Teacher-efficacy as a complex web: Lessons from a qualitative case study on the transition of military faculty to emergency remote teaching during COVID-19

by

Dwayne A. Clark

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Approved by

Carey E. Andrzejewski, Professor,
Department of Educational Foundations, Leadership, & Technology
Hannah C. Baggett, Associate Professor,
Department of Educational Foundations, Leadership, & Technology
Sara Wolf, Associate Professor,
Department of Educational Foundations, Leadership, & Technology
Sean Forbes, Professor,
Department of Educational Foundations, Leadership, & Technology

Abstract

Although scholars have well-established the benefits of higher teacher-efficacy, the lack of literature regarding the sources and influences of these self-beliefs has led to an overly-reductionistic view of the construct. A teacher's sense of efficacy is a multifaceted entity which involves the interplay of various factors individuals leverage to formulate their judgement of their abilities. These influencers include a combination of internal elements such as an individual's previous experiences or social interactions, and external elements such as the environmental context or surroundings. The aim of this study was to explore the intricacies of the teacher-efficacy development process as situated during a crisis event. Crises, such as the COVID-19 pandemic, are ominous in that they tend to be volatile, uncertain, complex, and ambiguous (VUCA). With the crisis in mind, this study involved an ecological examination of the teacher efficacy construct concerning a group of professional military education personnel during the transition to emergency remote teaching during the COVID-19 pandemic. The goal of this study was to illuminate patterns and themes from within the data by comparing (1) the design context, principles, and design team choices to promote efficacy development during the pandemic with (2) how the course graduates perceived their efficacy.

The exploratory nature of this single case qualitative study involved a constant comparative analysis of semi-structured interview protocols with seven participants, archived documents of curriculum artifacts and course materials, and analytic memos. The participants consisted of three course design team members, who planned and implemented the professional development (PD) course, and four military faculty course graduates, who completed the PD and taught their first virtual teaching session. The result of using an inductive analytical approach revealed three interconnected themes that facilitated the efficacy-building process. The

consistency in the data exposed that the degree to which the participants perceived authenticity in the curriculum, their ability to harness collaborative engagement among colleagues and faculty, and their opportunity to source prior exposures to handling disruptions and change intertwined to influence the developmental effort. The implications of this study counter the dominant narrative in the literature that teacher-efficacy is a linear, simplistic process. Instead, scholars and practitioners might approach efficacy-building using a collection of biological, psychological, and social influencers.

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Disclaimer

The views expressed in this study are those of the author and do not reflect the official policy or position of the United States Air Force, the Department of Defense, or the United States government.

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Chapter 1: Introduction

In the year 2020, the world grappled with the unprecedented impacts from the novel coronavirus pandemic, known as COVID-19. Across the globe, individuals felt the rippling effects of the crisis, as virtually every sector was affected, including economic, socio-political, cultural, healthcare, and many more. In particular, the pandemic had deleterious effects on the educational system. According to UNESCO (2020), as of September 2020, over 1.1 billion students, approximately 60% of learners worldwide, were affected as in-residence schools closed in 132 countries.

In the United States (U.S.), the pandemic disrupted its educational system at a magnitude not previously experienced in our society. The intensity, scale, and quickness of COVID-19 was unlike any previous situation (Owusu-Fordjour et al., 2020). Schools, faculty, staff, and students all needed to adjust to the ominous circumstances that, early on, did not have an end in sight. Within weeks of reaching the U.S., academic institutions unveiled a litany of changes on how it would provide remote instruction to its students. And although educational disruptions are nothing new to the U.S., for instance the terrorist attacks of 11 September 2001, various natural disasters such as Hurricane Katrina, the California wildfires, or Nor'easter winter blizzards; the 2008 economic recession, and public safety events such as the Swine Flu, the far reaches of this event was different (Williams et al., 2017; J. Zimmerman, 2020).

The rapid shift to remote instruction shocked many academic institutions and faculty (Hodges et al., 2020; Karalis, 2020; Owusu-Fordjour et al., 2020; Whittle et al., 2020). Institutions faced multi-level challenges ranging from equity and accessibility shortfalls, to determining how to accomplish simple classroom management functions such as taking attendance, lesson delivery, and testing for the remainder of the learning term. School systems,

whether K-12 or higher education, public or private, had to rethink how to facilitate learning; how to provide administrative and emotional support; and how to ensure students received all necessary resources they needed to continue operations. On top of the health concerns of students and the apparent limitations in resource availability, teachers themselves were unprepared for their newly acquired responsibility of facilitating their classrooms in a remote environment. Many educators had to develop, implement, and assess student learning with little to no training or preparation (Hodges et al., 2020). In other words, teachers needed to overcome the existential threat of the pandemic and accomplish their mission while operating in an uncomfortable circumstance. The desire for teachers with higher senses of efficacy is no more apparent than when engaged in a crisis environment.

Over the last twenty years, scholars have offered well-established research regarding the considerable influences of teacher-efficacy in the classroom environment. The span of research has bridged consistent connections between teacher-efficacy and a range of areas, such as teacher motivation (Buric & Moè, 2020; Tschannen-Moran et al., 1998a; Tschannen-Moran & Hoy, 2001; Zee & Koomen, 2016), willingness to try new strategies (Glackin & Hohenstein, 2018), resiliency to changing environments (Tsui, 2018; Wilcox & Lawson, 2018), and student academic performance (Tschannen-Moran et al., 1998a; Zee & Koomen, 2016). Other notable influences included the significance of this self-judgement to impact the way teachers facilitate their classroom practice (Ciampa & Gallagher, 2016; Glackin & Hohenstein, 2018; Tschannen-Moran & Johnson, 2011) and engage with students in the learning environment (Banas, 2014). The general conclusion was that an increase in one's sense of efficacy leads to a host of positive outcomes in any of these areas. Bandura (1997) even asserted that this self-belief system has a more influential role on areas such as teacher performance than merely possessing the requisite

pedagogical and content knowledge teachers need to perform the task or behavior. Naturally, with the strength, support, and influence of the teacher-efficacy literature, the interest to promote efficacy development for educators was warranted, especially during a crisis environment. However, the literature pertaining to process for sourcing one's sense of efficacy was problematic (Morris et al., 2017).

Statement of the Problem

Despite the popularity and decades of research, there remains a shortage of empirical research exploring the depths or nuances of what contributes to one's teaching sense of efficacy. From a meta-view of the literature, there was ample evidence to suggest that the path to develop one's sense of efficacy involved a range of factors and considerations. These factors suggested that the nature of one's self-judgement regarding their efficacy forms as matter of their circumstances, their experiences, and their interactions. More succinctly, the trends in the research highlighted combinations of individual and environmental elements across biological, psychological, and social domains as potential contributors (Bandura, 2001; Glackin & Hohenstein, 2018; Wyatt, 2015). Even so, the direction of research supporting teacher-efficacy has not illuminated the complexities of its landscape. In part, this tendency was due to how researchers centered teacher-efficacy in within their studies. Historically, scholars in this space have explored this construct through a linear perspective (Milner, 2002; Wyatt, 2015), often as an intervention or as a correlate to other outcomes (Buric & Moè, 2020; Jan, 2015; Morris et al., 2017). In fact, there was an evident imbalance of methodological approaches in the literature. Klassen et al. (2011) conducted a review of 218 empirical studies published on teacher-efficacy between 1998-2009 and found that quantitative research maintained a significant footprint in the literature (76.7%) compared to qualitative-only studies (8.7%). Although Bandura (1977)

expressed his concern regarding the attempt to generalize conclusions and transferability of efficacious beliefs, the trend to prioritize these efforts continued in the literature. Wyatt (2015, 2018) argued that the acceptance of a single methodological approach to understand an intricate item such as teacher-efficacy has led to muddled definitions and misguided understandings of the sources of efficacy, has limited our perspective on the concept, and has masked the impacts of growth or other outside influencers. Similarly, Feldon et al. (2018) and Glackin & Hohenstein (2018) each found that the reliance on narrowed measures to understand teacher-efficacy obscured the complete nature of the concept. As such, scholars like Morris et al. (2017) have called for a reconceptualization of how we think about what promotes efficacy development.

