



University of North Florida  
**UNF Digital Commons**

---

UNF Graduate Theses and Dissertations

Student Scholarship

---

2020

## Examining the Impacts of Virtual Mentoring On College Students' Leadership Efficacy a Quantitative Study of C.A.M.P Osprey

Justin Michael Lerman  
*University of North Florida, [justinlerman@gmail.com](mailto:justinlerman@gmail.com)*

Follow this and additional works at: <https://digitalcommons.unf.edu/etd>



Part of the [Educational Leadership Commons](#)

---

### Suggested Citation

Lerman, Justin Michael, "Examining the Impacts of Virtual Mentoring On College Students' Leadership Efficacy a Quantitative Study of C.A.M.P Osprey" (2020). *UNF Graduate Theses and Dissertations*. 995. <https://digitalcommons.unf.edu/etd/995>

This Doctoral Dissertation is brought to you for free and open access by the Student Scholarship at UNF Digital Commons. It has been accepted for inclusion in UNF Graduate Theses and Dissertations by an authorized administrator of UNF Digital Commons. For more information, please contact [Digital Projects](#).  
© 2020 All Rights Reserved



VIRTUAL MENTORING AND LEADERSHIP EFFICACY

EXAMINING THE IMPACTS OF VIRTUAL MENTORING ON COLLEGE STUDENTS'  
LEADERSHIP EFFICACY

A QUANTITATIVE STUDY OF C.A.M.P OSPREY

by

Justin Lerman

A dissertation submitted to the department of Leadership, School Counseling, and Sports

Management in partial fulfillment of the requirements for the degree of

Doctor of Education in Educational Leadership

UNIVERSITY OF NORTH FLORIDA

COLLEGE OF EDUCATION AND HUMAN SERVICES

December 2020

© Justin Lerman

### **Abstract**

Mentoring involves a collaborative and reciprocal sharing of knowledge for professional development. In leadership, a mentor is an individual who currently serves as a leader while guiding someone who aspires to be a leader in the future. This study evaluated how virtual mentoring compares to face-to-face mentoring on the development of leadership self-efficacy for college students. This study undertook a comparative analysis of face-to-face mentoring sessions and virtual mentoring sessions to explore the research question and hypotheses. The mentoring process involved a dyadic relationship where personalities create a positive and effective learning experience. A comparative analysis permitted the study to determine what differences occur in leadership efficacy for college students participating in virtual versus face-face mentoring. Efficacy was assessed on the students' leadership abilities based on their evaluation of leadership mentoring sessions. The study realized that online learning was superior to relaying critical leadership skills to the student than face-to-face learning. As an implication, face-to-face mentoring experiences are not always possible due to geographical and budgetary constraints, virtual mentoring eliminates those barriers while still supplying a community learning experience. Additionally, virtual meetings also allow for access to marginalized populations that may not typically be available. The study was limited by the small sample population.

**Keywords:** Virtual mentoring, online mentoring, C.A.M.P OSPREY

**Dedications**

Dedicated to my Mom & Dad.

## Table of Contents

<i>Abstract</i> .....	2
<i>Dedications</i> .....	3
<i>List of Tables</i> .....	4
<i>List of Figures</i> .....	5
<i>Chapter 1: Introduction</i> .....	6
<b>Problem Statement</b> .....	6
<b>Purpose Statement</b> .....	7
<b>Study Definitions</b> .....	8
<b>Research Question</b> .....	9
<b>Procedures</b> .....	9
<b>Background Information on C.A.M.P. Osprey</b> .....	10
<b>Theoretical Framework</b> .....	11
<b>Selection of Participants</b> .....	13
<b>Significance of the Study</b> .....	13
<b>Organization of the Study</b> .....	14
<i>Chapter 2: Literature Review</i> .....	15
<b>Literature Search Criteria</b> .....	15
<b>Effective Mentoring Practices</b> .....	15

<b>Mentoring Challenges .....</b>	<b>19</b>
<b>Benefits of Mentoring.....</b>	<b>21</b>
<b>Benefits of Leadership Mentoring.....</b>	<b>22</b>
<b>Self-Efficacy .....</b>	<b>23</b>
<b>Teaching Leadership Through Example .....</b>	<b>28</b>
<b>Encouraging Leadership Behavior in Mentees .....</b>	<b>29</b>
<b>Mentoring in the K-12 Grades.....</b>	<b>30</b>
<b>Mentoring High School Students .....</b>	<b>30</b>
<b>Mentoring in the Younger Grades .....</b>	<b>31</b>
<b>Mentoring in a Multicultural Environment .....</b>	<b>32</b>
<b>What Mentees Have to Say About Mentors .....</b>	<b>34</b>
<b>Summary.....</b>	<b>35</b>
<i>Chapter 3: Research Methods .....</i>	<i>37</i>
<b>Data Collection .....</b>	<b>37</b>
<b>Ethical Considerations .....</b>	<b>39</b>
<b>Leadership Efficacy Survey .....</b>	<b>39</b>
<b>Data Analysis.....</b>	<b>40</b>
<b>Reliability and Validity .....</b>	<b>41</b>
<b>Limitations .....</b>	<b>42</b>

**Conclusion.....43**

*Chapter 4: Results ..... 45*

**Introduction .....45**

**Demographics.....45**

**Face-to-Face and Virtual Mentoring.....48**

**Gender .....52**

**Percentage Changes .....56**

*Chapter 5: Discussion ..... 59*

**Introduction .....59**

**Summary of Findings.....59**

**Trust.....63**

**Gender .....66**

**Performances across Attributes .....70**

**Impacts of COVID-19 on the Research .....71**

**Implications for Further Practice .....73**

**Leadership Development in the Corporate World. ....73**

**Leadership, Pedagogy and Professional Development in K-12.....74**

*References..... 75*

*Appendix A..... 87*

*Appendix B*..... 98



**List of Tables**

Table 1 - Demographics.....	45
Table 2 - Mentoring Method.....	46
Table 3 - Gender .....	46
Table 4 - Age .....	46
Table 5 - Race .....	47
Table 6 - Race Categories .....	47
Table 7 - Active Listening .....	48
Table 8 - Face-to-Face and Virtual Mentoring .....	49
Table 9 - Skills by Gender .....	53
Table 10 - Skills Trend .....	60
Table 11 - Post Skills Compared .....	67

### List of Figures

Figure 1 - Face-to-Face.....	<b>Error! Bookmark not defined.</b>
Figure 2 - Online.....	<b>Error! Bookmark not defined.</b>
Figure 3 - Gender Performance 1 of 3 .....	<b>Error! Bookmark not defined.</b>
Figure 4 - Gender Performance 2 of 3 .....	<b>Error! Bookmark not defined.</b>
Figure 5 - Gender Performance 3 of 3 .....	<b>Error! Bookmark not defined.</b>
Figure 6 - Percentage Change 1 of 3.....	<b>Error! Bookmark not defined.</b>
Figure 7 - Percentage Change 2 of 3.....	<b>Error! Bookmark not defined.</b>
Figure 8 - Percentage Change 3 of 3.....	<b>Error! Bookmark not defined.</b>
Figure 9 - Trust .....	<b>Error! Bookmark not defined.</b>

Examining the Impacts of Virtual Mentoring on College Students' Leadership Efficacy.

A Quantitative Study of C.A.M.P Osprey.

### **Chapter 1: Introduction**

Mentoring occurs when an individual with more knowledge or experience in a field provides guidance and/or advice to someone with less knowledge or experience. In terms of leadership, a mentor is an individual who currently serves as a leader while guiding someone who aspires to be a leader in the future. During this guidance, mentors guide their mentees by developing the skills and tools needed to become successful leaders. It can be argued that truly effective mentoring requires a certain level of intimacy, which can, sometimes, be facilitated by physical proximity. More specifically, being in the same office or setting would be highly beneficial for facilitating a mentor-mentee relationship. Despite this, higher learning institutions are leaning towards offering more online programs and expanding their distance learning departments. This means that relationships between mentors and mentees may not always occur in physical environments. With this, there has been an increased need for interactions to occur in a virtual setting. However, with this need being ever apparent, the virtual setting's impact on the benefits that are normally experienced during leadership mentoring has not been fully assessed by researchers.

#### **Problem Statement**

While web-based learning is still a growing domain, many businesses and educational institutions bolstered their use of eLearning systems and online meeting rooms. One of the most common approaches to achieve this is to offer online courses, which often occur as replacements for traditional learning environments. In 2013, the Department of Education (DOE) reported that, out of 20.6 million students enrolled in higher education, 6.7 million were enrolled in an online

course (Allen & Seaman, 2013). This shift in content delivery has resulted in changes to the effectiveness of online learning being studied. In terms of academic achievement, research has shown that online learning can be just as effective as face-to-face learning, depending on the type of learner (Chen, 2017). There is, however, little empirical evidence that supports the use of virtual leadership mentoring students and providing the same benefits as traditional mentoring practices. Pillon (2013) indicates that to date, most of the studies comparing face-to-face and online interaction examine virtual mentoring in email or telephone communication domains. Leadership mentoring via distance learning provides access to information, resources, and relationships not typically available to marginalized populations. By performing more research examining the effects of virtual leadership mentoring, the benefits of this type of mentoring could be promoted, building relationships between mentors and marginalized populations.

### **Purpose Statement**

The purpose of this study is to compare how virtual mentoring compares to face-to-face mentoring on development of leadership self-efficacy for college students. Specifically, this study will examine mentoring skills, a dimension of leadership self-efficacy (Fleming, 2013). This goal forms the study's research question, which focuses on a particular population, in a specific, non-physical setting.

The research hypothesis for this study is that the virtual nature of leadership mentoring will positively impact the experience of college students. This study posits that variations in the differences between face-to-face mentoring and virtual mentoring exist and will be identified and explored. This study also posits that face-to-face mentoring and virtual mentoring can affect and benefit mentees differently. While testing the hypothesis, these variables will be identified and explored as well.

## Study Definitions

There will be many terms used in this study that may be foreign to those who have never read about a topic similar to this before. These terms include self-efficacy, dyadic, distance learning theory, e-learning, and more. This subsection will serve to briefly define the key terms of this study before continuing any further:

- Distance Learning - A method of study that involves broadcasting lectures over a digital medium. Can also be known as “e-learning.” Distance learning theory involves the proposals and practices that involve changes in behavior in distance learning contexts (Roushanzamir, 2004).
- Dyadic - Something that consists of two elements or parts (Robert & Lesley, 2011).
- Leadership - The act of being in charge of a goal, group, or organization. The following traits are some of the generally accepted qualities of a leader. These traits are positive psychological capital, positive moral perspective, self-awareness, and self-regulation (Avolio & Gardner, 2005).
- Leadership Efficacy – The extent of one’s belief in their ability to become a successful leader. Leadership efficacy is associated with the level of confidence in the knowledge, skills, and abilities associated with leading others (Bandura, 1997).
- Mentorship - The guidance provided by a more experienced individual for another lesser experienced person (Brown, Zablah, & Bellenger, 2008).
- Self-Efficacy - The extent of one’s belief in their own ability to achieve certain tasks (Lahdenpera, 2018).

**Research Question**

The following research question will guide this inquiry. How does virtual mentoring compare to face-to-face mentoring on the development of mentoring skills for college students?

**Procedures**

This study will undertake a comparative analysis of face-to-face mentoring sessions and virtual mentoring sessions to explore the research question and hypotheses. A comparative analysis permits the researcher to determine what differences occur in leadership efficacy for college students participating in one form of mentorship versus the other. The determination of efficacy will be based on assessing the students' leadership efficacy based on their leading of several leadership mentoring sessions over a semester. This study will use two theoretical frameworks as its foundation: distance learning theory and mentoring theory. Distance learning theory is relevant, given this study's focus on virtual leadership mentoring. The relevance of the mentoring theory is self-evident. However, the notion of the cognitive apprenticeship will be applied. The cognitive apprenticeship model posits that mentors and mentees learn from one another through imitation, modeling, and observation.

When accounting for the virtual setting, the study will use telepresence technology, which includes a motorized camera that will allow mentors to guide mentees in real-time. Mentors will engage mentees in leadership activities, appreciative inquiry, and tutoring to mentor elementary school students in a successful and meaningful way. This study assumes that since many educators already use distance learning technology, they should already possess a sufficient understanding of technology. One may also posit that, since many college students take online or hybrid courses, their learning curve with the technology is also viable for the study.

**Background Information on C.A.M.P. Osprey**

C.A.M.P. Osprey got its start as C.A.M.P. Gator in 2012 when a group of student-athletes and non-athletes from the University of Florida began spending about half an hour each week with students from Oakwood Elementary School via videoconferencing (Best, 2012). This opportunity afforded the elementary school students the chance to speak with their role models from the university (Best, 2012). A fifth-grader who participated in the program at its start reported that the opportunity felt “like such an honor” just “to talk to these athletes” (Best, 2012). The program's success is partially attributed to collaborative technologies, including telepresence (Best, 2012; Ohlson, 2017). Later, the program was renamed C.A.M.P. Osprey, even though its mission to connect college students with elementary students remained. Its focus has shifted more to at-risk students (Ohlson, Buenano, & Gonzalez, 2017) and has extended beyond Florida to several other states (Ohlson, 2017).

The use of collaborative virtual technologies like those praised by Best (2012) continues to be considered a significant part of developing K-12 leadership (Ohlson, Buenano, & Gonzalez, 2017). Such technology also allows the program to overcome “geographic and financial barriers” faced by the program’s “high-poverty, urban/rural partners throughout the state” as a means of employing virtual leadership mentoring (Ohlson, Buenano, & Gonzalez, 2017, p.7). Such an approach has allowed the program to extend its partnerships beyond just elementary schools to middle schools (Ohlson, 2017). In this way, C.A.M.P. Osprey has been able to deliver “the benefits of mentoring to schools and communities that would otherwise not be able to participate due to their geographical locations” (p. 451) and potentially limited resources (Ohlson, 2017). These characterizations of C.A.M.P. Osprey highly recommend it as an ideal setting for exploring this study’s research question and hypotheses.

### **Theoretical Framework**

The mentoring process discussed in this study contains a dyadic relationship where many behaviors and personalities come together to create a positive and effective learning experience (Robert & Lesley, 2011). To frame this study, it is important to have a theoretical framework that considers the complexity of mentoring and a theoretical framework that informs and supports the C.A.M.P. Osprey mentoring program. Distance learning and mentoring theory are the theoretical frameworks that inform and support the C.A.M.P. Osprey's mentoring program. Distance learning theory, based on two-way educational exchanges between students and teachers through technological means, can be deconstructed into three areas: autonomy and independence, industrialization, and interactive communication. All of them contribute to the teaching/learning experience (Roushanzamir, 2004).

Although no universal definition for mentoring exists (Washington, 2010), this paper will define mentoring as an exchange between a more experienced individual (the mentor) and a less experienced individual (the mentee) characterized by guidance, feedback, and support (Brown, Zablah, & Bellenger, 2008). Telepresence technology with a motorized camera allows mentors to collaboratively administer real-time leadership activities, appreciative inquiry, and tutoring to meaningfully and effectively mentor elementary school students. Since many mentors have existing virtual instruction experience, the learning curve for using this technology is viable.

The theoretical framework that this study will be based on is cognitive apprenticeship. Collins, Brown, and Newman (1987) developed the "cognitive apprenticeship" model, which assumes that mentors and mentees learn from each other either through observation, imitation, or modeling (Collings, Brown, & Newman, 1987). Cognitive apprenticeship is broken down into



six distinct teaching methods: modeling, coaching, scaffolding, articulation, reflection, and exploration.

Modeling is a key aspect of cognitive apprenticeship. Modeling is where the mentor demonstrates the desired skill to aid students or mentees in acquiring or improving their skills (Collings, Brown, & Newman, 1987). This method allows the student to discover knowledge rather than be lectured. Collins, Brown, and Newman's theory has been widely quoted and used in several dissertations in the past 25 years (Bereiter & Scardamalia, 1987). All six of these teaching methods are conducted in the C.A.M.P Osprey mentoring program. One example of this is when C.A.M.P Osprey models how to shake someone's hand professionally and then has students/mentees practice professional handshakes with each other. Using cognitive apprenticeship as the main theoretical framework, a better understanding of how the teaching method impacts the overall mentoring experience is possible (Collings, Brown, & Newman, 1987).

Although this research study's primary focus is to examine the effects of mentoring modality, being able to root the research study in cognitive apprenticeship will provide a foundation for examining the mentee's mentoring experience. Once the researcher has a firm understanding of the teaching methods used in C.A.M.P Osprey, they can begin to examine the effects modality has on the mentoring experience and its effectiveness. When the cognitive apprenticeship theoretical framework was first developed in 1987 (Collings, Brown, & Newman, 1987), virtual mentoring was not mainstream. Nonetheless, virtual mentoring allows mentees to learn through observation and allows them to model the desired skill.

### **Selection of Participants**

A sample of 60 university students who have taken part in either virtual leadership mentoring programs or face-to-face leadership mentoring programs as part of a Collegiate Achievement Mentoring Program (C.A.M.P). Osprey at the University of North Florida (UNF) will be selected for the study. The mentoring programs pair undergraduate college students from UNF with students in grades K-12 across the United States. C.A.M.P Osprey uses Steven Covey's *7 Habits for Teens* (2011) as the curriculum for the mentor/mentee activities conducted during both the face-to-face and virtual mentoring sessions. Activities driven by the curriculum have students reflect on their attitudes, attendance, behaviors, and academic performance.

