will know which answers are yours.)
6. **Refusal/Withdrawal:** Your participation is strictly voluntary and you are free to withdraw/stop participating at any time with absolutely no penalty.

I acknowledge that the risks and benefits involved and the need for the research have been fully explained to me; that I have been informed that I may withdraw from participation at any time without prejudice or penalty; and the investigator has offered to answer any inquiries that I may make concerning the procedures to be followed or my rights as a participant, and has answered to my satisfaction any questions that I have.

I understand that by clicking the link below, I voluntarily consent to participate in this research project.

THE DATED APPROVAL STAMP ON THIS DOCUMENT INDICATES THAT THIS PROJECT HAS BEEN REVIEWED AND APPROVED BY THE MURRAY STATE UNIVERSITY INSTITUTIONAL REVIEW BOARD (IRB) FOR THE PROTECTION OF HUMAN SUBJECTS. ANY QUESTIONS ABOUT THE CONDUCT OF THIS PROJECT SHOULD BE BROUGHT TO THE ATTENTION OF DR. KEMALY PARR AT (270)809-2854 OR kparr@murraystate.edu. ANY QUESTIONS ABOUT YOUR RIGHTS AS A RESEARCH PARTICIPANT SHOULD BE BROUGHT TO THE ATTENTION OF THE IRB COORDINATOR AT (270) 809-2916, 328 WELLS HALL, MURRAY, KY 42071. If you would like to know the results of this study, please contact Dr. Kemaly Parr.

MURRAY STATE UNIVERSITY
Institutional Review Board
Approved: 2/16/17 Expires: 2/15/18