Another area that contributed to this problem was the lack of studies investigating or even challenging the sources of efficacy (Milner, 2002; Morris et al., 2017). Supporting this idea, Morris et al. (2017) argued that little research involved a forensic investigation on what informs one's sense of efficacy. In many examples, studies included an implicit understanding, perhaps even deference, to Bandura's (1977) original sources of efficacy. However, my synthesis of the literature revealed there were frequent contributors to efficacy development that did not align entirely under the original sources and also showcased the complexity of the concept (Glackin & Hohenstein, 2018). First, a look across domains showcased the importance of formal professional development and instructional design as critical elements (An, 2018; McKim & Velez, 2017). The ability for professional development to influence one's efficacy typically depended on, (1) the degree to which the program is contextualized and relevant to the recipient's environment (An, 2018; Darling-Hammond, 2009; Darling-Hammond et al., 2017; Desimone, 2009; Kleickmann et al., 2015) and (2) the faculty member's perspective on how well they believe they are prepared to perform their teaching task (Rowbotham, 2015; Tschannen-

Moran & Johnson, 2011). Second, educators also tend to rely on professional communities, peer engagements, and other social interactions as significant elements for establishing their self-beliefs (Bedford & Rossow, 2017; Goddard et al., 2015). These interactions occurred in many forms, to include both formal and informal environments, and benefited each member of the community, individually and collectively (Bedford & Rossow, 2017). Social engagement in this regard was distinct from *vicarious experiences* (i.e., learning from observing other perform a task) and *verbal persuasion* (i.e., receiving feedback or cues from others) (Morris et al., 2017).

The third element that was popular, yet less clear in the literature dealt with the influence of one's prior experiences (Jan, 2015; Tsui, 2018). Continuing from the early literature on teacher-efficacy, scholars have maintained the position that prior experiences directly connected to the domain, task, behavior, or knowledge tend to have positive influences on efficacy development (Jan, 2015; Tschannen-Moran & Johnson, 2011; Tsui, 2018). While the persistence of this finding was compelling, the opportunity for an individual to leverage prior knowledge or experiences outside of the specific domain to facilitate their efficacy was not consistent with Bandura's (1977) *mastery experiences* source of efficacy.

The outcome of the above concerns in the efficacy literature was that there was ambiguity in knowing how to promote efficacy. As teacher-efficacy was well-established for its benefits towards a teacher's performance (Tschannen-Moran & Hoy, 2001; Tsui, 2018), their ability to cope with change (Glackin & Hohenstein, 2018; Putwain & von der Embse, 2019; Wilcox & Lawson, 2018), and their improvement of the learning environment (McKim & Velez, 2017; Zee & Koomen, 2016), the need to develop this self-belief during a crisis is paramount. As the literature was underdeveloped in this area and limited in the analysis regarding the sources, the challenge of understanding how any of these contributors, alone or combined, might promote

efficacy during a crisis remains. Crises are disruptive and present external stressors and anxieties that can impact a learning environment (Bozkurt & Sharma, 2020; Chow et al., 2020).

Purpose and Design

At a larger level, my purpose for conducting this study was to help reconceptualize what it means to develop one's sense of efficacy (Morris et al., 2017). For this study specifically, I addressed the problem of the lack of empirical investigation on the sources of teacher-efficacy in the context of a crisis environment using a qualitative, single-case design approach. The case study approach was ideal as it offered a structured approach to investigate various data sources in a realistic environment. Researchers employ the case study design when naturalistic inquiry, holistic and comprehensive interpretation, and inductive exploration and discovery of knowledge is desired (Denzin & Lincoln, 2003; Lincoln & Guba, 1985; Merriam, 1998; Merriam & Tisdell, 2016; Stake, 1995; Yazan, 2015). Merriam (1998) and Stake (1995) argued that the case study approach was a necessity when exploring matters in education as the people, policies, and organizations involved form integrated system that we must examine as a holistic entity. Their justification was that as an integrated system these environments contain a wealth of data sources that case studies are designed to integrate. In this study, interview data, from the both groups of participants, archived documents, member checking responses, and analytic memos allowed me to triangulate an in-depth understanding of the multi-dimensions of teacher-efficacy (Merriam, 1985, 1998; Merriam & Tisdell, 2016; Stake, 1995; Yazan, 2015).

The overall intent of the study was to explore teacher-efficacy development within a case of professional military education personnel involved in the transition to emergency remote teaching in response to the COVID-19 pandemic. As Merriam and Tisdell (2016) noted, phenomena are less valuable in isolation and are meaningful when researchers situate within a

particular context. Therefore, the context of this case, involving the COVID-19 pandemic and military personnel, offered a unique opportunity for discovery. In general, military personnel are exposed to professional ethos espoused in cultures of resiliency and crisis management and response. In turn, servicemembers have experience with preparing and maintaining readiness, regardless of the circumstances or degrees of uncertainty (Meredith et al., 2011). In this study specifically, the center of this case included two groups of military participants who engaged in a professional development (PD) program to facilitate the transition to the emergency remote teaching (ERT) environment. The groups included of a design team and a group of military faculty. The course designers (n = 3) were responsible for developing the vision, planning, creating, and implementing the PD course. The course graduates (n = 4) were active-duty military faculty that completed the PD program between May and July of 2020 and then engaged in their first Emergency Remote Teaching (ERT) course in July 2020.

Research Questions

The objective of this research was to investigate the patterns and themes of efficacy development by comparing (1) the design context, principles, and design team choices to promote efficacy development during the pandemic with (2) how the course graduates perceived their efficacy to discover patterns and themes within the data. To accomplish this objective, I utilized the following research question and two sub-questions as the guide for the study:

Research Question: How does a crisis environment influence the conceptualizations of developing teacher-efficacy within a professional military education setting?

Sub-question 1: How did a crisis shape the way a team of course designers planned and implemented a professional development course to promote the growth of teacher-efficacy?

Sub-question 2: How did the involvement in the PD program affect teacher-efficacy perceptions for a group of military faculty transitioning to ERT?

Significance of the Study

Although the literature on teacher-efficacy has decades of research, there remains gaps in our understanding regarding how individual's source their self-beliefs. My hope is that the findings and discussion from this effort offer a perspective of efficacy development from an in-depth, holistic viewpoint. As the nature of this study involved a phenomenon embedded within a context, there is both an instrumental and intrinsic element of significance to the broader discussion on teacher-efficacy.

First, throughout the wave of research on teacher-efficacy, scholars have called for an increased representation of qualitative research in this area (Glackin & Hohenstein, 2018; Tschannen-Moran & Hoy, 2001; Wyatt, 2015). The commonality in their argument was that this construct contains a level of complexity that requies a flexible, comprehensive design structure to see the inherent nuances. As this call has remained mostly unanswered (Klassen et al., 2001), this study is significant in that it contributes to an underrepresented literature base that was long overdue.

Additionally, this study offers insight into one instructional design approach to the develop efficacy considering the constraints of a crisis. As mentioned, the PD course was a transitional course used for the military faculty to shift from their face-to-face setting to an emergency remote teaching environment. While circumstances, and context, are unique, this study is significant in that it offers scholars and future practitioners a perspective on promoting efficacy while handling the disruptions of a crisis event. This study highlighted how having a

narrowed instructional design and leaning on instructional strategies that leverage previous experiences might offer a gateway for efficacy development.