For this study's purposes, the mentors who will be selected for participation in the study are located physically in northeast Florida. A total of 60 participants are desired for participation in the study; of those, 30 of the selected college students must have taken part in C.A.M.P Osprey's virtual leadership mentoring program while the remaining 30 must have participated in C.A.M.P Osprey's face-to-face leadership mentoring program. Students must have attended the University of North Florida for at least one year to be included in the study. University students who have not completed the mentoring course with a passing grade will be excluded. Only university students participating in C.A.M.P Osprey programs as a mentor will be included in this study. There are no other exclusion criteria. C.A.M.P Osprey serves as a model program for this study as it provides access to university students participating in virtual and face-to-face leadership mentoring activities.

### **Significance of the Study**

The information presented within the literature review is beneficial to the application of mentoring knowledge. One thing that is missing from this body of literature is the effects of

serving as a mentor by collegiate students to those of a lower age. Similarly, there is also a gap in the literature that fails to address the present between the virtual mentoring environment and the face-to-face mentoring environment. By understanding both the effects of serving as a mentor to the mentee and by being able to identify whether one form of mentoring proves more beneficial to the mentor than the other, the data collected through the course of study will prove useful in tailoring the most effective mentoring program for a given situation, allowing for improved benefits for any parties involved.

### **Organization of the Study**

The first chapter of this study outlines the topic being studied, the problem statement, the purpose of the study, the research question and hypotheses, and a brief overview of the study's procedures and its significance. The next chapter provides a thorough review of the literature. It will address several overarching themes. These include effective mentoring practices, mentoring challenges, and the benefits of mentoring. The review will also explore self-efficacy and leadership efficacy. It will also address mentoring in the K-12 grades, mentoring in the younger grades, mentoring high school students, and mentoring in multicultural environments. Finally, it will also explore what mentees say about mentors before providing a summary of the review.

The next part of the study will introduce the methodology, which explains the theoretical frameworks underpinning the study, the selection of participants, data collection, and ethical concerns. It will also describe the measurement tool of the leadership efficacy survey. Along with this, the data analysis methods for the study will be explained as well. Finally, this part of the study will discuss the study's reliability and validity and identify the study's limitations before presenting the author's conclusions vis-à-vis the study's findings regarding the research question and hypotheses and making recommendations appropriate from those findings.

## **Chapter 2: Literature Review**

Many research studies have been conducted to examine the effects of mentoring. Although the literature referenced in this study covers a wide variety of studies and research, this review will focus on four major themes frequently mentioned throughout the literature reviewed. Those themes include effective mentoring practices, challenges in mentoring, mentoring benefits, and the effects of mentoring on student efficacy in face-to-face and virtual environments. Although the literature reviewed presents a wide variety of themes, this paper will primarily focus on the effects of mentoring on student leadership efficacy.

### **Literature Search Criteria**

After reviewing the quality of several databases, Education Source, ERIC, and Ebscohost were selected for this literature review. Only peer-reviewed journal articles were used in this literature review. The search terms used included the effects of mentoring, effective mentoring practices, mentoring challenges, mentoring benefits, mentoring and student efficacy, leadership self-efficacy, virtual mentoring, face-to-face mentoring, and virtual vs. face-to-face mentoring.

This search word sets provided several relevant articles on virtual and face-to-face mentoring. The term 'e-learning' was not used when searching for articles, as e-learning focuses on any type of technology used in education and not specifically on distance learning technologies. The plan for this study is to only use peer-reviewed articles from 1985 - 2019. As the field of virtual mentoring and distance education has evolved greatly over the years, articles before 1985 may be out of date and not provide accurate information.

### **Effective Mentoring Practices**

Determining whether a mentoring relationship is effective is challenging. Anwer, Hong, Alwi, Raza, and Nisa (2017) discussed how it is difficult to comment about effective and

successful mentoring. The terms themselves are linked with the goals and objectives of a program. Furthermore, some long-term effects of mentoring, such as continuous encouragement, can be difficult to measure. Due to this, some research has even advised not to create fixed lists of best practices that may ignore the fact that best practices are always fluid and ever-changing in nature (Francis & Holloway, 2007).

When a mentoring program meets goals and objectives, effective mentoring practices can be identified. The United States Department of Health and Human Services (2003) specified that the evidence of a practice's effectiveness is needed for a practice to become a best practice. This literature review identified four major themes in the mentoring best practices research. These themes are the structure, training, communication, and questioning.

**Structure.** Building a sense of community in an online class has increased student retention (Palloff & Pratt, 2007). The sense of community also provides students with a sense of belonging that gives them the feeling of being valued. Course templates built around best practices such as Universal Design for Learning (UDL) have been shown to improve classroom community or cohesion, which results in higher course retention rates (Huun & Hughes, 2014). The thinking behind templates is that if students understand what is expected of them, are comfortable with the format of the class, and know where to find support, and they have a better chance of completing the course and staying in the program.

This same type of thinking can be applied to synchronous virtual mentoring sessions. With these sessions, mentees are provided with an organized structure on how the virtual mentoring sessions will be conducted and how the experience will culminate in a sense of belonging. The culmination of a mentoring program does not have to be a grade in a class but something that the mentee can expect. For example, C.A.M.P Osprey busses virtually mentored

students to the University of North Florida at the end of the virtual mentoring program. During the students' visit, the mentors and mentees meet face-to-face. This face-to-face interaction allows mentors to form a connection that will solidify their relationships and bonds (Grossman, Tierney, & Resch, 2000).

**Training.** Higher education institutions place emphasis on mentoring as it impacts research productivity and the quality of training for undergraduate students (Pfund, Pribbenow, & Branchaw, 2006). Some institutions have mentors learn on the job; however, by providing some form of a mentor-training seminar, research has shown that mentors are more likely to discuss mentoring expectations and consider diversity (Pfund, Pribbenow, & Branchaw, 2006). Many programs that utilize mentoring train their mentors in various ways. For instance, some programs have new mentors attend seminars while other programs have their mentors roleplay. Research shows that mentoring training is impactful, the best practices for training mentors in either face-to-face or online settings are mixed (Pfund, Pribbenow, & Branchaw, 2006).

**Trust.** Trust is one of the critical factors for effective mentoring (Hudson, 2011). Some of the most effective mentorship interactions are built on trust. Mentees need mentors that can keep their confidence, show up, and have their best interest at heart. Wilson and Patent (2011) find that trust facilitates learning; the nature of professional learning and the associated challenges experienced by mentees during their learning requires that mentors create supportive environments. One of the best ways of building trust is by giving your mentees a voice. Giving a range of choices for the mentees makes them feel invested in the relationship to achieve some control. The mentees should also have control over what the mentor talks about and how they talk about it as well as be sensitive to their cues. By allowing mentees to share their experiences without the fear of being judged is essential to promoting trust.

**Communication.** Discussions are often conducted in face-to-face and online courses to provide a venue for students to communicate and foster a shared understanding (Zydney, 2012). While online discussions are time-consuming for instructors because they must write everything out, they can enhance students' learning experience. Research has found that communication can help learners gain confidence, enhance motivation, and boost self-esteem (Shellenbarger & Robb, 2016). Similarly, when mentors keep communication lines open during the mentoring process, they allow mentees to ask questions, share ideas, and discuss concerns and frustrations that may arise (Shellenbarger & Robb, 2016). Communication has further been highlighted in clinical mentoring. Shellenbarger and Robb (2016) indicate that communication is a crucial component of successfully mentoring and learning. Appropriate communication can further help the learner to gain confidence, enhances motivation, and boosts self-esteem. They can keep the communication open by allowing mentees to ask questions, discuss concerns, and vent their frustration.

Providing a space for mentees to talk about their experiences gives them a chance to reflect on their actions. Once mentors can reflect on these actions, providing supportive feedback is a crucial step to having open communication with a mentee. It is said that “mentors should provide regular communication of what is and what isn’t going well” (Eller, Lev & Feurer, 2014, p.5); however, in reality, providing regular synchronous communication with virtual mentees can be challenging, especially if the mentor and mentee live in different time zones. With the use of asynchronous discussion boards, mentors can provide regular communication to mentees.

**Questioning.** Experienced instructors spend anywhere from 35 to 50 percent of their instructional time, asking questions (Cotton, 1989). According to Bloom's Taxonomy, instructors typically classify their questions, which contains six categories: knowledge, comprehension,

application, analysis, synthesis, and evaluation. These six categories can then be split into two categories: lower cognitive questions (knowledge, comprehension, application) and higher cognitive questions (analysis, synthesis, and evaluation) (Cotton, 1989). When used correctly, questioning is a powerful tool that instructors can use to focus on learners' attention. For instance, students must focus on certain points to participate and answer the instructor's question (Cotton, 1989). Questioning techniques are critical to the mentor-mentee interaction and have been found to enhance learning, stimulate critical thinking, and promote reflection performance.

Additionally, questioning provides insight into actions and invokes knowledge in new situations. However, Shellenbarger and Robb (2016) indicate that for a mentor to use questioning approaches effectively, he/she should consider various factors, such as the learner (student, new graduate), the learning situation, and the amount of time available for questioning. Questions are also essential to helping learners overcome previously held beliefs. Questioning can also help the mentor assess what the learner knows and identify areas for which the learner needs improvement and additional guidance.

Providing mentors with training to improve their questioning skills is an effective best practice (Shellenbarger, & Robb, 2016). However, simply asking higher-level questions does not guarantee larger learning gains. Nevertheless, the mentoring related best practices discussed in the literature primarily focus on the types of questions to ask.

### **Mentoring Challenges**

Challenges exist in all types of mentoring, whether in a face-to-face or virtual environment (Kenyon et al., 2015). Throughout the literature researched for this study, the major themes regarding virtual mentoring challenges included a lack of real-time interaction, current technology limitations, and low energy due to two-dimensional technology. Mentors reported



that the lack of interaction with mentees during virtual observations was challenging (Reese, 2016). Overall, mentors reported that the experience was different from any face-to-face mentoring they had done. For instance, instructors who would typically narrate a lecture and then observe their mentees practice whatever was previously spoken about to be observed by the mentor virtually. Mentoring techniques such as coaching, stepping in, co-teaching, and demonstrating are nearly impossible to do virtually (Reese, 2016).

While technology provides the means for virtual mentoring, it can also hinder the mentoring process compared to face-to-face sessions. For instance, mentors reported that having the camera at only one angle during mentoring sessions can make it difficult to see what is happening (Reese, 2016). Providing mentors with multiple camera angles or a motorized camera could allow mentors to access the mentees' environment.

Other challenges identified included power differentials, competing and conflicting roles, and failure to provide supportive environments from the literature review. For instance, except for peer mentoring, mentoring relations consists of an uneven status arrangement. The power differential that exists due to education level, intellectual maturity, publication record, and recognition can cause friction. For instance, due to differences in intellectual attainment, mentees can be shy to interact with their mentors. However, the mentor must reach out to the novice in this form of interaction. Competing and conflicting roles are further indicated as a source of friction in the mentor-mentee relationship. For instance, as in this study, the mentor can also act as the mentee's tutor. These conflicting roles can derail the mentorship process (Starr-Glass, 2014).

The last limitation that emerged in the literature is low energy due to two-dimensional technology. This was best described as, "If [one imagines] going to a baseball game, that

experience is very different from watching a baseball game on TV” (Reese, 2016, p.28). While mentors note that there is a lack of energy between the mentor and mentee, it has been found that mentees can focus more easily virtually, as there are fewer distractions. This limitation seems to be a trade-off between mentoring energy and mentee focus.

### **Benefits of Mentoring**

The benefits of mentoring entail positive outcomes that come from a mentoring relationship that can be experienced by both the mentor and the mentee (Jakubik, 2007). The literature clarifies that the quality of mentoring is one of the best predictors of mentoring benefits (Jakubik, 2007). However, a gap in the literature exists on how to create a high-quality mentoring experience. Most research points to providing role-playing experiences that allow mentees to demonstrate learned practices (Jakubik & Weese, 2014). Also, kinesthetic or tactile learning is one of the most important experiences in the learning process (Moyer & Savino, 2015). Given these points, mentors who plan accordingly and make the mentoring experience interactive have a better chance of creating a quality mentoring experience. One of the mentoring benefits often exhibited by at-risk K-12 mentees is a boost in self-confidence. Mentees without friends or family to provide support and words of encouragement may have low self-confidence. A lack of self-confidence in high poverty areas can lead to student failure (Short, 2002).

**Student Outcomes.** Grossman, Tierney, and Resch (2000) researched mentoring concluded that mentoring can be successful and can lead to increased grade point averages and an increase in the amount of days students attend school. They also found that if mentors were able to connect with the mentee and be a positive role model, mentees showed a decrease in drug use and an improvement in peer and parent relationships. However, their research on mentoring was conducted in a face-to-face mentoring environment.

Research on virtual mentoring has shown that online environments promote greater autonomy, increased intimacy, and improved communication levels between participants (Ensher, Heun & Blanchard, 2003). While research on virtual mentoring is positive, a gap in the literature exists regarding virtual leadership mentoring and its impact on student efficacy. Further research could examine the impact of leadership development and its effect on students' grades and other academic measures.

### **Benefits of Leadership Mentoring**

Teaching leadership skills at a young age can help prepare K-12 students for future jobs. Leadership skills can help improve students struggling with goal setting, communication skills, group skills, problem-solving skills, decision-making skills, responsibility awareness, trusting and trustworthiness awareness, leadership awareness, and emotional awareness (Cansoy, 2017). The literature primarily covers leadership mentoring and its effectiveness in a face-to-face environment. A gap in the literature exists in the area of virtual leadership mentoring and its benefits. Future studies should examine the effectiveness of virtual leadership mentoring regarding student efficacy. This could promote the use of virtual sessions and help reach marginalized populations that may not have access to leadership development and its benefits.

While the benefits of face-to-face versus virtual mentoring have yet to be adequately compared, mentoring, in general, is associated with some broad benefits for both the mentors and the mentees, in a study of collegiate near-peer mentors, where an older student mentored first-year students, research reports that the mentors reported several benefits from the experience (Dyrberg & Michelsen, 2017). These benefits included expanded social networks, increased self-consciousness of their study habits and their effectiveness, and the development of their academic abilities (Dyrberg & Michelsen, 2017). Research also commented on the student

mentors' highly engaged nature in comparison to their non-mentor peers (Dyrberg & Michelsen, 2017). This suggests that the mentor-mentee relationship should be considered beneficial to the mentor side of the coin as the mentee.

In a study of collegiate athletes mentoring fourth-graders, researchers discovered that both the team members and the elementary school children obtained significant benefits (Rahill, Norman, & Tomaschek, 2017). The athletes reported an increase in their understanding of a role model's responsibilities and an increased commitment to serving others (Rahill, Norman, & Tomaschek, 2017). The fourth graders' teachers reported increases in students' participation and reduced classroom behavioral issues (Rahill, Norman, & Tomaschek, 2017). The fourth graders themselves reported that they had a better understanding of the college experience because of their interactions with them (Rahill, Norman, & Tomaschek, 2017).

Mentees also receive other benefits from mentoring quite apart from technical or soft skills, which can help them. Gunn, Lee, and Steed (2017) examined the benefits and challenges of participating in a mentoring program from both the mentors and the mentees' perspectives. Mentors focused on role modeling as both beneficial and challenging (Gunn, Lee, & Steed, 2017). However, the mentees' experiences were not necessarily characterized in this way. For the mentees, the most beneficial aspects of the mentorship experience were emotional and psychological support (Gunn, Lee, & Steed, 2017). This suggests that not all of the benefits obtained relate to focused skills or concepts but are advantageous to the mentees, nonetheless. Therefore, the benefits of the mentoring relationship should be thought of as multi-dimensional.

### **Self-Efficacy**

One of the most important proposed benefits of both face-to-face and virtual mentoring is creating a sense of self-efficacy in mentees. This feeling that they are capable of doing what

needs to be done can make an enormous difference in the life of a mentee, from his school performance to his job performance to his ultimate performance in life (Feldman, Arian, Marshall, Lovett, & O'Sullivan, 2010). Most of the literature supports the idea that an effective mentoring relationship does indeed increase the self-efficacy of mentees, but different authors credit different aspects of the relationship as being most important.

Bandura (1986) indicated that the belief in our abilities to perform a behavior or task impacts our ability to perform the task successfully. Poon (2006) adds that individual self-efficacy determines the level of effort they expend on an activity, and how long they can persevere when confronting an obstacle, and even their degree of resilience in challenging situations.

**Self-Efficacy in School.** Higher education can be a very different experience from high school for students. This is especially true if a student is attempting online or distance learning for the first time. The skill set involved in being successful in an online classroom is very different from what is involved in being successful in a traditional classroom. The student is responsible for their own time-management, keeping track of when assignments are due in the virtual classroom, and being sure that they maintain a contributing presence in the classroom throughout the course. For a first-time online learner, this can be a daunting task. The higher the efficacy, the greater the individual effort, persistence, and resilience. For example, improved self-efficacy means that the students can determine their study objectives, adapt with their study, build proactive attitudes, complete their assignments, perform well in class, organize their study time, and are motivated to learn problem-solving methods.

Virtual mentors who are very familiar with what is necessary to succeed in an online environment can be helpful in guiding a new student through the process. They can give time-

management tips, suggest how students can best structure their time, and give the student encouragement when they feel overwhelmed (Feldman et al., 2010). The ideal mentor will be available to mentees whenever they have questions. To support this, one study shows that the availableness of mentors to their mentees is one of the most important predictors of success in the mentoring relationship (Karcher, 2005). This seems logical, as solely having a mentor will not be helpful if that mentor is not there to help the mentee when he encounters a problem (Karcher, 2005).