Finally, this study is significant as it provides insight into a military population that is also underrepresented in the literature. Military personal are unique in that contingency planning and response and resiliency are fundamental elements within its culture (Meredith et al., 2011; Nindl et al., 2018). As such, the ability to highlight strategies they utilized to overcome the challenges of the crisis and facilitate efficacy development adds an additional component that might assist readers in contemplating how to operate in future crisis events.

Definitions of Key Terms

To assist with the readability of this document, the following section lists the terms, concepts, and definitions that were essential to this study.

Asynchronous Learning: a method of distance education in which facilitators and learners engage in the learning environment at different times and from different locations (Simonson et al., 2019)

Authenticity: the degree to which the learning tasks, curriculum content, or experiences have realistic application to operating environment (Kearney et al., 2012).

Biopsychosocial Model: the belief that the complex nature of humans requires a holistic understanding of the overlaps and interactions of biological determinants, psychological functions, and social engagements (Engel, 1980; Gilbert, 1995).

Collaborative Learning: a broad expression used to describe a host of pedagogical techniques which connects a learning situation with coordinated interactions among two or more students (Dillenbourg, 1999).

Cognitive Load: the mental resources required to process information as a result of working memory available to an individual combined with the design of the instructional materials (de Jong, 2010; Sweller, 1994).

Course Graduates: refers to the individuals who attended the professional development course in this case study. For consistency, I refer to this group of individuals as "course graduates" when referencing their experiences both during the course and after course completion. Also referred to as "**military faculty**" or "**learners**".

Crisis: a salient occurrence or event, often unexpected, that is disruptive and requires immediate attention (Bradley et al., 2017), also referred to as **contingency**.

Correspondence Education: an independent learning style of distance education where an academic institution provides the curriculum materials and resources by mail or electronic means and synchroneity among learners and educators is not required for the learning process (Kenyon & Flora, 2019; Simonson et al., 2019).

Design Team: refers to the course of participants responsible for planning, developing, and implementing the professional development course in this case study. Also referred to as "**designers**" or "**course designers**".

Distance Education: a formal method of providing education with four definable characteristics: (1) is institutionally based; (2) requires separation of teacher and student; (3) integrates an element of interactive telecommunications; and (4) has a structure which permits a learning environment (Simonson et al., 2019).

Emergency Remote Teaching (ERT): the use of remote instruction as a temporary solution of delivering curriculum originally designed for face-to-face instruction in response to an educational disruption (Hodges et al., 2020).

Explicit Instruction: a type of pedagogical approach characterized by direct and structured teaching methods, designed to develop independent mastery of a subject (Archer & Hughes, 2011).

Face-to-face courses: the type of environment where both educators and students are physically together for the learning event (Simonson et al., 2019), also referred to as **in-residence** in this study.

Military Resiliency: the set of characteristics that describe a servicemember's ability to overcome negative effects and stress associated with military operations, tempo, or performance (Nindl et al., 2018).

Military Training: job- or duty-oriented preparation aimed at the necessary tasks required to perform one's function towards the military mission (Kime & Anderson, 1997).

Professional Military Education (PME): the exploration of theoretical or practical concepts in a military learning setting with the purpose of increasing a servicemember's knowledge, skills, or expertise to succeed in military missions (J-7, 15 May 2020; Kime & Anderson, 1997).

Professional Development (PD): a structured learning opportunity for educators that is content-focused, actively involved, and models effective teaching to develop teaching knowledge, skills, or attitudes. (Darling-Hammond et al., 2017), also referred to as **faculty development** in this study.

Online Learning: a broader concept which purely focuses on the learner's ability to control the time and place the learning occurs, also referred to as **virtual learning** or **remote learning** in this study (Simonson et al., 2019).

Reflexivity: a research method involving continuous self-awareness with the purpose of acknowledging the existence and role of the researcher in the study's context (Pillow, 2003).

Resiliency: the ability of an individual or organization to adapt and overcome adversity (Meredith et al., (2011)

Scaffolding: a structured approach to instructional design which breaks down complex task or content into more manageable, less complex components (Kleickmann et al., 2015).

Self-Efficacy: a set of attitudes, judgements, or beliefs one has regarding their ability to succeed in a given task, performance, or scenario (Bandura, 1977).

Teacher-Efficacy: as progression from self-efficacy, teacher-efficacy is a teacher's judgement of their abilities to create, facilitate, organize, and plan in order to achieve an effective learning environment, within a specified context(s) (Tschannen-Moran & Hoy, 2001).

Conclusion

The purpose of this chapter was to serve as a foundation used to help transition into the future chapters. Upon existing this chapter, the reader should have a working knowledge of how the COVID-19 crisis impacted the learning environment in the US and how the lack of holistic research designs impacted how we perceive teacher-efficacy and its sources. This chapter also covered the purpose, significance, and limitations in the literature addressing the key areas this study addresses. The last element of this chapter was a glossary of the key terms and definitions found throughout this document.

Following this introductory section is four proceeding chapters which make up this study. Chapter 2 discusses how the connection of two theoretical foundations, the Biopsychosocial model and Teacher-Efficacy, helped realign the study to the origins of the construct. This chapter builds on this realignment and highlights the conceptual framework and accompanying review of

the literature that challenges the linear trends within the teacher-efficacy literature. Then, Chapter 3 progresses the discussion by notating the elements of my design methods for this qualitative case study. In this chapter, I delve into specific design influences and choices such as my positionality as the research instrument, the sampling methods and recruitment strategies, data collection, analysis, and concludes with the elements I used to bolster trustworthiness of my findings. Chapter 4 covers a thick description of the case details of the study and the three thematic findings that I discovered throughout my analysis. And finally, Chapter 5 concludes this study by providing a discussion and interpretation of my findings connected to the literature, both as independent themes and how they interconnected to facilitate efficacy development. In the end, transferability will be determined by each reader, however, I wrap up this discussion by offering transferable lessons I discovered regarding the larger implications of the study.

Chapter 2: Literature Review

Over the last twenty years alone, academic institutions systems have had to adapt learning environments in response to a series of educational disruptions. Events such as 9/11, devastating natural disasters like Hurricane Katrina or the California forest fires, and even mass shootings have presented obstacles both faculty and students had to overcome within their learning context. The challenges often included the need to care for the socio-psychological well-being of communities as they faced food and water shortages, substantial damage to living establishments, and infrastructure concerns such as loss of electricity or internet connectivity, to name a few. In a similar fashion, the emergence of the COVID-19 pandemic created a range of challenges to our academic environments. The public health crisis introduced communicable safety concerns which necessitated a shift from the all-to-familiar face-to-face classroom environment to a less-accustomed virtual environment This shift in the learning environments exposed many areas in which students and teachers were unprepared to handle.

In the spring semester of 2020, many teachers were ill-prepared to transition course curriculums and programs to fully online or virtual system (Foulger et al., 2020; Hodges et al., 2020). As teachers rely on their direct experiences in the classroom (Ciampa & Gallagher, 2016; Tschannen-Moran & Hoy, 2001; Zee & Koomen, 2016), faculty development engagements (Bedford & Rossow, 2017; Darling-Hammond et al., 2017; Desimone, 2009; Rowbotham, 2015), and colleagues (Goddard et al., 2015; Voelkel Jr. & Chrispeels, 2017; Zhou, 2019) to influence their performance and cope with changes, the novelty and challenges of the pandemic impacted their readiness (Johnson et al., 2020). For example, in many cases the rapid transition did not offer academic institutions the ability to create, curate, or even contract a professional development opportunity for faculty (Foulger et al., 2020). With the well-supported literature on

the role of faculty development on teacher -efficacy (Bedford & Rossow, 2017; Rowbotham, 2015; Strickland-Davis et al., 2020), the need to investigate instances where faculty development occurred is critical as the situation can offer insight into the relationship during an educational disruption.

Accordingly, this study involved an investigation of teacher-efficacy development for professional military education faculty that occurred in response to the COVID-19 pandemic. As the military has established foundations in crisis planning and crisis response (Joint Chiefs of Staff, 2020), investigating the development response and the servicemember's perspective on their sense of teacher-efficacy during this incident was worthwhile. To gain a better understanding of the research landscape, this literature review included a mixture of Boolean search combinations of the following keywords (in alphabetical order): *biopsychosocial model, cognitive load theory, collaborative learning, crisis management (or planning), emergency remote teaching, faculty development (or professional development), higher education, military resilience, professional military education, self-efficacy, stress,* and *teacher-efficacy*. I sourced publications across a range of literature disciplines using the following academic databases, *Academic Search Premier, APA PsycArticles, APA PsycInfo, Educational Research Complete, ERIC, Military & Government Collection,* and *ProQuest.* With minimal exceptions, search results were filtered by currency (within 5 years, except for seminal, historical references, or insufficient representation) and peer-reviewed journals, books, and dissertations.

The structure of this literature review is organized into three primary sections: (a) the theoretical foundations, (b) conceptual framework of the study, and (c) a review of the literature concerning the elements of the conceptual framework, and (d) a summary of the gaps in the

research. As transparency and clarity are critical to argumentation, I structured this review by framing the underpinnings of the study first.

Theoretical Foundations

There are two theoretical foundations that provide the basis for this study, the biopsychosocial model and teacher-efficacy. The latter, teacher-efficacy, has the direct association with my overall purpose of exploring the self-beliefs teachers utilize in their performance in the classroom. The role of the biopsychosocial model, however, was integral for aligning teacher-efficacy from a perspective that accounted for the range of potential factors, or domains, that can influence one's judgement of their abilities (Bandura, 1977, 2001).

Biopsychosocial Model (BPS)

The first element of my theoretical foundation for this study is the biopsychosocial (BPS) model and perspective towards learning. Engel (1980) introduced BPS to shift conceptual thinking towards a model that was more holistic in nature. At the time, biological determination (behaviorism) was the popular frame of reference in the medical community (Engel's concern), as well as education. Biological determinism was the idea that individual behaviors were controlled by environmental stimuli, as a product of evolution. Accordingly, internal systems such as agency, motivation, or other psychological factors were deemed irrelevant. He argued that biological determinism, while important, was insufficient and quite reductionistic in its characterization of human beings and human behavior (Bandura, 2001a; Engel, 1980). Consequently, BPS became a model of the interplay between biology, psychological thinking and behaviors, and cultural factors that influence how individuals process information. As noted by Gilbert (1995):

> [BPS] outlines the complex interactions between an individual's biological state, the nature of the relationships they seek, the type of relationship they elicit and form, and how all these are embedded in a socially scripted or prescribed set of patterns and values. (p. 137)

While Engel's (1980) argument was directed towards altering practices in the medical community, other scholars created representations of BPS in the educational context (Bandura, 2001). In similar fashion, BPS in educational environments explores the learning environment as an intersection of intrapersonal interactions, interpersonal cognitions, and environmental contexts. Fundamentally, BPS is the rejection of the popular notion that biological or cultural determinism are the sole, and dominant, explanations for how individuals learn, process information, or change behavior. Instead, scholars who incorporate a BPS perspective subscribe to the idea that learning, among other complex endeavors, require an integration of mechanisms to consider a learning through a whole-person concept. The implication of this approach is that although many learning strategies, and their accompanied research, often target developing one's cognitive abilities, these impact of these strategies tend to intertwine the way the social environments interacts with them (Akcaoglu & Lee, 2016; Al-dheleai & Tasir, 2020; Oyarzun et al., 2018), and psychological factors that address individual student needs (Eakman et al., 2019; Schunk & DiBenedetto, 2014).

One relevant example was Bandura's (1978) concept of reciprocal determinism, which he incorporated within his work regarding *Social Cognitive Theory*. Aligned with Engel (1980), Bandura (1978) postulated that biological, cognitive, and societal factors have bidirectional relationships with one another. In refuting the predominant way of thinking, that environmental stimuli were the sole determinants of actions, Bandura (1989) also introduced the notion of

functional consciousness as an integral element to human behavior. In other words, humans are agents capable of independent decision-making, are influenced by experiences, and are driven by goals related to various BPS needs (Bandura, 2001a; Gilbert, 1995). As he contended, biology alone does not explain the complexities, or beauties, that exists in individuals.

Human thought is also influenced by various environmental experiences and observations (B. J. Zimmerman & Schunk, 2003). In fact, many learning theories in contemporary education display the significant role of the environment on learning. For example, Bandura (1989) and others have argued that learning is a social endeavor and the environmental milieus influence how and what knowledge we process and absorb (B. J. Zimmerman & Schunk, 2003). Even as many scholars have made, or implied, the need to maintain a holistic perspective in education, the BPS concept remains largely underrepresented in the literature and in practice.

Teacher-Efficacy

The other theoretical foundation of this study is the construct teacher-efficacy. Popularized by Tschannen-Moran and Hoy (2001), teacher-efficacy refers to an individual's judgement of their abilities to create, facilitate, organize, and plan an effective learning environment within a particular context(s). Teacher-efficacy has its origins in Bandura's (1997) theory of self-efficacy and therefore understanding its concepts is paramount. Self-efficacy pertains to an individual's self-beliefs, or convictions, regarding their abilities to complete a given task or behavior, successfully. This connection between thoughts and behaviors deals with an exercise of control over mental processes required mobilize the motivation, cognitive resources, and courses of action needed to complete tasks (Bandura, 1993). Consequently, as argued by Bandura (1977), an individual might possess the knowledge and skills necessary to

succeed in a given task and still fail to reach desired outcomes if they have a weaker sense of efficacy in the area.

With over 40 years of representation, teacher-efficacy has an extensive body of research and interest among scholars (Zee & Koomen, 2016). One possible explanation for its popularity is that scholars have established connections between teacher-efficacy and a range of areas it influences, such as teacher motivation (Buric & Moè, 2020; Tschannen-Moran et al., 1998a; Tschannen-Moran & Hoy, 2001; Zee & Koomen, 2016), willingness to try new strategies (Glackin & Hohenstein, 2018), resiliency to changing environments (Tsui, 2018; Wilcox & Lawson, 2018), and student academic performance (Tschannen-Moran et al., 1998a; Zee & Koomen, 2016).

Sources of Efficacy

With its foundations in self-efficacy, the concept of teacher-efficacy maintained consistencies with original construct. Scholars are aligned in attributing four primary sources of information to each idea, (a) *mastery experiences*, (b) *vicarious experiences*, (c) *verbal persuasion*, and (d) *physiological and emotional cues* (Bandura, 1977; Tschannen-Moran & Hoy, 2001). The first, and arguably the most influential contributor per its representation in the literature, is derived from an individual's mastery experiences (Bandura, 1977; Schunk, 1994). Mastery experiences refer to the impact of first-hand practice, exposure, and repeated success has on improving one's self-beliefs. One's efficacy is reinforced by repeated experiences. As Bandura (1977) explained, "successes raise mastery expectations; repeated failures lower them" (p. 195). The idea is that the more an individual gains proficiency in performing a task or behavior, the more likely they are to increase their level of efficacy in that setting. Bandura (1977) even argued that the more an individual builds their efficacy through successful

performance reinforcement, the less susceptible they are to occasional disruptions or failures in performance, thereby promoting a degree of resiliency. As the more prevalent source, substantial evidence exists in the literature regarding a strong positive influence between mastery experiences and one's sense of efficacy (Alqurashi, 2016; Honicke & Broadbent, 2016; Jan, 2015; McKim & Velez, 2017).