Other optimal qualifications of a mentor that result in a successful mentoring outcome that promotes self-efficacy in a mentee are knowledge, the ability and willingness to give advice, and a strong sense of personal self-efficacy (Larose, 2013). While the focus of this section is promoting self-efficacy in mentees, the importance of self-efficacy in mentors cannot be overstated (Larose, 2013). It would be virtually impossible for a mentor to pass down a trait that they do not possess (Larose, 2013). It has also been stated in the literature that the majority of mentees can recognize when their mentor is hesitant about advising due to a low sense of self-efficacy and that this makes them insecure in the quality of advice that they are receiving (Abdolalizadeh, Pourhassan, Gandomkar, Heidari, & Sohrabpour, 2017). This, in turn, decreases the mentee's sense of increasing self-efficacy (Abdolalizadeh et al., 2017).

**Self-Efficacy on the Job.** Self-efficacy in school can lead to self-efficacy on the job. An effective mentor will use their skills to help their mentee succeed in school and develop the skills that will help make them successful after they graduate and are in the workforce. Many of the skills that make for a good student also make for a good employee, including responsibility, attention to detail, effective time-management skills, and the desire to complete a job correctly. They are also skills that a person begins to learn while in higher education, sometimes while

participating in a mentor-mentee relationship (Pryce, Giovannetti, Spencer, Elledge, Gowdy, Whitley, & Cavell, 2015).

Many mentors focus on working with students in specific majors in college. These majors are usually disciplined that they are proficient in and have worked in in many cases (Muschallik & Pull, 2016). Thus, mentors are in an ideal position to advise and teach their mentees what exactly is expected of new prospects in the industries that look for graduates in those majors (Muschallik & Pull, 2016). This is especially helpful in highly technical and scientific fields that require the ability to conduct research (Muschallik & Pull, 2016). Mentors working with students in such majors are in an excellent position to help their mentees develop their research skills while still in college, ensuring that they are prepared for a research-related position once they graduate and begin searching for a career (Muschallik & Pull, 2016). In such domains, inspiration is critical to the mentoring process. One of the skills that differentiate superb mentors from other various types of mentors is the ability to inspire. Experiencing inspirational people, especially in their fields of interests is essential to effective mentoring. Inspirational mentoring helps young people onto future paths, exciting and motivating them beyond their original dreams and aspirations (Phillips-Jones, 2003). According to the research, different mentoring skills tend to be more effective when working with mentees in artistic majors such as creative writing, music, or media design (Form, Schlichting, & Kaernbach, 2017). This type of mentee gains more from an almost confrontational relationship with their mentor. This could be because the artistic mind simply works differently. Still, it is more likely that the mentors who work with students in these fields are attempting to prepare their mentees for the very volatile and difficult professions they will eventually be part of (Form et al., 2017).

**Self-Efficacy in Life.** Ultimately, the goal of doing well in school is not an end in itself. Therefore, an effective mentor will not stop teaching their mentees how best to get through their academic studies and teach them how to lead a successful life in general (Francis & Holloway, 2007). This, of course, is much more difficult to quantify than success in school. Life is a more elusive concept as different people want different things in their lives. Some do not consider themselves successful unless they earn a great deal of money, while others do not see this as overly important. Some value happy family life above all else, while others are content being on their own. The goal of an effective mentor is to customize their approach to each mentee's wants and needs to the extent that this is possible (Francis & Holloway, 2007). This is accomplished by developing a personal and mutual relationship with the mentees (Francis & Holloway, 2007).

A good mentor will not treat their mentees with a one-size-fits-all approach but will instead develop a relationship with each mentee that allows for the free flow of ideas and honest conversation about things that do not necessarily have to do with school (Francis & Holloway, 2007). As an older, more experienced person, the mentor is in the position to know when they are able to advise a mentee on life choices and when they are not (Francis & Holloway, 2007). The mentor will not overstep their authority or push their own beliefs onto their mentees, and instead will help their mentees work through their issues to the best of their abilities on their own with guidance and support (Francis & Holloway, 2007).

Developing self-efficacy in life is one of the ultimate objectives of mentorship. Santos and Reigadas (2002) believe that a fulfilling relationship between the mentor and mentee is critical to helping mentees navigate the various demanding parts of life, a situation that can improve mentees' self-competence. More precisely, it can help them develop better life goals, approach life from a wider perspective, and help them adjust to conventional life stressors. A



study by Santos and Reigadas (2005) primarily considered the mentor's role in improving their well-being in school. The authors realized that mentors could help facilitate students' personal and academic achievement and adapt to college life by providing emotional support. Mentoring further appeared to promote personal, intellectual, and professional development. These aspects were critical to self-efficacy in life.

**Leadership Efficacy.** To describe how mentoring can help students develop leadership efficacy, it is first necessary to define what is meant by “leadership.” The following traits are some of the generally accepted qualities of a leader. These traits are positive psychological capital, positive moral perspective, self-awareness, and self-regulation (Avolio & Gardner, 2005). Furthermore, effective leaders are expected to behave in a certain manner. The most important behaviors expected of leaders are the ability to lead by example, motivate those around them, and support those they work with (Avolio & Gardner, 2005). The qualities often found in ineffective leaders are also qualities and behaviors found in ineffective mentors (Anwer et al., 2017).

### **Teaching Leadership Through Example**

One way to look at how mentors encourage their mentees to develop leadership efficacy is to imagine that they are training mentees to do what they do. With this theoretical context, mentors are modeling leadership through their own mentoring. Mentoring is, after all, a form of leadership, and by observing how a mentor treats them, mentees are being given firsthand knowledge of how to be a leader (Anwer et al., 2017). An effective mentor will do all the things expected of an effective leader. This includes giving advice when necessary to let a mentee find solutions for themselves when the situation calls for it. They will support the mentee while not

encouraging the mentee to become overly reliant on them and will be available to the mentee when they are needed (Eller et al., 2014).

### **Encouraging Leadership Behavior in Mentees**

In addition to modeling leadership behavior, the mentor will also encourage that behavior in his mentees. Mentors can do this either directly or indirectly. Indirectly, a mentor will praise the mentee when they “catch” them using leadership behavior, thus reinforcing that behavior (Avolio & Gardner, 2005). Directly, they will instruct the mentee exactly how a leader would act in various situations and encourage them to behave in this manner. With this, they will explain the importance of being an effective leader and how it correlates to being successful in school, business, and life (Avolio & Gardner, 2005).

**Building Leadership Efficacy.** A person does not become an effective leader overnight. It is often a matter of trial and error, with many false starts. Having a mentor available to guide the process is an invaluable tool to mentees attempting to learn the skills needed to be an effective leader (Anwer et al., 2017). In very young and inexperienced students, leadership might seem to be related to always being the person in charge. The mentor's responsibility is to lead the mentee towards a true understanding of leadership, which is a much more cooperative relationship than many young students would imagine.

While an effective leader might be the person who is ultimately in charge, this is ideally not something that they flaunt or take advantage of. People who do this would not be considered true leaders, according to Avolio & Gardner (2005). True leaders work alongside their employees to attain what is best for the entire group and do not take ultimate credit for any task's success. They are a true team player and know how to work well with others, motivate people, and give appropriate credit when it is due (Avolio & Gardner, 2005). They make their team

members feel valued and appreciated, encouraging them to work as hard as possible on other projects. They do this partially for their benefit, but they also must have their employees' best interests in mind.

### **Mentoring in the K-12 Grades**

While the majority of this paper has focused on mentoring in higher education, the recent popularity of online K-12 schools makes exploring mentoring in these grades important as well, as mentoring in the younger grades is significantly different from mentoring at the college or graduate level, but is based on the same principles (Ohlson, Ehrlich, Blakewood Pascale, & Lerman, 2017; Karcher, 2005). Mentoring high school students is remarkably similar to mentoring higher education students. (Karcher, 2005). In both instances, the goal is the same—to assist students in doing well where they are to go on to do well at the next level. With students in higher education, the next level is usually graduate school or employment, while, with high school students, the next level hoped for is college itself (Karcher, 2005).

### **Mentoring High School Students**

While it has been previously stated that working with high school students is very similar to working with students in higher education, there is one important difference that mentors working with this age group must keep in mind. While virtually every college student will go on to either graduate school or a job, not every high school student will go on to college (Karcher, 2005). A mentor should be cautious never about pressuring a high school student to attend college or imply that college is the only next natural step. This is because some students cannot attend college, whether it be for financial reasons or other personal or familial obligations. This is especially true in students of very low socioeconomic status, who are often expected to start working to help support their families immediately following graduation (Karcher, 2005).

### **Mentoring in the Younger Grades**

While mentoring high school students is very similar to mentoring students in higher education, this is not the case when working with very young students. While the primary goal is still the same (to help the child succeed), doing so requires a different set of skills (Ohlson et al., 2017). A mentor working with this population of students must be more entertaining than a mentor working with older students. They must also keep a more professional distance when discussing personal issues not related to school, both for legal reasons and for the good of the student (Ohlson et al., 2017).

One of the problems with working with very young students is keeping their attention, as they often do not yet have a firm understanding of what schooling means or what it is meant to accomplish. The mentor working with this type of child will most likely take on another teacher's role, which is something that the student can better understand (Ohlson et al., 2017). Students this age often do well working with other students who are a few grades above them rather than with adults, as they can feel that this type of "teacher" understands them better and is not just trying to make them do work that they do not want to do (Ohlson et al., 2017). In general, when working with students in the K-12 grades, mentors who are a few years older have the most success connecting with their mentees (Ohlson et al., 2017).

Another way mentoring elementary students differs from mentoring college students is that more of it is involved with social skills and academic skills (Ohlson et al., 2017). Students just beginning in school often have difficulty adjusting to being around many other children with different personality types and need the help of an older, more experienced person to help guide them through the process. A good mentor will be able to help young students not only to succeed academically but also to put their best foot forward socially (Ohlson et al., 2017).

Other studies have explored how mentors can improve their efficacy when mentoring younger students. Karcher and Nakkula (2005) underscore the quality of mentoring relationships, the mentor and mentee's characteristics, and the mechanism through which they work to define positive development and change. Rhodes et al. (2005) indicated that the mentor-mentee relationship should thrive on trust for younger children, which ultimately improves the child's social-emotional, cognitive, and identity development. In the Rhodes et al. (2005) model, mentors who give genuine support can greatly help change the negative views that adolescents hold about themselves and their relationship with others. Additionally, mentors can provide a range of enrichment activities and counseling to help develop various life aspects. Rhodes et al. (2005) underscores the need for the mentor to act as a role model to the adolescents. Spencer (2006), however, posits a need for the mentor to share authentic feelings and understand reality from the standpoint of the young mentee. Spencer (2006) further documented that professional mentorship with young people can also require the mentor to understand their background and provide coaching without bias or prejudice.

### **Mentoring in a Multicultural Environment**

Mentoring can help all students but may be particularly valuable to students of varying ethnicities or those new to this country to help with cultural acclimatization, including understanding school norms, expectations, and values (Lee, Bell, & Shaulskiy, 2017). While some mentees respond more positively to a mentor from their own or a similar culture, it is not always possible for this to be arranged (Lee, Bell, & Shaulskiy, 2017). In cases where the mentor is from a different culture than the mentee, the mentor should receive additional training in multicultural sensitivity and some rudimentary training about the student's culture (Lee, Bell, & Shaulskiy, 2017).

Bellon-Harn and Weinbaum (2017) discussed how in multicultural environment, mentors are required to maintain a dual perspective in which they consider the mentee as an individual and as part of a broad social context. However, the mentoring relationship can cause ethical issues, the mentor should create ethical boundaries with the mentees. Other scholars have further provided suggestions about negotiating challenges that come with cross-cultural mentorships. One solution to cultural barriers is providing students with the knowledge and training to overcome cultural and social differences (Sufrin, 2014). Multicultural competence involves mentors having the ability to understand their biases, personal backgrounds, and privileges.

Leadership, Education, Advocacy, and Diversity (LEAD) model is presented as one of the strategies for mentorship in a multicultural environment. A major focus of LEAD was to reduce aspects of power (social, gender) and permanence for cross-cultural mentorship (Keller & Pryce, 2010). The model is built upon Bandura's social cognitive theory, both the mentor and mentee change observed behaviors, values, beliefs, and attitudes.

Students from different cultures are likely to have very different expectations and experiences with schooling. Therefore, their mentoring experience will have to be aligned to what they can understand and work with (Lee, Bell, & Shaulskiy, 2017). While there is some responsibility on the mentee's part to acclimate to society it is primarily the responsibility of the mentor to help them do so (Lee, Bell, & Shaulskiy, 2017). The mentor should begin the mentoring process from the mentee's current point-of-view and his culture and gradually make the process more Americanized (Lee, Bell, & Shaulskiy, 2017). The mentoring process in the case of multicultural mentees should also include more life-skill and social mentoring than traditional mentoring. This will help the mentee fit in better at their school and feel less isolated (Lee, Bell, & Shaulskiy, 2017). The mentor should take special care to make themselves available

to the mentee for conversations about non-academic matters such as peer pressure and bullying (Lee, Bell, & Shaulskiy, 2017).

### **What Mentees Have to Say About Mentors**

According to Manzar-Abbass, Malik, Khurshid, and Ahmad (2017), most mentees surveyed for their study expressed satisfaction with their mentor and the mentoring process. Many stated that while they saw growth and improvement in their abilities to learn, they also saw growth and improvement in their mentors' ability to teach (Manzar-Abbass et al., 2017). Most mentees also stated that, in addition to helping them understand their academic work, their mentors helped guide them in other areas, such as socialization, peer pressure, and bullying (Manzar-Abbass et al., 2017).

Of those students who had worked with more than one mentor, they stated the following qualities that made one superior to the others: superior knowledge of the subject matter, a caring way of expressing any criticism, the willingness to give direct instruction and advice, and an open and honest manner of dealing with the student (Manzar-Abbass et al., 2017). Most also stated that they felt more comfortable with the mentors they rated as superior to others they felt less comfortable with.

They attributed this to the mentor's willingness to discuss themselves openly and readily admit problems that he themselves had experienced in school in the past (Manzar-Abbass et al., 2017). They further stated that their preferred mentor never made them feel self-conscious or "stupid" when they did not immediately understand an assignment or idea presented to them by a professor or the mentor (Manzar-Abbass et al., 2017). Considering these statements, it should be possible to improve the training programs for potential mentors and provide a more effective

mentoring experience for all concerned. After all, it is the mentors' quality that determines the quality of the mentoring program and the effectiveness of the mentees that take advantage of it.

### **Summary**

Mentorship is a distance learning strategy envelops broadening access to information, resources, and relationships not generally available to marginalized populations and contributes to organizations' educational objectives. With money in short supply at higher education institutions and public schools, low-cost initiatives that utilize virtual mentoring can offer all students involved in the process a leadership development experience.

Face-to-face mentoring experiences are not always possible due to geographical and budgetary constraints. When virtual mentoring best practices are followed, it can eliminate those barriers while still supplying a quality mentoring experience. With more and more students attending school online, beginning in kindergarten and continuing through graduate school, the virtual mentoring system seems to be the most effective and promising way to help the greatest number of students possible. Students attending school online already have the necessary equipment necessary to engage in virtual mentoring, so there will be no additional expense. The mentors employed by the schools are generally students who also already have access to the equipment, meaning no elaborate expense necessary to the schools.

While face-to-face mentoring may continue in small communities or rural schools, virtual mentoring is almost certainly going to surpass it in availability and use, if this has not already occurred. Face-to-face mentoring is made nearly impossible in the online learning environment by several factors: students and mentors live in different time zones or just very far away from each other, student or mentor, or both are too busy to take time to travel to a mutually agreeable meeting place, and online students often have questions at all hours of the day or night. With



face-to-face mentoring, such a question would go unanswered until the next scheduled mentoring meeting. With virtual mentoring, the student may simply leave a message to his mentor to get the fastest possible response. Depending on the mentor's availability, the mentor and mentee might even leave their schedule relatively open to an as-needed situation, which is not possible or desirable with face-to-face mentoring.

While there are still many studies to be done, the available literature indicates that mentoring helps students of all ages in various ways, not academics. Mentors can act as leadership role models, provide advice on socialization and peer issues, and sometimes advise. There is little doubt that mentoring will continue, most likely in the form of virtual mentoring, and that this will help many students to have a better chance of succeeding in school, in their careers, and in life. While not every student will take advantage of their school's mentoring program, those who do will likely come out of the process better students, better workers, and more effective leaders. In this way, mentoring programs benefit not only students and mentors but society as a whole.

### **Chapter 3: Research Methods**

The purpose of this study is to compare how virtual mentoring compares to face-to-face mentoring on the development of leadership self-efficacy for college students. This topic's nature dictates the use of a comparative analysis of face-to-face mentoring sessions and virtual mentoring sessions. A comparative analysis is used to investigate whether there is a difference in leadership efficacy for college students who participate in virtual mentoring than those who mentor in face-to-face settings. The focus is on students' leadership efficacy after they lead multiple leadership mentoring sessions over a semester.

#### **Data Collection**

This researcher is interested in exploring the impact of virtual mentoring on college students' leadership efficacy according to a leadership efficacy survey over a semester. University mentors meet virtually or face-to-face with K-12 students for one hour every week while school is in session. Students are taken out of a resource class for one hour each week to attend the leadership mentoring session. Students who are mentored virtually meet in a classroom located in their school and, through telepresence software, virtually meet with their university mentors under an elementary school teacher or aide's supervision. To collect information for use within this study, quantitative data was collected for use in a comparative analysis to measure and compare college students mentoring in a face-to-face environment and virtual environment through a comparison of the university student's (mentor's) leadership efficacy survey results, to see if there is any difference between the two modalities.