Although mastery experiences were supported in the literature as beneficial, the alignment of experiences to tasks is a critical component. Individual learners utilized experiences as a source of reinforcing self-beliefs towards future performance when the experiences were directly transferable to the learning context (Bandura, 1977, 1993; B. J. Zimmerman & Schunk, 2003). In an example study, Tsui (2018) conducted a qualitative study exploring nuanced changes in teacher-efficacy while preparing to enter a novel teaching environment. She discovered that the teachers in the study (n=11), regardless of level of expertise, experienced "setbacks" (p. 112) in their efficacy in the early stages of their developmental training events. Tsui (2018) concluded that teachers who are either early in their practice or are asked to partake in a novel teaching environment might experience a decrease in their judgement of their abilities because of their lack of exposure.

The second source of efficacy refers to the vicarious experiences individuals receive. While mastery experiences were the more prevalent source in the literature, Bandura (1977) also noted the importance of observing others in the social environment as a source of efficacy. Vicarious experiences are beneficial for promoting efficacy as they offer individual's opportunities to make judgements on performance by witnessing someone else's actions. Some scholars have concluded that these experiences are most advantageous when observing individuals who are similar in their developmental progression and display proficiency in the

task (McKim & Velez, 2017). In practice, vicarious experiences often come in the form of modeling or the demonstration of the task or behavior. For teachers, this practice might involve observing a more experienced teacher deliver a lesson or implement a particular teaching strategy.

The third source of efficacy is verbal persuasion. This source refers to the notion that individuals can construct self-beliefs regarding their abilities based upon motivational strategies, pep talks, or feedback from other individuals. Verbal persuasion can be explicit feedback sessions with a more experienced individual, or implicit from a group of peers or community providing feedback in collegial environments. The power of this source resides in the level of creditability and trust one has with the individual providing the feedback (Tschannen-Moran & Hoy, 2001). The fourth source is physiological and emotional cues. An individual's perception of stress or anxiety in the environment, or their ability to cope in such environment, can influence their efficacy (Bandura, 1977). These are judgments on how stressful, taxing, or tiring an anticipated task is can lead to feelings of relaxation or increased distress (Bandura, 1977; Tschannen-Moran & Hoy, 2001).

Both teacher-efficacy and self-efficacy, through the lens of Bandura's (1977) four sources of information, are not static or fixed entities. Instead, efficacy expectations are dynamic, context-specific, individual-dependent and must be considered from various perspectives. Bandura (1977) argued that an individual's perspective can shift when making a generic, broader judgment of one's abilities or when viewed as a reflection of our skills or abilities towards specific tasks or events (Honicke & Broadbent, 2016). Self-efficacy, as a general construct, does not have any delimitations. However, many have argued that the more

narrow the efficacy construct is in the individual context, the more nuanced the understanding is of the individual (Glackin & Hohenstein, 2018).

Efficacy Expectancy versus Outcomes Efficacy

While teacher-efficacy and self-efficacy are compatible in many respects, there was an element in the teacher-efficacy literature that needed additional clarity. In Bandura's (1997) seminal text, and follow-on works (Bandura, 1993, 2001), he posited a clear distinction between an efficacy expectancy and an outcome expectancy. Outcome expectancies, or a *means-ends* relationship, or rooted in behaviorist ideals suggest that specific actions lead to desired outcomes (Bandura, 1977). The problem, as Bandura has argued, is that outcome-expectancies have little explanatory power for our understanding as to why individuals change or improve their behaviors. To address this issue, he proposed that efficacy expectations were more appropriate. Bandura further argued that these expectations, which involve an individual's self-judgement of their capabilities to perform (Bandura, 1977; B. J. Zimmerman & Schunk, 2003), have more influence on individual behaviors and performance. This relationship is known as the *agent-means* relationship, with the focus on the individual's perception of what is within their locus of control.

In the teacher-efficacy literature, the differentiation between the means-ends and the agent-means approaches was less clear among studies. For example, in their original description, Tschannen-Moran and colleagues (1998) defined teacher-efficacy as "belief in his or her capability to organize and execute courses of action required to successfully accomplish a specific teaching task in a particular context" (p. 233). The expression of one's judgement of, and for, their actions aligned with the agent-means description. In comparison, Tschannen-Moran and Hoy (2001), later defined teacher-efficacy as a teacher's "judgment of his or her

capabilities to bring about desired outcomes of student engagement and learning…" (p. 783). In this definition, the judgement shifts from the means to the end state, aligning more with a means-ends definition, or as Wyatt (2015) opined, perhaps even an *agent-ends* relationship. Regardless, the shift in definitions, for the same concept can create inconsistencies in what, and how, the concept is represented in the literature. As Wyatt (2015) argued, a potential explanation for this conflation of conceptual directions was the tendency for scholars to draw conclusions connecting one's sense of efficacy to successful performance outcomes. The focus on efficacy as a 'predictor of success' perpetuates the means-ends (or agent-ends) relationship, although many scholars communicate an intent to showcase an agent-means relationship. For clarity, the direction I utilized in this study was consistent with qualitative research findings and the efficacy expectancy, *agent-means* relationship.

Dimensions of Teacher-Efficacy

Teacher-efficacy continued the perspective of self-efficacy within a more narrow domain. Tschannen-Moran and Woolfolk Hoy (2001) concluded that teacher-efficacy has two dimensions in which an individual forms a judgement on the (a) environment surrounding the task will perform and (b) their personal teaching competence. The first dimension, task analysis and context, involves the inference individual teachers make regarding the anticipated level of difficulty of the given teaching task. That is, an individual considers the external factors and available resources which might challenge their individual teaching process. Tschannen-Moran & Hoy (2001) noted that the assessment teachers make regarding their teaching tasks is linked to a specific context. In other words, a teacher might express higher efficacy in one teaching element, (e.g., using questioning techniques to facilitate higher order thinking), and express lower efficacy in another (e.g., classroom management through a Canvas LMS). Lee, Wang, and

Chen (2020) conducted a qualitative study exploring the relationship between teacher-efficacy and teaching analysis. In their findings, they noted that although teachers initially expressed a higher degree of teacher-efficacy broadly, the levels of an individual's efficacy varied when examined at the task level. For example, they discovered the teachers shifted their individual judgements as their familiarity with specific tasks changed. This study provided some evidence that a developmental course might emphasize task specific behaviors as a valuable efficacy-building strategy for teachers (Lee et al., 2020).

The second dimension, personal teaching competence, refers to the individual's internal judgement of their knowledge, skills, or attitudes in comparison to their perceived weaknesses or limitations for that context. As consistent with the general ideas of self-efficacy, the verdict(s) individuals have regarding their abilities to succeed in the classroom environment has lasting, significant impacts on performance (Bandura, 1977; McKim & Velez, 2017; Tschannen-Moran et al., 1998a; Zee & Koomen, 2016). A teacher's personal teaching competence is a general perception of their current capabilities or current functioning levels. The way an individual concludes their current state of abilities is in part what contributes to the overall efficacy of future action (Tschannen-Moran et al., 1998). Therefore, the combination of personal teaching competency (i.e., perception of current capabilities) with task context and analysis (i.e., anticipated difficulty of future environment) are the pillars to an individual's teacher-efficacy.