The study adopted a quantitative methodology. Peterson (1997) indicates that rating scales are some of the most ubiquitous tools for exploring marketing or consumer behavior. For many researchers, they are critical for obtaining interval data on personal factors such as

attitudes, preferences and opinions as was used in this study. Through the Likert scale system, the data obtained from such scales can easily be evaluated through quantitative analysis.

The participants consist of college students mentoring in a face-to-face environment and a virtual environment who are asked to complete a leadership efficacy survey before starting the mentoring program and again at the mentoring program's conclusion. Students will not have partaken in C.A.M.P Osprey before the start of the semester. However, by the end of the semester, college students will have completed either a virtual or face-to-face series of mentoring sessions every school week for at least one hour. While a sample size of 60 is desired, the minimum sample will be 40, allowing for the potential variation in population size due to leaving the course, leaving the mentoring program, or other considerations that may result in the university student who started the course being unable or unwilling to complete the course. A sample size of ten was used in a similar study investigating the benefits of E-mentoring on nurses (Baker, 2016).

The university students that run the mentoring sessions with elementary students (mentors) will be enrolled in an undergraduate three-credit mentoring course in the College of Education. Their class assignments include developing, organizing, and providing virtual mentoring or face-to-face mentoring to elementary school students. Mentoring sessions include providing information on how to make smart decisions and include listening to motivational speakers such as the University of North Florida's (UNF) basketball coach, which will then be discussed between the mentor and the mentee.

Elementary students (mentees) take part in group work and receive homework assignments from UNF mentors. However, it is important to note that the data was not collected from the mentees during this study. No identifying information was collected on either the

mentors or the mentees during the data collection process. At the end of the virtual mentoring program, students completing the virtual mentoring program took a UNF field trip. During the field trip, elementary school students receive a professional wardrobe, meet with their mentors face-to-face, receive a university tour, and meet with UNF administrators.

### **Ethical Considerations**

The leadership efficacy survey was utilized as the data collection instrument for the completion of the study. This instrument does not collect any identifying information, allowing for data to remain anonymous. All participants were informed that survey results are anonymous before the start of the data collection process, and the university Institutional Review Board (IRB) provided approval prior to the data collection process commencement.

All digital data was stored on the researcher's computer in a password-protected file, accessible only by the researcher, and all physical data (paper forms, hard copies of the instruments) was stored in a locked drawer in the researcher's desk, with the researcher the only one with access to the key. After the university's time period for data storage has expired, with the clock commencing after the study, the data will be destroyed. All digital files will be deleted, and all physical files will be shredded.

### **Leadership Efficacy Survey**

The chosen data collection instrument is the leadership efficacy survey. The leadership efficacy survey was developed at the University of Wisconsin and is a validated instrument. The survey measures mentors' perceived skills before mentoring (at baseline) and after mentoring has been completed, allowing for a comparison of change between the baseline and completion of the task. The survey takes approximately 10 minutes to complete. The survey contains 25 multiple choice Likert-style questions. For the Likert-style questions, the scale descriptors are as

follows: not at all skilled, moderately skilled, and extremely skilled. The survey model deployed in this study will closely resemble the evaluation plan used in a national mentor training randomized controlled trial (Pfund, Burnham, & Schurr, 2014). The trial set out to determine whether a structured mentoring curriculum improves research mentoring skills.

### **Data Analysis**

To determine the impact of virtual mentoring on college students' leadership development, as identified through the leadership efficacy survey, data over multiple semesters were collected and compared. A leadership efficacy survey was administered via the learning management system (LMS) to university students (mentors) registered for either the virtual or face-to-face mentoring course offered in participation with C.A.M.P Osprey. Typically fall and spring university semesters are sixteen weeks long.

A pre-test survey was administered during the first and second weeks of class to mentors. The post-test survey was administered during the fifteenth and sixteenth weeks of the semester. Students' quantitative survey results will be entered into SPSS, and a comparative analysis such as a two-way mixed ANOVA will be used to examine students' quantitative responses.

A two-way mixed ANOVA was selected to determine the effects of face-to-face and virtual mentoring programs as it compares the means between two unrelated groups on the same independent variables. The independent variables are all measured on a continuous scale and include students' scores in the quantitative section of the mentors' pre- and post-survey responses. My two independent variables are the two independent groups, the virtual group, and the face-to-face group. University students were divided into two independent groups depending on the type of environment they completed the mentoring programs; this includes university

students who mentored in a face-to-face environment and university students who mentored in a virtual environment. Assumptions for a two-way mixed ANOVA include

- The dependent variable should be measured on a continuous scale.
- The independent variable should consist of two categorical, independent groups.
- There should be independence of observations.
- No significant outliers should be present.
- The dependent variable should be approximately normally distributed for each group of the independent variable.
- There needs to be a homogeneity of variance.

For the results section, the University of Wisconsin's leadership efficacy survey, hereafter to be referred to by the times at which the survey is given to the participants, was analyzed, both in terms of pre- and post- surveys, followed by the comparison of the data. The pre-mentoring survey refers to the data collected using the leadership efficacy survey given to the college students at the start of the semester (at baseline). In comparison, the post-mentoring survey refers to the leadership efficacy survey given to college students at the end of the semester after students have led mentoring sessions throughout the semester.

### **Reliability and Validity**

To ensure the studies reliability and validity, several steps were taken. First and foremost, careful consideration was given when selecting the sample population. Although the sample population is a convenience sample, it is hoped that they serve as a varied selection of respondents representing the greater population, given that all university student participants come from different backgrounds, different socioeconomic statuses, and other varied considerations.

To minimize the margin of error, the desired sample size of 60 students was selected, with a minimum of 40 participants. To increase the student response rate for the leadership efficacy survey, this researcher plans to work closely with the university instructor responsible for overseeing the mentoring program to ensure that every student in the course completes the survey who finishes the mentoring program. A sample size of 30 students in a face-to-face environment, and 30 students in the virtual environment was primarily chosen to ensure a good mix of leadership development practices across both modalities is experienced.

To understand the impact of virtual mentoring on college student's leadership development, students partaking in face-to-face and virtual mentoring complete a pre and post leadership efficacy survey, which is then be compared. The survey was selected as the data collection instrument for use in this study because it can be easily quantified and compared and serves as a valid and reliable tool for capturing leaders' self-efficacy and the confidence individuals have in their capabilities. The tool was created and validated by the University of Wisconsin, allowing for increased reliability and validity in the collected study results (citation?). Further tests of reliability could be conducted through the use of test-retest reliability; however, some variation may be present in the results, should the study be recreated for this purpose, as some students will have more leadership experience than others due to variations in age of college students, socioeconomic backgrounds, personal interests, and other similar variables.

### **Limitations**

Although limitations are normal in any research study, this researcher has worked to minimize the range of limitations present in the study throughout the research process. One limitation is the lack of control over university students in classroom experiences. As students

have different instructors, their individual university experiences may be a variable in leadership efficacy. Since university courses can have different aged students, maturity levels may also affect the leadership efficacy survey results.

Furthermore, integrating additional methods of data collection could help increase the scope and depth of the analysis. However, this study was delimited to use of only the leadership efficacy study to start, given that due to the many variables present within individual students, the use of a single instrument works to ensure accuracy in data collection, the response by students, and analysis of data. Lastly, due to the lack of prior research on virtual leadership mentoring at the collegiate level, forming a foundation for understanding the research problem is challenging. It may work to limit the discussion of study results given the focus within the existing body of literature on mentoring at the middle school and high school levels. Still, further limitations of the study are tied to the delimitations of the study; the small sample size, a delimitation of the study based on the classroom size of university students participating in the mentoring program, also serves as a limitation due to the lack of generalizability present in a study that uses such a small sample size. Where such limitations are present, they are noted in the completed study's write up, once approved and once research has commenced.

## **Conclusion**

Research studies such as this one aid in detailing the effects of how higher education institutes and K-12 schools can partner to create programs that can have a positive impact on the lives of students. With tight budgets at higher education institutes and public schools, low-cost initiatives and partnerships can offer all students involved in the process of a community learning experience. As face-to-face mentoring experiences are not always possible due to geographical and budgetary constraints, virtual mentoring eliminates those barriers while still supplying a



community learning experience. Additionally, virtual meetings also allow for access to marginalized populations that may not typically be available. The results of this study provide vital information to virtual leadership mentoring programs and will provide them the knowledge on the impacts that mentoring can have on leadership development.

## Chapter 4: Results

### Introduction

This chapter presents the results derived from the 25-question online survey. A total of 25 pre and post responses were received from the targeted 60 potential respondents over multiple semesters. Due to low survey participation, the study has low statistical power. Rather than running a two-way mixed ANOVA with a reduced likelihood that the results would be statistically significant, the researcher has run descriptive statistics. Descriptive statistics can provide insight into how virtual mentoring compares to face-to-face mentoring on the development of mentoring skills for college students. Responses gathered have been analyzed using SPSS software.

This chapter provides the background to the respondents by analyzing their demographics details. The findings then turn to face-to-face and virtual mentoring as well as a crosstabulation of findings by gender. They are presented alongside tables and diagrams used to facilitate a simplistic reader-friendly experience.

### Demographics

#### Participants Language

The table shows all the participants for the study spoke English.

Table 1 - Demographics

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid EN	25	100.0	100.0	100.0

#### Mentoring method

For the study, 60% were face-to-face, while 40% were virtual.

Table 2 - Mentoring Method

	Frequency	Percent	Valid Percent	Cumulative Percent
	F2F	15	60.0	60.0
Valid	Virtual	10	40.0	100.0
	Total	25	100.0	100.0

Gender

For the study, 60% were males while 40% were female.

Table 3 - Gender

	Frequency	Percent	Valid Percent	Cumulative Percent
	Male	15	60.0	60.0
Valid	Female	10	40.0	100.0
	Total	25	100.0	100.0

Age

Many of the participants fall in the youth age category. For instance, as shown in the table below, 44% of the respondents were in the 18-19 age category, 24% in the 21-22 age bracket, and 8% aged 44 years.

Table 4 - Age

	Frequency	Percent	Valid Percent	Cumulative Percent
	17	1	4.0	4.0
Valid	18	6	24.0	28.0

19	5	20.0	20.0	48.0
20	5	20.0	20.0	68.0
21	4	16.0	16.0	84.0
22	2	8.0	8.0	92.0
44	2	8.0	8.0	100.0
Total	25	100.0	100.0	

Race

Table 5 - Race

	Frequency	Percent	Valid Percent	Cumulative Percent
White	18	72.0	72.0	72.0
Black, African America	4	16.0	16.0	88.0
American Indian	1	4.0	4.0	92.0
Filipino	2	8.0	8.0	100.0
Total	25	100.0	100.0	

The study further assessed the race categories of the participants. As shown in the table above, the majority of the respondents were white (72%), Black or African American (16%), American Indian 4%, and Filipino (8%). However, the race was only used as a demographic variable and not for understanding the various respondents' mentoring responses.

Table 6 - Race Categories

	Frequency	Percent	Valid Percent	Cumulative Percent
No, Not Spanish/Hispanic/Latino	22	88.0	88.0	88.0
Valid Yes, Puerto Rican	2	8.0	8.0	96.0
Yes, Other, Spanish, Latino	1	4.0	4.0	100.0
Total	25	100.0	100.0	

Cross Tab: Active Listening

The table shows a crosstabulation between gender and active listening.

Table 7 - Active Listening

	Skilled	Highly skilled	Extremely skilled	Count
Q17 Male	3	7	5	15
Female	0	6	4	10
Total	3	13	9	25

**Face-to-Face and Virtual Mentoring**

The table below shows the performance of the participants for both the Face-to-face and virtual mentoring processes. As shown, the general trend is that performance in pre and post was different, as indicated by the positive deviation in both online and face-to-face mentoring.

However, positive deviations for the skills were higher for online mentoring than it is for face-to-face mentoring. For instance, from the table, the positive deviation for active listening for face-to-face mentoring is 0.66, while online, it is 1.025. Other scores also show the same trend. For

instance, considering constructive feedback, the positive deviation (an indicator of the progress of the participants) is 0.2 for face-to-face mentoring and 0.7 for online mentoring.

Table 8 - Face-to-Face and Virtual Mentoring

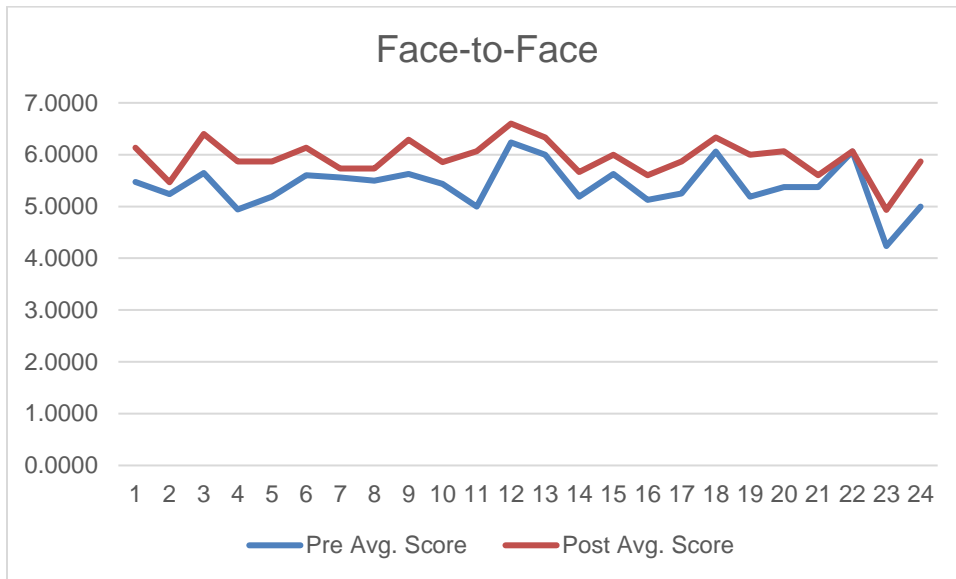
Skill	Face-to-Face			Online		
	Pre. Avg. Score	Post Avg. Score	Deviation	Pre. Avg. Score	Post Avg. Score	Deviation
Q3_1_Active_Listening	5.4706	6.1333	0.662	5.3750	6.4000	1.025
Q3_2_Constructive_Feedback	5.2353	5.4667	0.231	5.0000	5.7000	0.700
Q3_3_Trust	5.6471	6.4000	0.752	6.3750	6.4000	0.025
Q3_4_Communication_Styles	4.9412	5.8667	0.925	5.0000	6.1000	1.100
Q4_1_Improve_Communication	5.1875	5.8667	0.679	4.8750	5.8000	0.925
Q4_2_Coordinating	5.6000	6.1333	0.533	4.8750	5.9000	1.025
Q4_3_Clear_Expectations	5.5625	5.7333	0.170	5.1250	6.0000	0.875
Q4_4_Aligning_Expectations	5.5000	5.7333	0.233	5.3750	6.0000	0.625
Q5_1_Professional_Differences	5.6250	6.2857	0.66	5.8750	6.0000	0.125
Q5_2_Meet_Goals	5.4375	5.8571	0.419	5.2500	6.3000	1.050
Q6_1_Abilities	5.0000	6.0667	1.066	5.2500	6.1000	0.850
Q6_2_Motivating	6.2353	6.6000	0.364	5.6250	6.3000	0.675
Q6_3_Confidence	6.0000	6.3333	0.333	6.0000	6.6000	0.600
Q7_1_Creativity	5.1875	5.6667	0.479	4.7500	6.1000	1.350
Q7_2_Contributions	5.6250	6.0000	0.374	5.3750	6.3000	0.925
Q7_3_Independence	5.1250	5.6000	0.475	4.5000	5.8000	1.300
Q7_4_Biases	5.2500	5.8667	0.616	5.2500	6.1000	0.850

Q8_1_Background	6.0625	6.3333	0.270	5.2500	6.3000	1.050
Q8_2_Networking	5.1875	6.0000	0.812	5.0000	6.0000	1.000
Q8_3_Set_Goals	5.3750	6.0667	0.691	5.6250	6.4000	0.775
Q8_4_Balance_Work	5.3750	5.6000	0.225	6.0000	6.3000	0.300
Q9_1_Role_Model	6.0588	6.0667	0.007	5.5000	6.6000	1.100
Q9_2_Resources	4.2353	4.9333	0.698	4.2500	5.6667	1.417
Q10_1_Quality	5.0000	5.8667	0.866	4.7500	6.2000	1.450

However, the table shows some instances where the positive deviation in the face-to-face group for the mentoring skills score is higher than the online mentoring. For instance, in professional differences, the positive deviation for face-to-face mentoring is 0.6, while for online mentoring, the positive deviation is 0.1. This is an indicator that the skill was better relayed through face-to-face learning as opposed to online mentoring. Other skills further indicate a similar trend, such as 'abilities' 1.0 for face-to-face learning and 0.8 for Online mentoring. However, the variation is seen in only two of the skills. Only three face-to-face items scored higher than online: Trust, professional differences, and abilities.

The line graph below shows the participants' performance in face-to-face mentoring, pre scores, and post scores. The graph shows a generally positive trend, where the post-average scores are higher than the pre-intervention scores. This is an indicator that the intervention successfully imparts various skills and abilities in the study participants. The intervention (face-to-face mentoring) on some skills is considerably higher than other skills, as shown in the table below.