Thus far, teacher-efficacy consists of combined factors including the four sources of information, the perceptions of the teaching task, and personal teaching competence. The independent elements supplement each other to formulate a teacher's sense of efficacy (see Figure 1). Efficacy development is cyclical. The cycle informs, and is both informed by, and informs an individual's general sense of efficacy and their abilities towards anticipated domains

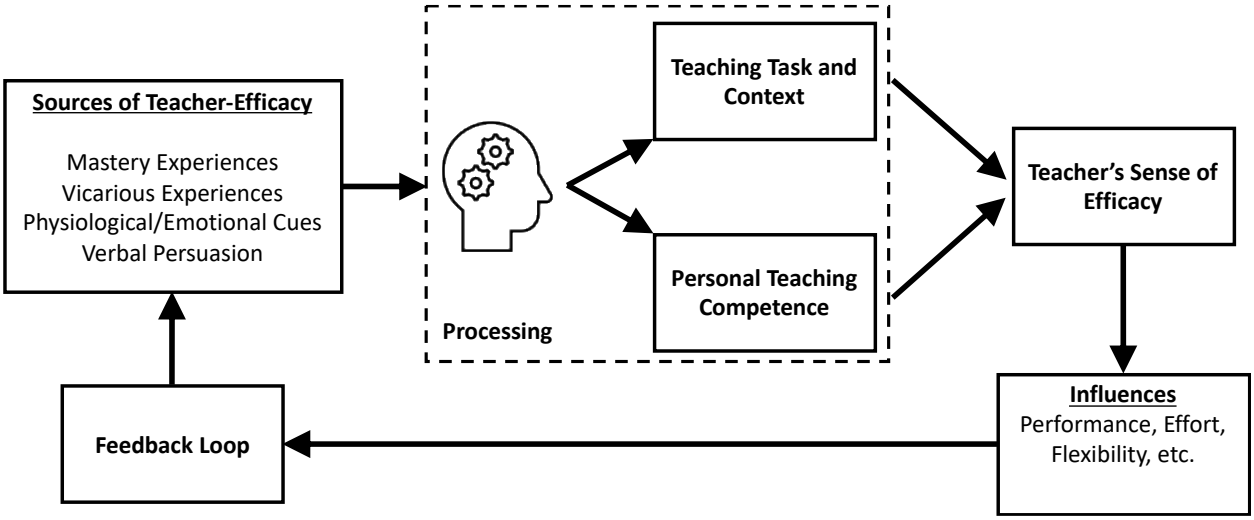
or tasks. Individuals then create a degree of efficacy which influences elements such as how individual effort and attention towards goal setting (Honicke & Broadbent, 2016; Tschannen-Moran et al., 1998a; Tschannen-Moran & Hoy, 2001) or the ability to react or adjust to change (Bandura, 1977; Glackin & Hohenstein, 2018; Tschannen-Moran & Hoy, 2001), ultimately influencing the teacher's performance in the classroom. In turn, the experience gained from the performance is then linked in a feedback loop which informs the continuous efficacy-building process.

Methodological Limitations in Teacher-Efficacy Literature

The cyclical diagram proposed by Tschannen-Moran and colleagues was helpful for creating a baseline understanding of teacher-efficacy. However, the diagram was limiting in that it obscured the actual complexities of the construct. This limitation was in part due to the trends in the literature for investigating teacher-efficacy. Some scholars have argued that the over-representation of quantitative research has, in many ways, obfuscated the broader understanding of teacher-efficacy, as these methods tend to offer a narrow frame for investigation (Wyatt, 2015), which has led to pervasive misapplications and "misleading conclusions" (Klassen et al., 2011, p.36). Consequently, scholars have recognized, and called for, an increase in qualitative research to better understand the multi-dimensional elements of this psychological construct (Tschannen-Moran et al., 1998).

Figure 1

Teacher-Efficacy Cycle



Note. This figure diagrams the relationship of sources, internal processing, and influences on the teacher-efficacy process. Adapted from Tschannen-Moran et al. (1998) graphic "The cyclical nature of teacher-efficacy."

In their seminal review of the teacher-efficacy literature, Tschannen-Moran et al. (1998) lamented that qualitative research is "overwhelmingly neglected" (p. 242) in the literature. This call to create a perspective of efficacy-development through qualitative methods remained mostly unanswered as the paucity of research using qualitative methods was abysmal. Klassen et al. (2011) conducted a review of 218 empirical studies published on teacher-efficacy between 1998-2009 and found that quantitative research maintained a significant footprint in the literature (76.7%) compared to qualitative-only studies (8.7%). Although they noted an increase in qualitative research over their 12-year review, the relative proportion of qualitative representation remains sparse. The result unfortunately has led to ambivalence regarding our in-depth understanding of teacher-efficacy. Notably, some scholars have argued that their approach of conducting interpretive qualitative research allowed them to discover incompatibilities between how individuals expressed their efficacious beliefs through self-reported measures

versus data they triangulated from interviews, observations, and documentation (Glackin & Hohenstein, 2018; Wyatt, 2015, 2016, 2018).

In alignment with this perspective, Glackin and Hohenstein (2018) conducted a rare study in which they conducted a comparative analysis of teacher-efficacy beliefs using both quantitative and qualitative methods. In their study, their participants completed a self-reported survey instruments regarding various elements of their teaching practice, followed by traditional qualitative case study design which included semi-structured interviews and observational assessments. For their two cases, the participants had a more nuanced structure to their efficacious beliefs than what the participants communicated through the survey instruments. For example, Glackin and Hohenstein discovered that although one participant self-reported as having "higher efficacy", this individual's need for social desirability was influential in their self-assessment, a point that the research team discovered during their interpretative analysis from their interview and observational sessions. They concluded that the insight they received regarding the teacher-efficacy dimensions and the changes and nuances of the construct were "unattainable" (p. 286) through the quantitative methods they employed. Their findings were consistent with a broader sentiment that teacher-efficacy is a multi-dimensional, complex construct shaped by the context that surrounds the individuals developing their belief system (Bandura, 2001a; Wyatt, 2018). As such, understanding teacher-efficacy requires an in-depth, holistic investigation to detect the nuances of the construct as connected to a given circumstance (Glackin & Hohenstein, 2018; Wyatt, 2015).

Conceptual Framework

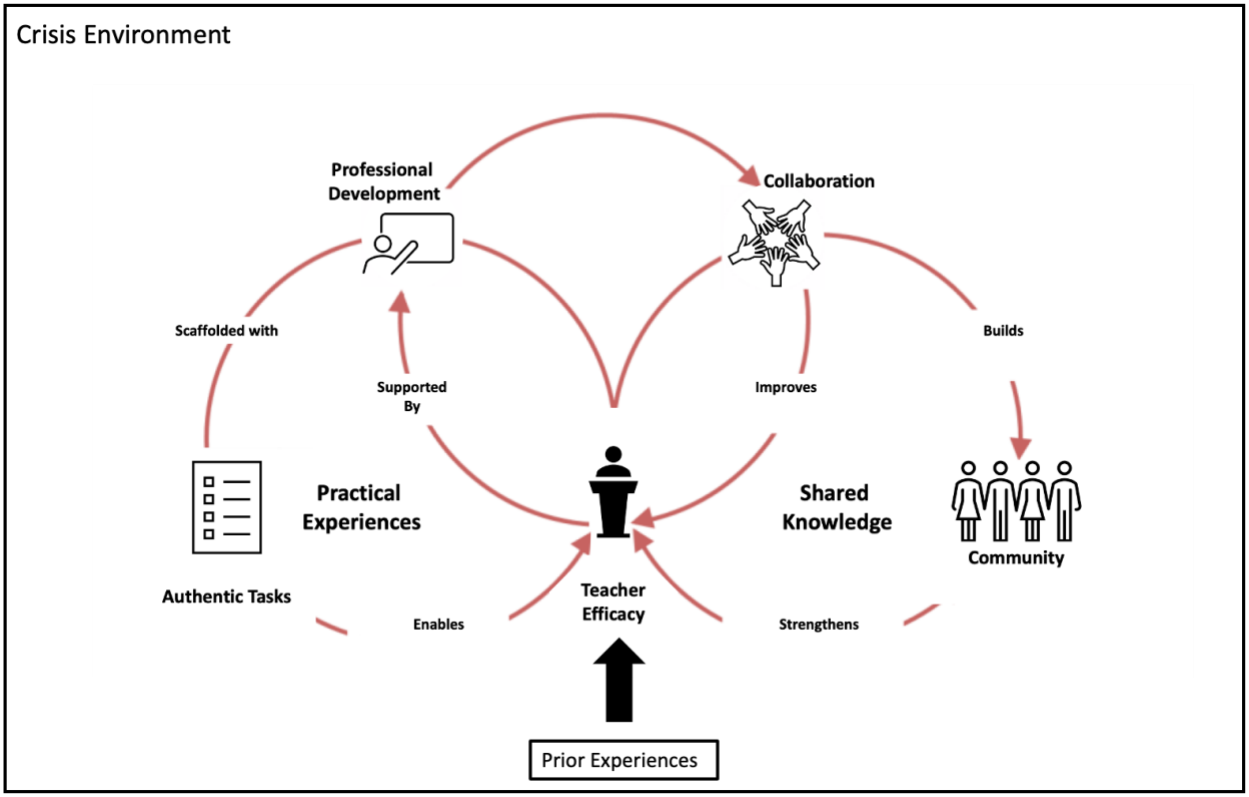
The formation of one's sense of efficacy regards an individual's self-judgement towards a task, situation, or behavior as tailored, and influenced, by a given context. In turn, the way an individual assesses a capability in one context might differ from their assessment of the same capability in a different setting. With respect to social science research, the COVID-19 pandemic offered a unique opportunity as the crisis entailed external elements (e.g., a time-compressed environment, uncertainty, among other factors) that were pervasive, disruptive, and required learners and educators to mitigate in the learning process (Blankstein et al., 2020; Hodges et al., 2020).

In searching for a framework, I struggled in utilizing a pre-existing model as that the typical study-maintained teacher-efficacy through a linear focus, often examining an independent association between two factors. For example, studies often highlighted correlational relationships between learning interventions and teacher-efficacy (Chong & Kong, 2012; McKim & Velez, 2017; Thomas & Mucherah, 2014), impacts of previous experiences (Kopparla & Goldsby, 2019; Tsui, 2018; Wyatt, 2015), or the connections between community and efficacy (Caza & Nelson, 2019; Ciampa & Gallagher, 2016; Legrain et al., 2019), to name a few of the more prevalent categories. However, as noted by some scholars, the teacher-efficacy construct is a complex psychological construct (Glackin & Hohenstein, 2018; Wyatt, 2015, 2018). In fact, after examining the literature through a meta-perspective, the range of explanations supported the notion that a teacher's sense of efficacy was influenced, not by a singular contributor, but by an interconnected web of factors that construct an individual's self-beliefs. To narrow the scope of the conceptual framework, I utilized the prevalent themes I discovered in the literature and

included the elements relevant to this study (see Figure 2 for depiction of conceptual framework).

Figure 2

Framework for Contingency Teacher-Efficacy Development



Note. The framework depicts an interconnected web of influences of teacher-efficacy while navigating the PD environment. This depiction is **not** exhaustive of the many factors that contribute to efficacy building, so the interconnected web expands and collapses as necessary to each individual and each context. The following sections will explore various relationships of the framework with the emphasis on developing teacher-efficacy. The graphic was adapted from Teräs and Kartoglu's (2017).

The conceptual framework is bounded by the context. In the depiction, the crisis environment shapes and constrains how individual's form their judgements. Next, at the center of this web is the individual teacher formulating their sense of efficacy using their prior knowledge and previous experiences as key contributors for initiating their self-assessments

regarding the upcoming classroom tasks. Individuals leverage prior experiences to determine which resources are needed from the additional sources within the environment (Bandura, 2001). From here, there were two external factors that reoccurred as significant influencers to molding one's sense of efficacy, professional development interactions (An, 2018; Spatz et al., 2019; Tsui, 2018) and collaborative engagement (Chong & Kong, 2012; Goddard et al., 2015; Voelkel Jr. & Chrispeels, 2017). Both professional development and collaboration have independent pathways for influencing teacher-efficacy. For example, PD opportunities promote efficacy development through authentic instructional designs that exposure learners to practical experiences. While collaboration, either through formal or informal engagements, creates instances for building efficacy through community interactions. However, as the framework depicts, there are also connections and overlaps of these elements which construct the larger web individuals use to mitigate crisis challenges and construct higher-efficacious beliefs.

Review of the Literature

In this review, each section represents an element of the conceptual framework, its relationship to teacher-efficacy, and potential areas of overlap or connections. The concluding element of this review examines the impact of the crisis environment on learning and efficacy-development.

Teacher-Efficacy and Professional Development (PD)

Desimone (2009) and Darling-Hammond and her colleagues (2017) define professional development as a formal, structured endeavor which aims to change teacher behavior by improving their individual practices, confidences, and knowledge towards their own classroom and the classrooms of their peers. Professional development can take many forms, however, both sets of scholars concluded that the most effective PD environments are (a) content-focused;

(b) involves active learning; (c) supports collaborative engagement; (d) provides modeling, feedback, and reflection. The challenge to implementing successful professional development, however, requires responsiveness to the needs and context of the teachers in attendance to facilitate efficacy development (Desimone, 2009). This intentionality involves characteristics of the instructional design such as the appropriate scaffolding, the level of authenticity and, the incorporation of collaborative engagement.

Design Structure

The instructional design of a PD program can facilitate opportunities for efficacy building. Structure can offer a conductive learning environment when properly scaffolded to promote efficacy. In general, the use of scaffolded instruction is beneficial for learner development (Archer & Hughes, 2011; Martin et al., 2020). Scaffolded instruction refers to the use of structure, progression, and teacher support as a strategy to present new information to students (Archer & Hughes, 2011). In the classroom, instructional scaffolding can appear in various forms in which it progresses from maximum to minimal teacher assistance (Archer & Hughes, 2011; Kleickmann et al., 2015), simple to complex material, or general to specific problems sets (Kleickmann et al., 2015). The literature supported the notion that scaffolded instruction was advantageous if teachers associated their level of support offered to student expertise and the complexity of the material (Feldon et al., 2018; Kalyuga et al., 1998; Kalyuga & Singh, 2016; Likourezos & Kalyuga, 2017). Highlighting this point was a study conducted by Feldon et al. (2018) which investigated a learner's sense of efficacy as impacted by the structure of the instructional design. In their quasi-experimental study, online students in higher education either experienced a highly procedural-based scaffolded design (meaning the content included guided instructional assistance from the course facilitator) or an independent-style of learning

through online instructional videos only, while learning an unfamiliar task. They found that the students demonstrated much higher levels of efficacy when engaged in the highly scaffolded design structure as opposed to the alternative design option. The findings are significant for understanding the connection between design and efficacy on two levels. The first dealt with how the instructional structure can promote efficacy development. A highly structured design can populate mastery-experiences and mitigate the impacts of negative psychological cues (i.e., self-deprecation or insecurities regarding perceived inabilities to perform tasks) (Bandura, 1977; Tsui, 2018). As Bandura and many other scholars have argued, gaining mastery experiences are paramount to achieving higher levels of efficacy (Kopparla & Goldsby, 2019; McKim & Velez, 2017; Tsui, 2018).