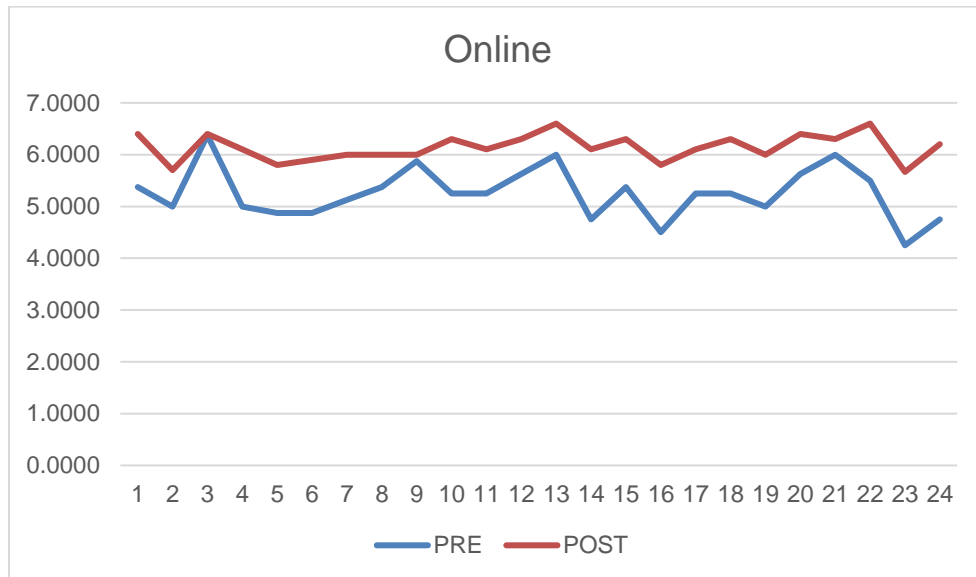
Figure 1 - Face-to-Face



The same trend can be seen for online mentoring. As hypothesized in the study, variations in face-to-face and online mentoring are apparent. However, for the virtual mentoring process, the rate of change of the various skill is bigger than online mentoring. More specifically, from the line graph shown below, apart from only one skill that shows the same score for both the pre- and post-survey, all other scores show a wide margin of positive deviation.



Figure 2 - Online



Comparing the online (virtual) and face-to-face mentoring processes, the extent of positive deviation is greater online than face-to-face mentoring prospects. These findings deflect the importance of physical interactions during the mentoring processes as widely established in the extant literature. However, further analysis and understanding of the trend will be provided in the study's discussion section.

**Gender**

The table below shows the average scores as clustered by gender in the various skill-groups. A general trend is that females performed better as compared to males in the various categories. However, in a few of the instances, males performed better in mentoring skills. The average score for the males is 5.9, while that for the females is 6.1, which indicates that females performed better than males.

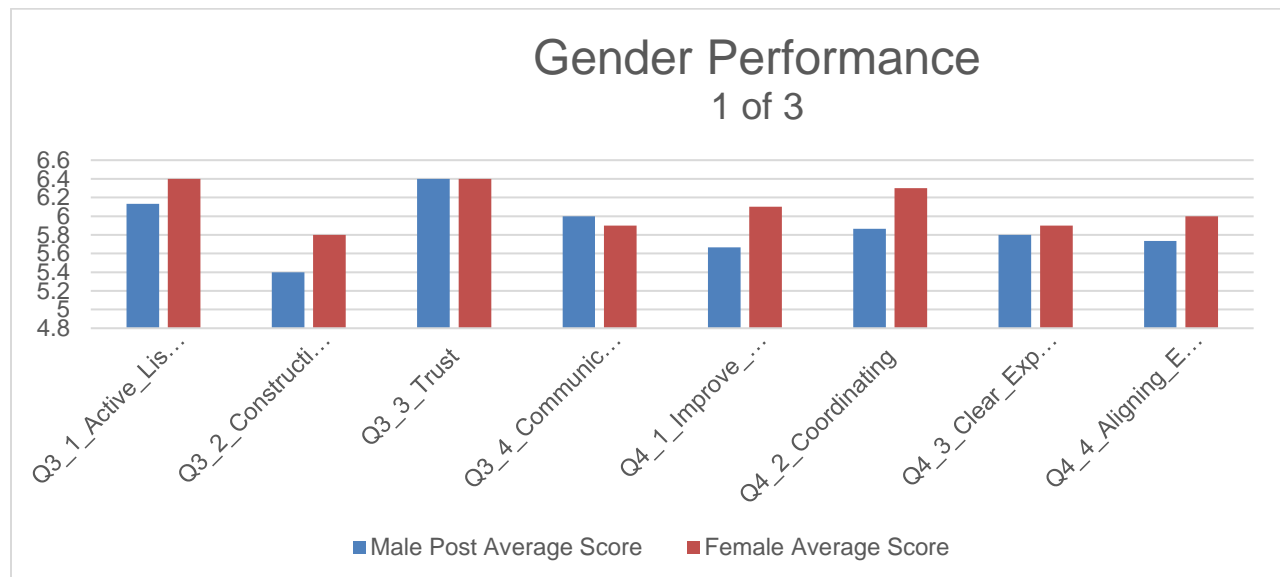
Table 9 - Skills by Gender

Skill	Male Post Average Score	Female Post Average Score
Q3_1_Active_Listening	6.1	6.4
Q3_2_Constructive_Feedback	5.4	5.8
Q3_3_Trust	6.4	6.4
Q3_4_Communication_Styles	6	5.9
Q4_1_Improve_Communication	5.6	6.1
Q4_2_Coordinating	5.8	6.3
Q4_3_Clear_Expectations	5.8	5.9
Q4_4_Aligning_Expectations	5.7	6
Q5_1_Professional_Differences	6.1	6.2
Q5_2_Meet_Goals	5.8	6.3
Q6_1_Abilities	6.2	5.8
Q6_2_Motivating	6.5	6.4
Q6_3_Confidence	6.3	6.6
Q7_1_Creativity	5.6	6.1
Q7_2_Contributions	6.2	6
Q7_3_Independence	5.5	5.9
Q7_4_Biases	5.8	6.2
Q8_1_Background	6	6.8
Q8_2_Networking	5.9	6.1
Q8_3_Set_Goals	6.2	6.1
Q8_4_Balance_Work	5.8	5.9

Q9_1_Role_Model	6.4	6.1
Q9_2_Resources	5	5.4
Q10_1_Quality	6	6
Valid N (listwise)	5.9	6.1

The performances above can be shown using descriptive statistics. In the graph shown below, females have generally performed better in the eight mentoring skills than males. More specifically, females have had a higher performance in *active listening skills, constructive feedback, improved communication, coordinating, clear expectations, and aligning expectations with the mentees*. Males have only performed better in two skills-- *Identifying and accommodating different communication styles and establishing a relationship based on trust*. However, for trust, both males and females have the same performance.

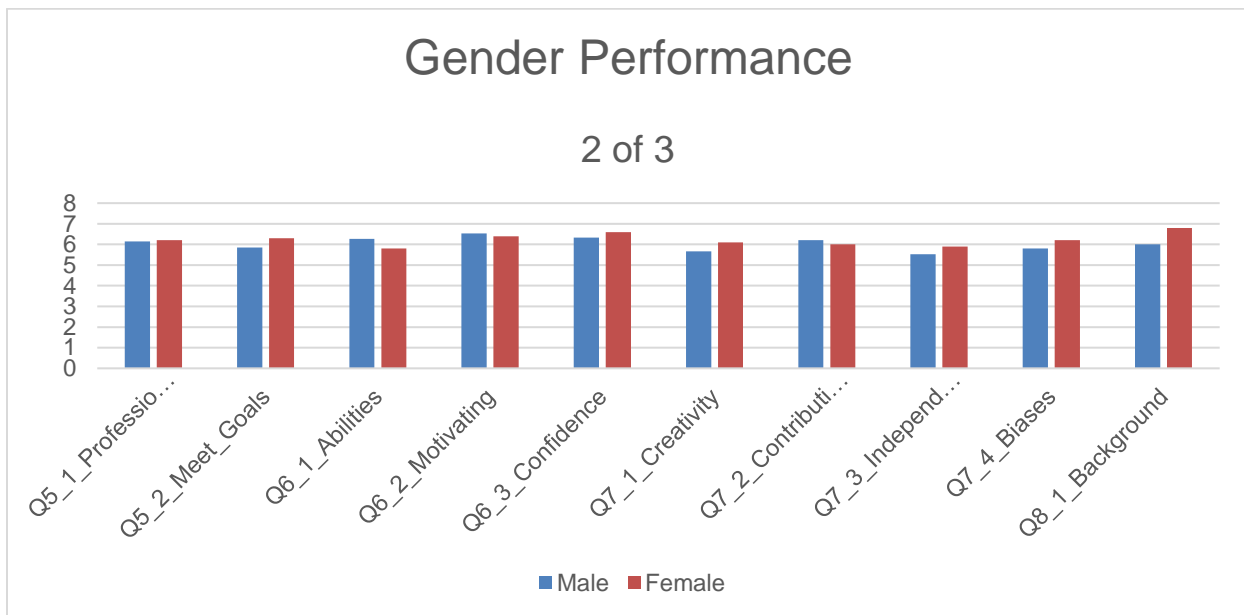
Figure 3 - Gender Performance 1 of 3



Other skills can be further compared between the gender groups. In the graph below, the differences in gender scores in various mentoring skills categories is apparent. The females have

generally scored higher in the various skill domains as compared to males. Precisely, the females have scored higher in *Considering how personal and professional differences may impact expectations, Helping mentees develop strategies to meet goals, Building mentees' confidence, creativity, Acknowledging your mentees' professional contributions, biases, and effectively working effectively with mentees who personal background is different from your own (age, race, gender, class, region, culture, religion, family composition etc.)*. Males have witnessed higher performances in *abilities, motivating and contributions*.

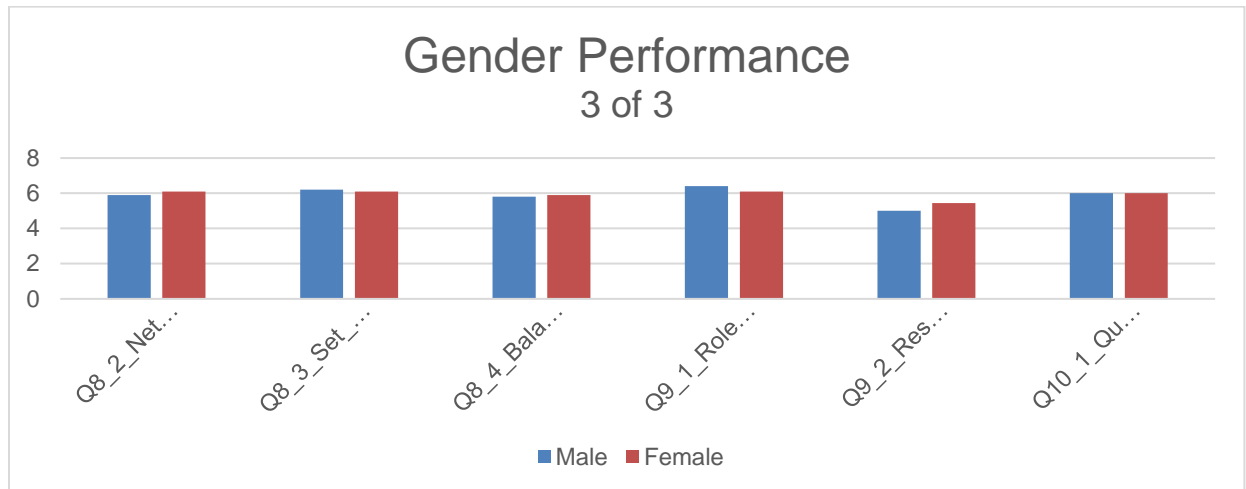
Figure 4 - Gender Performance 2 of 3



And for the last skill set;

The performances are average for the two groups.

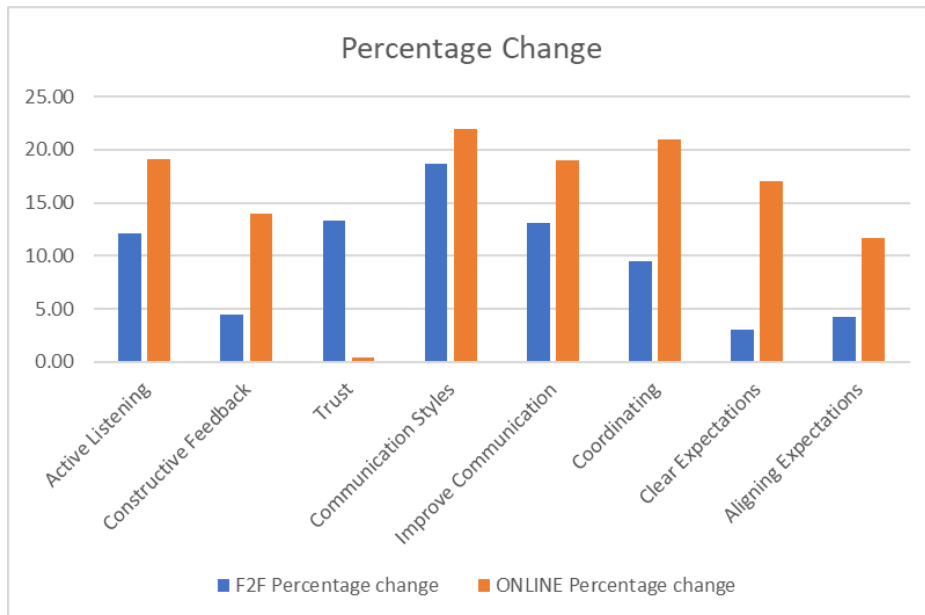
Figure 5 - Gender Performance 3 of 3



**Percentage Changes**

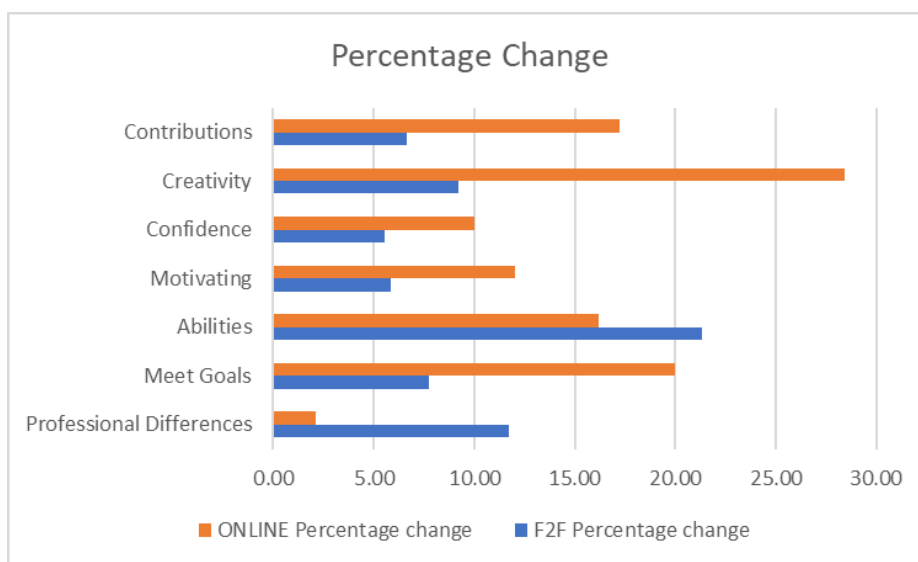
A clear pictorial representation shows the percentage of the skills in both face-to-face and online mentoring. To give a clear understanding and show the magnitude of variations of the two mentoring modalities, the study provided a pictorial comparison of the magnitudes of change of the two processes. The comparison below considers the magnitude of change in the post-intervention scores of the two mentoring modalities. For instance, as shown in the graph below the post survey performance on active listening skills is higher for online mentoring than face-to-face mentoring.

Figure 6 - Percentage Change 1 of 3



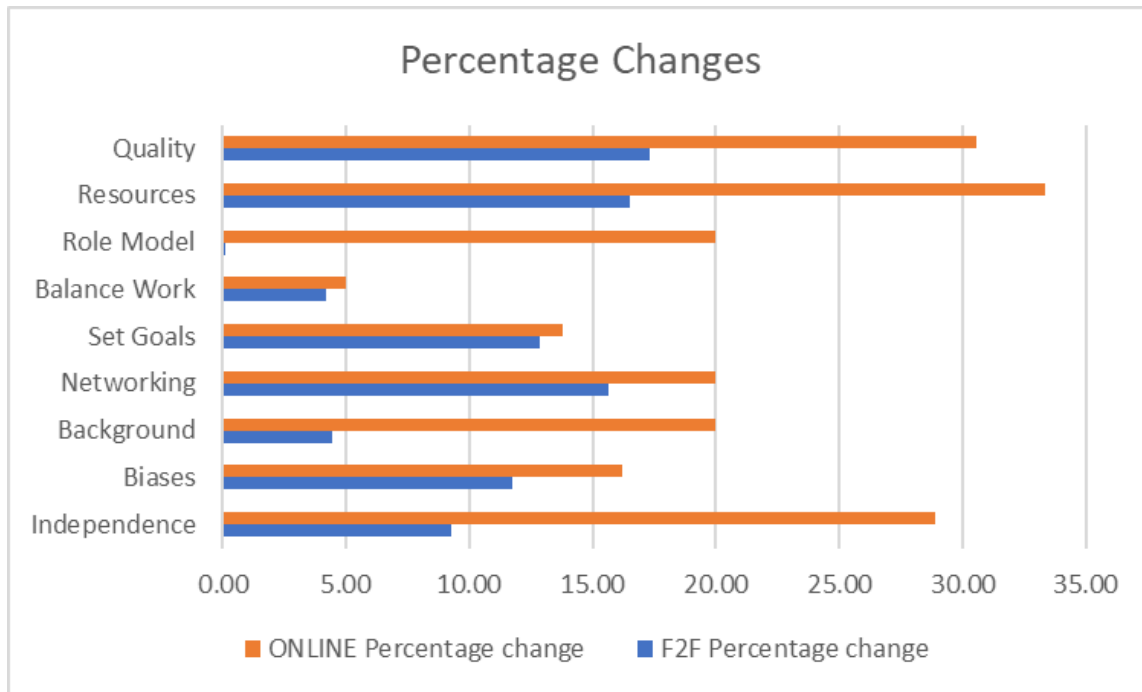
Consider the graph below, the percentage scores of the various skills are higher for online mentoring skills. However, for the skills ‘abilities’ and ‘professional differences’ the trend is different. The scores are higher for face-to-face mentoring then it is for online mentoring.

Figure 7 - Percentage Change 2 of 3



The graph below shows the performance of the participants in the other skills. As shown, the trend is generally the same. Participants performed higher in the skills using online mentoring than for face-to-face interaction.

Figure 8 - Percentage Change 3 of 3



## **Chapter 5: Discussion**

### **Introduction**

This chapter discusses the findings of the study and the implications for further practice. It examines various relationships established in the study and the reasons for the observations. Additionally, this section will compare the results of previous studies and findings to observations established in the study as a way of making inferences. It is critical that the findings of this study compare favorably to other findings and studies already established.

### **Summary of Findings**

The questions and hypothesis of the study were answered. While the demographic information of the respondents was assessed, the core aim of the study was to understand the variations in developing leadership self-efficacy through the two modalities of interaction: face-to-face and virtual. A general trend discovered in the study was that the scores in the pre-intervention and post-intervention for each of the two mentoring platforms (virtual and face-to-face) were significantly different. In both instances, the participants experienced a positive deviation of their self-efficacy, indicating that the programs were beneficial to their development. A core purpose of the paper was to compare virtual and face-to-face modes of interaction and assess the effectiveness of each model. A general trend indicates that positive deviation for skills were higher for online mentoring as compared to face-to-face mentoring. This general observation has mixed support in literature and deviates from conventional research. For instance, in a One-On-One mentorship program at the Society for General Internal Medicine Annual Meeting, Pillon (2013) indicated that 67% of the participants participated in virtual mentoring through email or telephone, and of the respondents, 79% indicated that long distance mentoring was less effective as compared to in-person mentoring for the mentees.



Various schools of thought believe that the personal interaction occurring in face-face mentoring improves the trust and in turn supports the exchange. In the study by Pillon (2013), many of the respondents indicated concerns with lack of direct observation. Some of the strongest mentor-mentee bonds are established through strong personal bonds, such as the Mark Zuckerberg and Steve Jobs famed connection. Other studies indicate that it becomes difficult to replicate such kinds of interaction through virtual or online avenues. Therefore, for online mentoring to achieve its intended purpose, there is need for mentors to establish a rapport with their mentees.

When comparing the self-efficacy skills of each of the two mentoring modes, the positive deviation for active listening for face-to-face mentoring is 0.66 while it is 1.025 for virtual mentoring. Additionally, for constructive feedback, the positive deviation (indicating a progress of knowledge among the participants) is 0.2 for face-to-face and 0.7 for online mentoring. The positive deviations indicate that there was a higher increase in the leadership efficacy when mentoring was provided through online as compared to a face-to-face interaction. The same trend can further be examined using the table below. The positive deviation in skills is generally higher for online interaction as compared to face-face interaction.

Table 10 - Skills Trend

Skill	F2F (Post)	ONLINE (Post)
Q3_1_Active_Listening	0.662	1.025
Q3_2_Constructive_Feedback	0.231	0.700
Q3_3_Trust	0.752	0.025
Q3_4_Communication_Styles	0.925	1.100

Q4_1_Improve_Communication	0.679	0.925
Q4_2_Coordinating	0.533	1.025
Q4_3_Clear_Expectations	0.170	0.875
Q4_4_Aligning_Expectations	0.233	0.625
Q5_1_Professional_Differences	0.66	0.125
Q5_2_Meet_Goals	0.419	1.050
Q6_1_Abilities	1.066	0.850
Q6_2_Motivating	0.364	0.675
Q6_3_Confidence	0.333	0.600
Q7_1_Creativity	0.479	1.350
Q7_2_Contributions	0.374	0.925
Q7_3_Independence	0.475	1.300
Q7_4_Biases	0.616	0.850
Q8_1_Background	0.270	1.050
Q8_2_Networking	0.812	1.000
Q8_3_Set_Goals	0.691	0.775
Q8_4_Balance_Work	0.225	0.300
Q9_1_Role_Model	0.007	1.100
Q9_2_Resources	0.698	1.417
Q10_1_Quality	0.866	1.450

Pillon (2013) indicated that to date most of the studies comparing face-to-face and online interaction examine virtual mentoring in the domains of email or telephone communication.

Unlike this study that used the C.A.M.P Osprey model where there are video interactions, previous studies have mostly used emails and telephone as a way of long-distance mentoring. A possible reason for the disconnect in the results. Pillon (2013) believes that email worked best for frequent and short exchanges, and for simple questions and general information. However, emails are reduced in their ability to convey critical feedback or commenting on an individual's knowledge, skills, abilities, attitudes, beliefs and behavior. Email communications used as a traditional virtual mentoring tool reduce the ability of the mentees to develop trust, respect, and communication which are critical for an effective mentor-mentee relationship. Telephone communication allowed mentors to add some non-verbal cues to the communication process such as tone, pitch, flow of speech, but could not allow for conveying of crucial facial expression and body language.

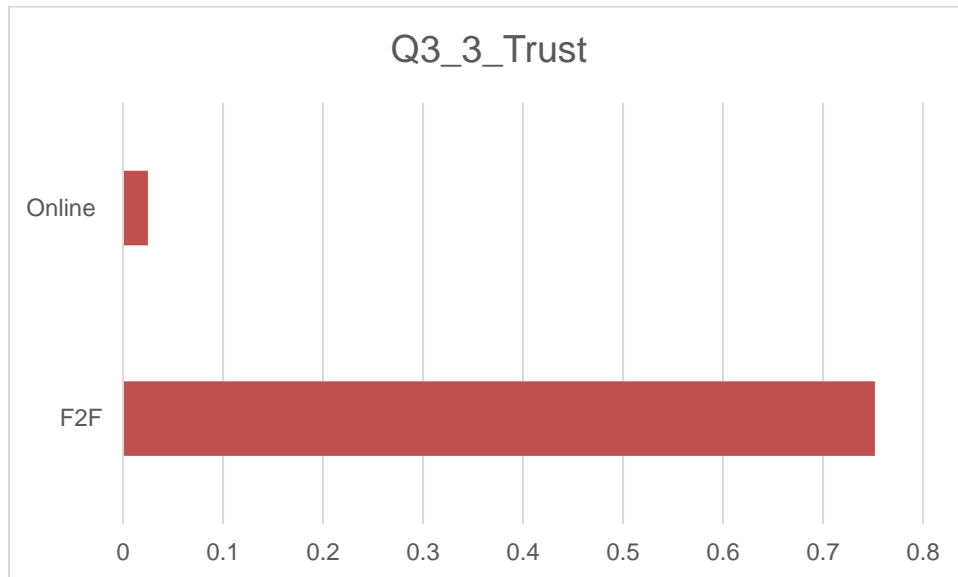
Pillon's (2013) study established that virtual mentoring done through emails and telephone modalities come with inherent challenges. Many of the challenges faced in his study are seen throughout the virtual modality. However, modern mentoring platforms have developed employing various forms of technology such as videos, cameras, and the possibility of virtual interaction with the mentor. Using this technology, the mentor and mentee can develop a rapport and improve trust between them just as it would happen in the traditional face-to-face interaction. By developing trust, the relationship between the mentor and mentee grows naturally. For the mentee trust is critical to the interaction as the mentor starts becoming the advisor. Any advice given by the mentor will mostly likely be acted upon if trust between the participants is already established. However, through the traditional model of email or telephone long distance mentoring, trust fails to develop early in the relationship.

Ackerman et al. (2011) documented that engagement is a crucial recipe for the success of the mentor mentee interaction. In most cases, it is easier for an individual to focus and give full attention to people sitting in front of them. For the mentee, this implies that they can benefit from having a mentor or instructor's undivided attention. Additionally, the mentee may provide more attention when it is only two of them in the interaction, helping to solidify the interactions. For instance, from the findings the positive deviation of motivating as a trait is higher in online interaction (0.675) as compared to face-to-face (0.364). This is an indication that through online interaction, the mentors achieved a tremendous step in developing the 'motivating' self-efficacy trait.

In the following section, it's critical to understand some of the deviations in findings and link them to previous studies and literature as a way of contextualizing the findings.

**Trust.** Trust is a critical component in the mentor-mentee relationship. Rademaker et al. (2016) believe that trust is a critical component for high-stakes relationship. The authors defined trust as a multifaceted construct comprising of harmony, reliability, and concern. In other settings, Rademaker et al. (2016), established that trust is a critical component of positive outcomes. For instance, in the healthcare industry, the trust between the patient and provider is critical for successful health outcomes. In this study, the positive deviation in trust as leadership self-efficacy deviates from the other attributes. For instance, the positive deviation of trust in face-to-face mentoring is higher than it is for online mentoring. The association can be clearly shown in the exhibit below.

Figure 9 - Trust



The study established that trust is highly developed in the face-to-face interaction as compared to online interactions. The findings are consistent with other previous studies that have highlighted the role of trust in maintaining positive relationships. In order to establish trust, positive exchanges between the mentor and the mentee need to occur. However, trust does not come so easily. Instead, it must be built through numerous interactions. It requires time and patience to build. Trust is linked to openness, mutual reliance, respect, and willingness to be vulnerable. In some instances, concepts that are not easy to achieve through an online interaction. Successful mentoring relationships depend on the level of trust that the mentor and mentee develop.

Feldman (1999) documented that trust is critical to the early stages of the mentoring process.

When established early in the mentoring process, trust facilitates positive mentoring outcomes.

Hudson (2016) believes that mentors demonstrate various forms of interaction from the highly supportive interaction to laissez-faire or ad-hoc approaches which can inform the quality of outcomes. Mentors and mentees form professional relationships at varying levels, and the mentoring relationships can be “contextualized as close relationships that occur along a spectrum

from highly functional to highly dysfunctional, with most occurring between” (Gormley, 2008, p. 45). These views recognized the complexities involved in the mentoring relationship.

However, trust is a critical component for facilitating these complex relationships. Through trust mentoring can significantly help mentees develop in their professional capabilities and build effective relationships. The quality of the mentor mentee interaction has multiple factors, including the mentors and mentees professional qualities (Rippon & Martin, 2006), skills, and the environment in which the mentoring occurs (Forsbach-Rothman, 2007). However, without developing trust, these relationships can fail to reach their full potential.

Turner (2002) further supported the finding that trust is more developed when there is some form of face-to-face interaction between people, or what is considered a ‘personal touch’. Developing trust is a complex process that requires that the mentee becomes familiar with the mentor. Both through actions and language. In a two-day Mentoring for Effective Teaching (MET) program, Hudson (2016) asked that the mentors and mentees document their understanding of the relationship. Hudson (2016) found that a positive mentor mentee relationship based on trust is critical to optimizing the benefits of the interaction. Trust helped to optimize benefits in face-to-face interaction as compared to online interactions for the two-day MET program. Relationships based on trust made participants more willing to invest time and helped to avoid conflicts in their interactions. Active participation learning requires mentors to develop supportive environments for learning, and foster opportunities to reflect on experiences. While reflection is typically a private activity. There are multiple benefits for students to share their reflections with the mentors. Reflection typically requires some form of self-disclosure, owning up to mistakes or uncomfortable feelings that can arise during the mentoring process.

However, through trust mentors can aid students through self-disclosure. Developing trust can also ease concerns of the student that the mentor might exploit their vulnerabilities.

There is 'psychological safety' that comes with trust developed through interactions. For the mentee, it is that the mentor will not punish, embarrass, ridicule, or punish someone for speaking their mind or showing their insecurities. Psychological safety plays an important role in the learning experience and has been previously studied (Kolb, 2005). Supportive environments often have a high degree of psychological safety. Typically, this includes environments where mistakes can be openly discussed and vulnerabilities disclosed. This type of disclosure can lead to emotional intimacy and may foster the development of feelings of friendships between the mentor and mentee. However, such relationships are not easy to establish through the online medium. The nature of virtual learning lends itself to concerns about being exploited or conversations being recorded and misused. Therefore, mentors must take their roles extremely seriously in order to not hinder mentees growth. When trust is developed expectations can be developed that supports the progress of everyone in the relationship.

### **Gender**

For the study, there was interest to understand the implications of gender on performance of various self-efficacy skill sets. The results indicate that there are indeed variations in gender performance across the various skill sets. The average performance of females in various self-efficacy skill sets are considerably higher than those of the males. The average score for a male is 6.1 and that of a female is 6.4. The scores of the two groups is presented below in the table.

Of the 24 self-efficacy skills, females performed better as compared to males in 16 of the self-efficacy attributes. This is a step in understanding the variations in various leadership skills among males and females and can loosely indicate the effect of online mentoring on females.

Lahdenpera (2018) defined self-efficacy as the belief that an individual can accomplish a specific task and how well they can perform a task in a specific context. These beliefs determine how people feel think and motivate themselves.

Table 11 - Post Skills Compared

Skill	Male Post Average Score	Female Post Average Score
Q3_1_Active_Listening	6.1	6.4
Q3_2_Constructive_Feedback	5.4	5.8
Q3_3_Trust	6.4	6.4
Q3_4_Communication_Styles	6	5.9
Q4_1_Improve_Communication	5.6	6.1
Q4_2_Coordinating	5.8	6.3
Q4_3_Clear_Expectations	5.8	5.9
Q4_4_Aligning_Expectations	5.7	6
Q5_1_Professional_Differences	6.1	6.2
Q5_2_Meet_Goals	5.8	6.3
Q6_1_Abilities	6.2	5.8
Q6_2_Motivating	6.5	6.4
Q6_3_Confidence	6.3	6.6



Q7_1_Creativity	5.6	6.1
Q7_2_Contributions	6.2	6
Q7_3_Independence	5.5	5.9
Q7_4_Biases	5.8	6.2
Q8_1_Background	6	6.8
Q8_2_Networking	5.9	6.1
Q8_3_Set_Goals	6.2	6.1
Q8_4_Balance_Work	5.8	5.9
Q9_1_Role_Model	6.4	6.1
Q9_2_Resources	5	5.4
Q10_1_Quality	6	6

Peters (2013) found that student's self-efficacy is higher in teacher-centered than in learner centered classrooms. However, in another study by Kogan and Laursen (2014) they found that females make higher gains from student-centered approaches as they show more confidence in their mathematical abilities in this type of environment. Self-regulation is how students regulate cognition, behavior, motivation and emotions in enhancing their personal learning process (Pintrich, 2004). Self-regulation plays a large role in the quality of learning students receives and student's self-efficacy beliefs affect their outcomes.

Variation in effect sizes were observed in the 'role model' attribute where males performed better than females. A previous study by Schyns and Sanders (2005) examined gender differences of transformational leadership and leader's occupational self-efficacy. The idea of the study was to understand the differences in the processes that males and females go through when developing their self-efficacy. The researchers ended up not finding a relationship between self-rated transformational leadership and occupational self-efficacy in women. However, they did find a positive association for men, but in the end, they could not account for the process that informed the differences. As an implication of the research they discussed the importance of recognizing the existence of the differences between males and females. As well as how the two genders interact differently between transformational leadership and self-efficacy. This information is beneficial for organizations when designing programs for improving employee's occupational self-efficacy.

Previous studies (Machida-Kosuga, Schaubroeck, & Feltz, 2016) examined the role of self-efficacy as vital to the progression of women in careers and leadership positions. However, Machida-Kosuga et al. (2016) discussed that an individual's sense of personal agency in leadership positions can be an obstacle. Leader self-efficacy plays a large role in whether an individual pursues personal development, which can impact their ability to obtain high level positions. Previous studies have shown a weak link between women's self-efficacy and career growth. Instead, many of the previous studies focused on barriers that prevent women from obtaining high level positions, such as resources, social beliefs, and family responsibilities. Studies such as these typically focus on the diminished belief of women's leadership abilities. However, the results of this study indicated that this is changing, and women perform better in leadership indicators as compared to males.

Machida-Kosuga (2016) established that for women there are three developmental experiences that can impact their development. First, there is a need to be challenged by complex assignments. Developmental challenges can motivate individuals to experiment with strategies and aid in mastering the skills needed to overcome such challenges. In Bandura's social cognitive theory (1997), mastery experiences are critical to developing self-efficacy. Secondly, feedback is critical to leadership development. Bandura's (1997) study determined females performed better in constructive feedback as compared to males (5.8 versus 5.4). Constructive feedback is critical to eliminating negative self-behaviors. It can be used to examine one's weaknesses, strengths, and skills, helping learners pave the way for improvement. Lastly, McCauley (2013) believes that support is critical to developing leadership self-efficacy. Females could have performed better in many of these attributes due to support from their mentors and constructive feedback given to them.

### **Performances across Attributes**

Understanding performances across the attributes of leadership self-efficacy is vital to designing virtual mentorship programs for K-12. In this study, the results indicate variations in performances throughout the attributes. For some of the attributes the variations were negligible, while for others, the variations were significant. When educators understand the degree of variation among the attributes they can start to design and improve on attributes with lower performances. For instance, both groups performed dismally in 'resources' (*Helping your mentees acquire resources*) which had a score of 5 for males and 5.4 for females and stimulating your mentees creativity (score of 5.6 and 6.1 males and females respectively). For some indicators there was significant performance. For instance, 'confidence' (*Please rate how skilled you feel you are in each of the following areas: Building mentees' confidence*), the score is 6.3

for males and 6.6 for females. The scores were also high for ‘background’ (*Please rate how skilled you feel you are in each of the following areas: - Working effectively with mentees who personal background is different from your own (age, race, gender, class, region, culture, religion, family composition etc.)*) 6 for males and 6.8 for females. Background is particularly critical in modern times like these. Leaders are increasingly facing multicultural workforces that require them to adjust to the concerns of their workforce.

Being culturally competent is critical for leaders as it ensures that all employees are treated in the right manner. In turn this provides employees a path to reaching their full potential regardless of race, background, or age. This leads to increased morale across the board. Females performed better for ‘background’ 6.8 as compared to males 6. Chuang (2013) believes that the world is changing as many organizations extend to international regions. Technological advancements have also helped create the existence of a global economy. With a global economy emphasis should be placed on creating cross cultural communication for companies to be successful in unfamiliar territories. To deal with these changes leaders and educators must respond to the need for a culturally sensitive leadership. Leaders should work on developing their interpersonal skills as a way of increasing cultural sensitivity.

### **Impacts of COVID-19 on the Research**

The COVID-19 pandemic has had tremendous effects on the various avenues of life, including business, academia, travelling and clinical research. Most studies consider internal validity of research extremely important. However, the generalizability of a study to other settings or studies is equally as important. Bradt (2020) discusses how there is a growing need for studies to be replicated in similar situations outside the scope of its original parameters. The COVID -19 pandemic greatly affected the study, especially the number of participants that could

take part in the study. It was the hope that more than 60 respondents would take part in the study. However, with the COVID-19 pandemic, this was not possible. Restrictions on travel made it nearly impossible for mentors and mentees to access public areas such as schools. With the situation, the study experienced a sizable shrink in the number of participants, with only 25 respondents participating in the study.

The study initially envisioned a sample size of 40 respondents, the smallest to produce statistically significant results. The researcher further envisioned working closely with the university instructor responsible for overseeing the mentoring program as a way of ensuring that every student in the course completed the survey after finishing the mentoring course. However, all these were not possible due to the COVID -19 pandemic, which in turn reduced the number of respondents to only 25. This affected the original data analysis plan and instead of conducting a two-way ANOVA to understand the interactions, the study resorted to descriptive statistics to understand the changes in modality. Due to the small sample size, the external validity of the study is in question. However, the results compare favorably with other similar studies conducted in non-limiting settings.

Like many areas this research study was not immune to the effects of COVID-19 as it required the use of human subjects. The pandemic crippled academic research in an unprecedented manner. For instance, typically research is done through libraries. However, this was not possible as most libraries were closed. For example, the University of North Florida library was closed for months to help avoid spreading the virus. Hence, I could not obtain research materials such as books for the completion of the project. Nevertheless, I used online access and retrieval platforms provided by the institution to obtain books and other forms of publication.

Bradt (2020) notes that continuing studies have seen significant reduction in enrolment and higher attrition than usual as people feel overwhelmed by the pandemic, and therefore, less likely to enroll or continue participating in research studies. Even when online data collection is possible as was the case for this study, asking people to complete surveys is becoming difficult given the burden placed on individuals by this pandemic. These challenges delayed study findings and resulted in missing data (as was the case for this study). Bradt (2020) discussed how the shifts in data collection modalities can affect study findings. The situation could prevent participants from providing open and honest answers. Missing data can also threaten the statistical power of studies.

### **Implications for Further Practice**

From the study, virtual mentoring is critical for leadership development among college students. Unlike conventional practices where mentoring was assumed to be more effective with face-to-face interactions, the new findings suggests the need for change in practice. For instance, there is a need to develop and expand virtual mentoring as a leadership development model in schools.

**Leadership Development in the Corporate World.** Professional building is an ongoing need in the corporate world. While there is a need to promote professional building and development in the business world, time constraints are a barrier to face-to-face training. However, this study indicates that virtual mentoring is more than effective than face-to-face mentoring in developing leadership skills.

Miner (2020) recognizes changes in the workplace. People are figuring out ways of managing their time, maintaining personal connections, and remaining productive. However, a crucial item that has fallen to the wayside is professional development, especially developing

future leaders. Miner (2020) believes that leadership is successful when presented through an immersive experience. Therefore, leadership development programs are based on in-person meetings and collaborative activities. However, the results of the study indicate that a virtual mentoring program is critical to leadership development. With the convenience of meeting remotely, there are increased opportunities for mentoring and learning conversations.

Corporate mentorship can take the form of senior employees mentoring entry level employees. Mentoring programs are often outsourced due to time constraints. Providing senior employees with the technology to mentor entry level employees gives leaders the opportunity to provide employees personal growth opportunities. Especially for companies under cost cutting measures.

**Leadership, Pedagogy and Professional Development in K-12.** The study indicated the need for establishing trust for mentoring programs. Trust is critical to ensuring that mentees open up during the mentor mentee relationship. As noted in the research, trust propels teams to new heights in the interactional processes. When developing mentorship interventions there is a need to ensure that trust is primary to the process.

Additionally, the study indicates that schools virtual learning is critical to professional development. Schools can consider low-cost virtual programs as compared to expensive programs that require face-face interaction.

### References

- Abdolalizadeh, P., Pourhassan, S., Gandomkar, R., Heidari, F., & Sohrabpour, A. A (2017). Dual peer mentorship program for undergraduate medical students: Exploring the perceptions of mentors and mentees. *Medical Journal of the Islamic Republic of Iran*, 31(1): 1-5.
- Ackerman, R. A., Kashy, D. A., Donnellan, M. B., & Conger, R. D. (2011). Positive-engagement behaviors in observed family interactions: A social relations perspective. *Journal of Family Psychology*, 25(5), 719.
- Allen, I., & Seaman, J. (2013). *Changing course: Ten years of tracking online education in the United States*. The Online Learning Consortium. Retrieved from [http://onlinelearningconsortium.org/publications/survey/changing\\_course\\_2012](http://onlinelearningconsortium.org/publications/survey/changing_course_2012)
- Anwer, M., Hong, S., Alwi, S. K., Raza, D., & Nisa. (2017). Factors of effective mentoring: An empirical study of post-graduate faculty and students in Pakistan. *New Horizons* (1992-4399), 11(1): 41-58.
- Avolio, B. J., & Gardner, W. L. (2005). Authentic leadership development: Getting to the root of positive forms of leadership. *The Leadership Quarterly*, 16: 315-338.
- Baker, Sandra. (2010). Nurse Educator Orientation: Professional Development That Promotes Retention. *Journal of continuing education in nursing*. 41. 413-7. 10.3928/00220124-2010050302.
- Bandura, A. (1986). *Social foundations of thought and action: A social-cognitive theory*. Englewood Cliffs, NJ: Prentice-Hall.
- Bandura, A. (1994). Self-efficacy. In V. S. Ramachaudran (Ed.), *Encyclopedia of human behavior* (Vol. 4, pp. 71-81). New York: Academic Press.



- Bandura, A. (1997). Self-efficacy and health behavior. In A. Baum, S. Newman, J. Wienman, R. West, & C. McManus (Eds.), *Cambridge handbook of psychology, health and medicine* (pp. 160-162). Cambridge: Cambridge University Press.
- Bellon-Harn, M. L., & Weinbaum, R. K. (2017). Cross-cultural peer-mentoring: Mentor outcomes and perspectives. *Teaching and Learning in Communication Sciences & Disorders, 1*(2), 3.
- Bellon-Harn, M. L., & Weinbaum, R. K. (2017). Cross-cultural peer-mentoring: Mentor outcomes and perspectives. *Teaching and Learning in Communication Sciences & Disorders, 1*(2), 3.
- Bereiter, C., & Scardamalia, M. (1987). *The psychology of written composition*. Hillsdale, NJ: Lawrence Erlbaum Associates.
- Best, K. (2012). Florida mentoring program connects Gator athletes with elementary students. *Cisco Blogs*. Retrieved from <https://blogs.cisco.com/perspectives/florida-mentoring-program>
- Bradt, J. (2020). Impact of COVID-19 on clinical research., <https://doi.org/10.1080/08098131.2020.1777785>
- Brezina, T., Kuperminc, G., & Tekin, E. (2016). *Future selves, motivational capital, and mentoring toward college: Assessing the impact of an enhanced mentoring program for at-risk youth* (pp. 1-42). Washington, D.C.: Office of Justice Programs. Retrieved from <https://www.ncjrs.gov/pdffiles1/ojjdp/grants/250499.pdf>
- Briggs, A. (2018). Ten ways to overcome barriers to student engagement online. Retrieved from <http://at.blogs.wm.edu/ten-ways-to-overcome-barriers-to-student-engagement-online/>

- Brodeur, P., Larose, S., Tarabulsky, G., & Feng, B. (2017). Mentors' behavioral profiles and college adjustment in young adults participating in an academic mentoring program. *International Journal of Mentoring and Coaching in Education*, 6(1), 2-18. doi: 10.1108/ijmce-03-2016-0027
- Brown, B. P., Zablah, A. R., & Bellenger, D. N. (2008). The role of mentoring in promoting organizational commitment among black managers: An evaluation of the indirect effects of racial similarity and shared racial perspectives. *Journal of Business Research*, 61(7): 732-738.
- Cansoy, Ramazan. (2017). The effectiveness of leadership skills development program for university students. *Journal of History, Culture & Art Research / Tarih Kültür Ve Sanat Arastirmalari Dergisi*, 6(3): 65-87.
- Cavell, T. A. (Sep 2015). Mentoring in the social context: Mentors' experiences with mentees' peers in a site-based program. *Children & Youth Services Review*, 56: 185-192.
- Chen, C., Jones, K., & Moreland, K. (2017). How online learning compares to the traditional classroom: Measuring accounting course outcomes. *CPA Journal*, 58(9), 44-47.
- Chuang, S. F. (2013). Essential skills for leadership effectiveness in diverse workplace development. *Online Journal for Workforce Education and Development*, 6(1), 5.
- Collins, A., Brown, J. S., & Newman, S. E. (1987). Cognitive apprenticeship: Teaching the craft of reading, writing and mathematics (Technical Report No. 403). Cambridge, MA: BBN Laboratories, Centre for the Study of Reading, University of Illinois.
- Cotton, K. (1989). Classroom questioning: School improvement research series. *Northwest Regional Educational Laboratory*. Retrieved from <http://www.nwrel.org/scpd/sirs/3/cu5.html>.

Covey, S. (2011). *The 7 habits of highly effective teens*. New York, NY: Simon and Schuster.

Drysdale, J., Graham, C., & Borup, J. (2014). An online high school "shepherding" program: Teacher roles and experiences mentoring online students. *Journal of Technology and Teacher Education*, 22(1), 9-32. Retrieved from <https://www.learntechlib.org/p/112372/>

Dyrberg, N. R., & Michelsen, C. (2017). Mentoring first year study groups--Benefits from the mentors' perspective. *European Journal of Science and Mathematics Education*, 5(1), 43-54.

Eller, L. S., Lev, E. L., & Feurer, A. (2014). Key components of an effective mentoring relationship: a qualitative study. *Nurse Education Today*, 34(5): 815-820.

Ensher, E. A., Heun, C., & Blanchard, A. (2003). Online mentoring and computer-mediated communication: New directions in research. *Journal of Vocational Behavior*, 63: 264 - 288.

Ervin, C., & Baghurst, T. (2017). College mentoring: Alumni views on programme efficacy in shaping leadership ability. *International Journal of Evidence Based Coaching and Mentoring*, 15(1), 169-185.

Feldman, D. C. (1999). Toxic mentors or toxic protégés? A critical re-examination of dysfunctional mentoring. *Human resource management review*, 9(3), 247-278.

Feldman, M. D., Arean, P. A., Marshall, S. J., Lovett, M., & O'Sullivan, P. (2010). Does mentoring matter: Results from a survey of faculty mentees at a large health sciences university. *Medical Education Online*, 15(1): 1-8.

Fleming M, House S, Shewakramani Hanson V, Yu L, Garbutt J, McGee R, Kroenke K, Abedin Z, Rubio D.M. (2013). The mentoring competency assessment: Validation of new instrument to evaluate skills of research mentors. *Acad Med*. 2013;88(7):1002-1008.

- Form, S., Schlichting, K., & Kaernbach, C. (Nov 2017). Mentoring functions: Interpersonal tensions are associated with mentees' creative achievement. *Psychology of Aesthetics, Creativity & the Arts, 11*(4): 440-450.
- Forsbach-Rothman, T. (2007). The mentor role: is training necessary? *Journal of In-service Education, 33*(2), 245-247.
- Francis, G., & Holloway, J. (2007). What have we learned? Themes from the literature on best practice benchmarking. *International Journal of Management Reviews, 9*(3): 171-189.
- Gormley, W. T., Phillips, D., & Gayer, T. (2008). Preschool programs can boost school readiness. *SCIENCE-NEW YORK THEN WASHINGTON-*, 320(5884), 1723.
- Grossman, J. B., Tierney, J., & Resch, N. (2000). Making a difference: an impact study of big brothers, big sisters. *Public/Private Ventures*. Retrieved from [http://www.ppv.org/ppv/publications/assets/111\\_publication.pdf](http://www.ppv.org/ppv/publications/assets/111_publication.pdf)
- Gunn, F., Lee, S. H., & Steed, M. (2017). Student perceptions of benefits and challenges of peer mentoring programs: Divergent perspectives from mentors and mentees. *Marketing Education Review, 27*(1), 15–26.
- Huang, C. (2013). Gender differences in academic self-efficacy: a meta-analysis. *European journal of psychology of education, 28*(1), 1-35.
- Hudson, P. (2016). Forming the mentor-mentee relationship. *Mentoring & tutoring: partnership in learning, 24*(1), 30-43.
- Huun, K., & Hughes, L. (2014). Autonomy among thieves: Template course design for student and faculty success. *Journal of Educators Online, 11*(2), 264-271.

- Jakubik, L. D. (2007). The relationships among quality, quantity, and type of mentoring and mentoring benefits for pediatric staff nurse protégés. (Doctoral dissertation, available from ProQuest Dissertations and Theses database. UMI No. 1283974231).
- Jakubik, L., & Weese, M. (2014). Mentoring practices that predict mentoring benefits in nursing. Paper presented at the meeting of Society of Pediatric Nurses, Scottsdale, AZ.
- Johnson, W. (2015). *On being a mentor: A guide for higher education faculty* (2nd ed.). New York, NY: Routledge.
- Kalpazidou Schmidt, E., & Faber, S. (2016). Benefits of peer mentoring to mentors, female mentees and higher education institutions. *Mentoring & Tutoring: Partnership in Learning*, 24(2), 137-157. doi: 10.1080/13611267.2016.1170560
- Karcher, M. J. (Jan 2005). The effects of developmental mentoring and high school mentors' attendance on their younger mentees' self-esteem, social skills, and connectedness. *Psychology in the Schools*, 42(1): 65-77.
- Keller, T. E., & Pryce, J. M. (2010). Mutual but unequal: Mentoring as a hybrid of familiar relationship roles. *New directions for youth development*, 2010(126), 33-50
- Kenyon, C., Marshall, J., & Hogarth, S. (2015). Challenges of mentorship. *The practicing midwife*, 18(3), 36-40.
- Kern, L., Custer, B., & Tsai, S. (2018). Mentoring to decrease absenteeism and enhance school engagement. *Schulabsentismus Und Eltern*, 215-227. doi: 10.1007/978-3-658-18585-5\_13
- Kern, L., Harrison, J., Custer, B., & Mehta, P. (2018). Factors that enhance the quality of relationships between mentors and mentees during check & connect. *Behavioral Disorders*, 019874291877979. doi: 10.1177/0198742918779791

- Kogan, M., & Laursen S. L. (2014). Assessing long-term effects of inquiry-based learning: a case study from college mathematics. *Innovative Higher Education*, 39(3), 183-199.
- Kolb, A. Y. (2005). The Kolb learning style inventory-version 3.1 2005 technical specifications. *Boston, MA: Hay Resource Direct*, 200(72), 166-171.
- Lahdenperä, J. (2018). Comparing male and female students' self-efficacy and self-regulation skills in two undergraduate mathematics course contexts. In *Proceedings of INDRUM 2018 Second conference of the International Network for Didactic Research in University Mathematics*. University of Agder and INDRUM.
- Larose, S. (May 2013). Trajectories of mentors' perceived self-efficacy during an academic mentoring experience: What they look like and what are their personal and experimental correlates? *Mentoring & Tutoring: Partnership in Learning*, 21(2): 150-174.
- Laukhuf, R., & Malone, T. (2015). Women entrepreneurs need mentors. *International Journal of Evidence Based Coaching and Mentoring*, 13(1), 70-86.
- Lee, J. J., Bell, L. F., & Shaulskiy, S. L. (Nov 2017). Exploring mentors' perceptions of mentees and the mentoring relationship in a multicultural service-learning context. *Active Learning in Higher Education*, 18(3): 243-256.
- Lejonberg, E., & Tiplic, D. (Aug 2016). Clear mentoring: Contributing to mentees' professional self-confidence and intention to stay in their job. *Mentoring & Tutoring: Partnership in Learning*, 24(4): 290-305.
- Lewis, S., Whiteside, A., & Dikkers, A. (2014). Autonomy and responsibility: Online learning as a solution for at-risk high school students. *International Journal of E-Learning and Distance Education*, 29(2). Retrieved from <http://ijede.ca/index.php/jde/article/view/883>

- Machida-Kosuga, M., Schaubroeck, J., & Feltz, D. (2016). Leader Self-Efficacy of Women Intercollegiate Athletic Administrators. *Journal of Intercollegiate Sport*, 9(2), 157-178.
- Manzar-Abbass, S. S., Malik, N. A., Khurshid, M. A., & Ahmad, S. (Jan 2017). Impact of mentoring on teachers' professional development: Mentees' perceptions. *New Horizons* (1992-4399), 11(1): 85-102.
- Mason, A., & Eva, V. (2014). Fostering internationalization: The benefits to home students of mentoring international students. *Innovations in Practice*, 9(1). Retrieved from <http://openjournals.ljmu.ac.uk/index.php/iip/article/view/104>
- McCauley, C.D., DeRue, D.S., Yost, P.R., & Taylor, S. (2013). *Experience-driven leader development: Models, tools, best practices, and advice for on-the-job development*. Hoboken, NJ: John Wiley & Sons.
- Miner, N. (2020). Virtual Mentorship Is Key to Continuing Personal Development in A Remote Environment. *Forbes Magazine*, <https://www.forbes.com/sites/forbescoachescouncil/2020/07/03/virtual-mentorship-is-key-to-continuing-personal-development-in-a-remote-environment/#36ccd4114481>
- Moyer, M., & Savino, D. D. (2015). The role of the kinesthetic learning style and prompted responses in teaching management courses. *Global Education Journal*, 2015(1): 85-104.
- Muschallik, J., & Pull, K. (Apr 2016). Mentoring in higher education: Does it enhance mentees' research productivity? *Education Economics*, 24(2): 210-223.
- Ohlson, M., Buenano, A., & Gonzalez, C. (2017). Virtual mentoring: Harnessing the power of technology to develop K-12 leadership partnerships. *ISTE 2017*. Retrieved from [https://conference.iste.org/uploads/ISTE2017/HANDOUTS/KEY\\_108390360/ISTE2017.pdf](https://conference.iste.org/uploads/ISTE2017/HANDOUTS/KEY_108390360/ISTE2017.pdf)

- Ohlson, M., Ehrlich, S., Blakewood Pascale, A., & Lerman, J. (2017). The virtual mentor: Harnessing the power of technology to connect K-12. *Journal of Interactive Learning Research*, 28(4): 439-457.
- Olson, M. (2017). Virtual mentoring. *EdTech Digest*. Retrieved from <https://edtechdigest.com/2017/04/05/virtual-mentoring/>
- Palloff, R. M., & Pratt, K. (2007). *Building online learning communities: Effective strategies for the virtual classroom*. San Francisco, CA: Jossey-Bass.
- Peter, H. (2016) Forming the Mentor-Mentee Relationship, *Mentoring & Tutoring: Partnership in Learning*, 24:1, 30-43, DOI: 10.1080/13611267.2016.1163637
- Peters, M. L. (2013). Examining the relationships among classroom climate, self-efficacy, and achievement in undergraduate mathematics: a multilevel analysis. *International Journal of Science and Mathematics Education*, 11(2), 459-480.
- Pfund, C., House, S., Asquith, P., Fleming, M., Buhr, K., & Burnham, E. et al. (2014). Training mentors of clinical and translational research scholars. *Academic Medicine*, 89(5), 774-782. doi: 10.1097/acm.0000000000000218
- Pfund, C., Pribbenow, C. M., & Branchaw, J. (2006). The merits of training mentors.
- Pillon, S., & Osmun, W. E. (2013). Mentoring in a digital age. *Canadian Family Physician*, 59(4), 442-444.
- Pintrich, P. R. (2004). A conceptual framework for assessing motivation and self-regulated learning in college students. *Educational Psychology Review*, 16(4), 385–407.
- Plaskett, S., Bali, D., Nakkula, M., & Harris, J. (2018). Peer mentoring to support first-generation low-income college students. *Phi Delta Kappan*, 99(7), 47-51. doi: 10.1177/0031721718767861



- Poon, R. (2006). A model for servant leadership, self-efficacy and mentorship. In *Proceedings of the 2006 Servant Leadership Research Roundtable*.
- Pryce, J., Giovannetti, S., Spencer, R., Elledge, L. C., Gowdy, G., Whitley, M. L., & Rademaker, L. L., Duffy, J. O. C., Wetzler, E., & Zaikina-Montgomery, H. (2016). Chair Perceptions of Trust between Mentor and Mentee in Online Doctoral Dissertation Mentoring. *Online Learning*, 20(1), 57-69.
- Ragin, C. (2016). *What is qualitative comparative analysis (QCA)?* (pp. 1-19). Tuscon, AZ: University of Arizona. Retrieved from [http://eprints.ncrm.ac.uk/250/1/What\\_is\\_QCA.pdf](http://eprints.ncrm.ac.uk/250/1/What_is_QCA.pdf)
- Rahill, S. A., Norman, K., & Tomaschek, A. (2017). Mutual benefits of university athletes mentoring elementary students: Evaluating a university-school district partnership. *School Community Journal*, 27(1), 283–305.
- Reese, J. R. (2016). Virtual mentoring of preservice teachers. *Journal of Music Teacher Education*, 25(3): 39-52.
- Rippon, J. H., & Martin, M. (2006). What makes a good induction supporter? *Teaching and teacher education*, 22(1), 84-99.
- Robert G. H., & Lesley, S. (2011). Behavioral criteria of perceived mentoring effectiveness: An empirical study of effective and ineffective mentor and mentee behavior within formal mentoring relationships. *Journal of European Industrial Training*, 8: 752-752.
- Roushanzamir, S. (2004). Theories of distance learning meet theories of mediated (mass) communication. Paper presented at the Association for Educational Communication & Technology, Chicago, IL. *Distance Learning Roundtable*. Retrieved from <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.556.7111&rep=rep1&type=pdf>

- Sanford, A., Ross, E., Blake, S., & Cambiano, R. (2015). Finding courage and confirmation: Resisting imposter feelings through relationships with mentors, romantic partners, and other women in leadership. *Advancing Women in Leadership*, 35, 31-41.
- Schyns, B., & Sanders, K. (2005). Exploring gender differences in leaders' occupational self-efficacy. *Women in Management review*.
- SCIENCE- NEW YORK. Retrieved from [http://m.chestnet.org/~media/chesnetorg/Get%20Involved/Documents/training\\_mentors.ashx](http://m.chestnet.org/~media/chesnetorg/Get%20Involved/Documents/training_mentors.ashx)
- Scott, E. (2018). Mentoring: How to build trust in mentoring relationships. *Michigan State University*, [https://www.canr.msu.edu/news/mentoring\\_how\\_to\\_build\\_trust\\_in\\_mentoring\\_relationships#:~:text=One%20of%20the%20most%20important,substance%20of%20a%20successful%20relationships.&text=Youth%20feel%20more%20invested%20in,they%20can%20exercise%20some%20control](https://www.canr.msu.edu/news/mentoring_how_to_build_trust_in_mentoring_relationships#:~:text=One%20of%20the%20most%20important,substance%20of%20a%20successful%20relationships.&text=Youth%20feel%20more%20invested%20in,they%20can%20exercise%20some%20control).
- Shellenbarger, T., & Robb, M. (2016). Effective mentoring in the clinical setting. *AJN American Journal of Nursing*, 116(4): 64-68. Short, P. M., & Greer, J. T. (2002). *Leadership in empowered schools*. Columbus: Merrill Prentice Hall.
- Starr-Glass, D. (2014). E-mentoring: Mentoring at a distance. In *Handbook of research on education and technology in a changing society* (pp. 935-952). IGI Global.
- Sufrin, R. L. (2014). The role of multicultural competence, privilege, attributions, and team support in predicting positive youth mentor outcomes. (Master's Thesis, DePaul University).
- Turner, J. H. (2002). *Face to face: Toward a sociological theory of interpersonal behavior*. Stanford University Press.

- US Department of Health and Human Services. (2003). Administration for children and families program announcement. *Federal Register*, 68(131): 3-41.
- Washington, C. (2010). Mentoring, organizational rank, and women's perceptions of advancement opportunities in the workplace. *Forum on Public Policy Online*, 2010(2). Retrieved from <https://eric.ed.gov/?id=EJ903579>
- Weiner, D. L., Balasubramaniam, V., Shah, S. I., & Javier, J. R. (2020). COVID-19 impact on research, lessons learned from COVID-19 research, implications for pediatric research. *Pediatric research*, 88(2), 148-150.
- What does Cronbach's Alpha Mean. UCLA: Statistical Consulting Group. from <https://stats.idre.ucla.edu/sas/modules/sas-learning-moduleintroduction-to-thefeatures-of-sas/> (accessed August 22, 2016).
- Wilson, A., & Patent, V. (2011). Trusted to care: role of trust in mentoring. *Trust and Human Resource Management*, 139.
- Zydney, J. M., deNoyelles, A., & Kyeong-Ju Seo, K. (2012). Creating a community of inquiry in online environments: An exploratory study on the effect of a protocol on interactions within asynchronous discussions. *Computers & Education*, 58(1): 77-87.

## Appendix A

### Mentoring Survey

---

#### Start of Block: Default Question Block

First, so we may compare your pre and post responses, please enter the last four digits of your cell phone number; if you do not have a cell number, please enter the last four digits of your home phone number. These codes are for internal tracking only.

---

---

Select the method of mentoring that applies to you.

- Mentoring in a face-to-face environment
  - Mentoring in a virtual setting (online)
-

Please rate how skilled you feel you are in each of the following areas:

	Not at all skilled 1	2	3	Moderately skilled 4	5	6	Extremely skilled 7	N/A
Active listening	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Providing constructive feedback	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Establishing a relationship based on trust	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Identifying and accommodating different communication styles	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

---

Please rate how skilled you feel you are in each of the following areas:

	Not at all skilled   1	2	3	Moderately skilled   4	5	6	Extremely skilled   7	N/A
Employing strategies to improve communication with mentees	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Coordinating effectively with your mentees' other mentors	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Working with mentees to set clear expectations of the mentoring relationship	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Aligning your expectations with your mentees	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



Please rate how skilled you feel you are in each of the following areas:

	Not at all skilled   1	2	3	Moderately skilled   4	5	6	Extremely skilled   7	N/A
Considering how personal and professional differences may impact expectations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Helping mentees develop strategies to meet goals	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



Please rate how skilled you feel you are in each of the following areas:

	Not at all skilled 1	2	3	Moderately skilled 4	5	6	Extremely skilled 7	N/A
Employing strategies to enhance your mentees knowledge and abilities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Motivating your mentees	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Building mentees' confidence	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>





Please rate how skilled you feel you are in each of the following areas:

	Not at all skilled /> 1	2	3	Moderately skilled /> 4	5	6	Extremely skilled /> 7	N/A
Stimulating your mentees creativity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Acknowledging your mentees' professional contributions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Negotiating a path to professional independence with your mentees	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Taking into account the biases and prejudices you bring to the mentor/mentee relationship	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>





Please rate how skilled you feel you are in each of the following areas:

	Not at all skilled   1	2	3	Moderately skilled   4	5	6	Extremely skilled   7	N/A
Understanding your impact as a role model	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Helping your mentees acquire resources (e.g. grants, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

How would you rate the overall quality of your mentoring?

	Not at all skilled   1	2	3	Moderately skilled   4	5	6	Extremely skilled   7	N/A
Quality of your mentoring	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Demographics

Gender

Male

Female

-----

What is your age?

\_\_\_\_\_

-----

What is your race (US Census Categories)? [check all that apply]

- White
- Black, African American, or Negro
- American Indian or Alaska Native (write in tribe)
- 

- Asian Indian
- Chinese
- Filipino
- Japanese
- Korean
- Vietnamese
- Native Hawaiian
- Guamanian or Chamorro
- Samoan
- Other Asian (please specify)
- 

Other Pacific Islander (please specify)

---

Other race (please specify)

---

-----

Are you Spanish/Hispanic/Latino?

- No, not Spanish/Hispanic/Latino
  - Yes, Mexican, Mexican American, Chicano
  - Yes, Puerto Rican
  - Yes, Cuban
  - Yes, other Spanish/Hispanic/Latino (write in group)
- 

**End of Block: Default Question Block**

---

## Appendix B



Office of Research and Sponsored Programs  
 1 UNF Drive  
 Jacksonville, FL 32224-2665  
 904-620-2455 FAX 904-620-2457  
 Equal Opportunity/Equal Access/Affirmative Action Institution

**MEMORANDUM**


**DATE:** August 22, 2018

**TO:** Dr. Justin Lerman

**VIA:** Dr. Matthew Ohlson  
 Leadership, School Counseling & Sports Management

**FROM:** Dr. Jennifer Wesely, Chairperson  
 On behalf of the UNF Institutional Review Board

**RE:** Declaration of Exempt Status for IRB#1288916-1:  
 "Leadership Efficacy and Virtual Mentoring"

UNF IRB Number: 1288916-1 Exemption Date: 08-22-2018 Processed on behalf of UNF's IRB	
---	---

Your project, "Leadership Efficacy and Virtual Mentoring" was reviewed on behalf of the UNF Institutional Review Board and declared "[Exempt](#)" [Categories 1 & 2](#). Based on the [UNF IRB Standard Operating Procedures](#) regarding exempt projects, the UNF IRB no longer reviews and approves exempt research according to the [45 CFR 46](#) regulations. Projects declared exempt review are only reviewed to the extent necessary to confirm exempt status.

Once data collection under the exempt status begins, the researchers agree to abide by these requirements:

- All investigators and co-investigators, or those who obtain informed consent, collect data, or have access to identifiable data are trained in the ethical principles and federal, state, and institutional policies governing human subjects research (please see the [FAQs on UNF IRB CITI Training](#) for more information).
- An informed consent process will be used, when necessary, to ensure that participants voluntarily consent to participate in the research and are provided with pertinent information such as identification of the activity as research; a description of the procedures, right to withdraw at any time, risks, and benefits; and contact information for the PI and IRB chair.
- Human subjects will be selected equitably so that the risks and benefits of research are justly distributed.
- The IRB will be informed as soon as practicable but no later than 3 business days from receipt of any complaints from participants regarding risks and benefits of the research.
- The IRB will be informed as soon as practicable but no later than 3 business days from receipt of the complaint of any information and unexpected or adverse events that would increase the risk to the

participants and cause the level of review to change. Please use the [Event Report Form](#) to submit information about such events.

- The confidentiality and privacy of the participants and the research data will be maintained appropriately.

While the exempt status is effective for the life of the study, if it is modified, all substantive changes must be submitted to the IRB for prospective review. In some circumstances, changes to the protocol may disqualify the project from exempt status. Revisions in procedures or documents that would change the review level from exempt to expedited or full board review include, but are not limited to, the following:


- New knowledge that increases the risk level;
- Use of methods that do not meet the exempt criteria;
- Surveying or interview children or participating in the activities being observed;
- Change in the way identifiers are recorded so that participants can be identified;
- Addition of an instrument, survey questions, or other change in instrumentation that could pose more than minimal risk;
- Addition of prisoners as research participants;
- Addition of other vulnerable populations;
- Under certain circumstances, addition of a funding source

To submit an amendment, please complete an [Amendment Request Document](#) and submit it along with any updated documents affected by the changes via a new package in IRBNet. If investigators are unsure of whether an amendment needs to be submitted or if they have questions about the amendment review process, they should contact the IRB staff for clarification.

**Your study was declared exempt effective 08/22/2018.** When the project is complete and you would like to close the project, please submit a [Closing Report Form](#). This will remove the project from the group of projects subject to an audit. An investigator must close a project when the research no longer meets the definition of human subject research (e.g., data collection is complete and data are de-identified so the researcher does not have the ability to match data to participants) or data collection *and* analysis are complete. The closing report or exempt status report will need to be submitted as a new package in IRBNet.

All principal investigators, co-investigators, those who obtain informed consent, collect data, or have access to identifiable data must be CITI certified in the protection of human subjects. As you may know, **CITI Course Completion Reports are valid for 3 years**. The CITI training for renewal will become available 90 days before your CITI training expires. Please renew your CITI training when necessary and ensure that all key personnel maintain current CITI training. Individuals can access CITI by following this link: <http://www.citiprogram.org/>. Should you have questions regarding your project or any other IRB issues, please contact the research integrity unit of the Office of Research and Sponsored Programs by emailing [IRB@unf.edu](mailto:IRB@unf.edu) or calling (904) 620-2455.

This letter has been electronically signed in accordance with all applicable regulations, and a copy is retained within UNF's records. All records shall be accessible for inspection and copying by authorized representatives of the department or agency at reasonable times and in a reasonable manner. A copy of this memo may also be sent to the dean and/or chair of your department.

UNF IRB Number: 1288976-1 Exemption Date: 08-22-2018 Processed on behalf of UNF's IRB 
---