The second implication involved the implications regarding the connections between instructional design, teacher-efficacy, and cognitive load. In the study, the two groups of learners not only varied in efficacy because of the two design scaffolds but the changes in instructional strategies had inherent differences in the cognitive load they experienced. This realization was significant as there are scholars who contend that efficacy development and cognitive load reduction utilize similar cognitive pathways and mechanism in their development (Feldon et al., 2018, 2019; Martin & Evans, 2020), suggesting a biopsychosocial impact of instructional design.

The implication was that cognitive load might also serve as a useful theory to consider instructional design for developing teacher-efficacy. Sweller (1994) described cognitive load theory as an explanation of an individual's utilization of cognitive resources during the learning process. The theory involves information processing and learning as a characteristic of working memory and long-term memory transfer (Sweller, 1994, 2020). Cognitive load is a consideration

of how much working memory is taxed and available as a product of both internal and external elements (Anmarkrud et al., 2019; Clark, 2008). Therefore, cognitive load theory is an essential pedagogical tool for the classroom and instructional design (Anmarkrud et al., 2019; Sweller, 2020).

As indicated in the seminal works of cognitive load theory development, an instructional designer must consider the two primary elements of cognitive load, intrinsic and extraneous loads. According to Chandler and Sweller (1991), intrinsic load referred to complexity of information an individual must process. The intrinsic load an individual experiences is connected to the overall element interactivity of the subject matter. Lower element interactivity refers to simple concepts, while higher interactivity material has greater sophistication and complexity with its constituent parts (de Jong, 2010; Sweller, 2010). Consider the comparison of learning a simple addition math problem versus mathematical proofs in geometry. The latter involves a much larger number of concepts needed to process likely resulting in an increase in intrinsic load for a novice learner. In effect, the higher the intrinsic load, the greater the challenge will be for an individual to process the information (Anmarkrud et al., 2019; de Jong, 2010; Sweller, 2020). Extraneous load, however, deals with the degree to which mental load is imposed strictly by the design and structure of the learning environment. This load is one that is predicated by an inappropriate or less optimal presentation of information. In other words, this load is an artifact of the design and not any specific learning schema. The instructional design impacts the perceived level of complexity of the curriculum content (Chandler & Sweller, 1991; Sweller, 1994). The more complex or taxing either the material or instructional design is, the more negative the impact is likely to the learning process (Sweller, 1994, 2020). In practice, design choices to decrease extraneous load vary in approaches (Sweller et al., 1998; Van Merriënboer &

Sweller, 2010). Van Merriënboer and Sweller, (2010) provided one design illustration using the *worked example principle* as an example design scaffold. The worked example principle, a method of providing novice students with full solutions to review, can decrease extraneous load by allowing learners to study and learn problem solving methods before engaging in conventional problem-solving tasks. Conversely, the use of independent problem solving too early in the learning process increases mental load required to process and potentially decrease learning effectiveness (Sweller et al., 1998; Van Merriënboer & Sweller, 2010).

The preponderance of research often has teacher-efficacy and cognitive load as distinct constructs, however the convergence of the two concepts is beneficial to consider. Each of the respective literature bases are quite extensive as isolated concepts as researchers have commonly treated the two constructs as independent, and mutually exclusive items. Only recently have scholars started to explore the two concepts concurrently (Feldon et al., 2018; Likourezos & Kalyuga, 2017; Sweller, 2020; Vasile et al., 2011; Wu et al., 2012). For example, Wu et al. (2012) conducted a study exploring the relationship between self-efficacy, extraneous load, and task performance. Their findings supported the notion that scaffolded instruction which mitigated extraneous load led to higher learner perceptions of their efficacy. Based off their findings, they postulated that a conducive learning environment must consider both the elements of task design (i.e., extraneous load) as well as learner self-beliefs (i.e., self-efficacy). Their conclusion contributed to a larger notion that self-beliefs are more than a tangential, seemingly parallel process to cognition and performance (Feldon et al., 2018, 2019). de Bruin and van Merriënboer (2017) offered a similar sentiment. In their study, they argued three reasons cognitive load and efficacy theories are related (1) both are based in the psychology of learning and memory; (2) both use subjective estimates of learners; and (3) both focus on self-directed learning. These

three elements provided strong justification for the need for more examination of the two concepts in influencing the learning environment.

As the combined literature was limited, commonalities among the two literature bases supplemented the analysis. The commonalities served as connective tissues used as points to analyze relationships between the conceptual items. During the review, there were three themes that I unveiled as significant decisions to digest for an instructional design that combines both frameworks. The themes were as follows: the consideration of previous student experiences; the degree of instructional guidance and support provided; and the use of collaboration as a learning strategy.

Specific to cognitive load theory in the learning environment, intrinsic load and extraneous load involves the relationship between prior experience, the determination of subject difficulty, and how information is presented to the learner (Sweller, 2010). As a general conclusion, the more prior experience a learner has upon entering the learning environment, the more available working memory is accessible for handling complex tasks. This relationship has an implication for understanding how effective the learners will operate with a given course of instruction. Two of the leading scholars in this area, Kalyuga and Sweller have each researched the relationship between learner experience and instructional design extensively. To synthesize, they concluded that the experience level of the learner impacts their merit they place on learning experiences, the types of cognitive strategies they utilize, and the capacity of mental resources accessible in the learning environment (Kalyuga & Renkl, 2010; Kalyuga & Singh, 2016; Likourezos & Kalyuga, 2017; Sweller, 1994; Sweller et al., 1998; Van Merriënboer & Sweller, 2010).

Authenticity

Another important characteristic of PD involves the level of authenticity in the instructional design. The significance of an authentic design is vital for teacher preparation. Authenticity is the degree to which the curriculum or course content is related to the learner's context (Behizadeh, 2015; Luo et al., 2011). Kearney et al. (2012) defined the term by stating that authenticity is the "extent to which tasks are realistic and offer problems encountered by real world practitioners" (p. 9). At the heart of authenticity is the notion that the curriculum has realistic application that is transferrable directly to the learner's teaching context.

While the need for faculty development is hardly debated, one consistent criticism among faculty is that faculty development is not always relevant to their practice (Darling-Hammond et al., 2017). For instance, workshops or training sessions tend to provide a one-directional transmission of information that often does not meet the needs of faculty (Darling-Hammond, 2009; Surrette & Johnson, 2015). The challenge then is for PD designer to ensure their curriculum is situated to the anticipated work environment of the attendees.

To better frame an authentic learning experience, Teräs and Kartoglu (2017) offered nine characteristics as synthesis of the research on authenticity in PD. These environments includes as *authentic context* (reflection of knowledge in real life); *authentic tasks* (activities are representation of real-world problems); *expert modeling* (opportunity to observe experts); *promotes multiple roles* (exposes learners to a range of information, debates, and perspectives); *collaboration* (collegial engagement); *reflection* (opportunity to contemplate and compare thought processes with other); *articulation* (explanation and negotiation of meaning); *coaching* and *scaffolding* (proper support to learners); and *authentic assessments* (perform skills and knowledge they have acquired). In their own study, Teräs and Kartoglu (2017) utilized this

framework in their qualitative investigation of teacher perceptions regarding an authentic PD course design. The participants engaged in a course which scaffolded decision-making and problem-solving tasks, using simulated scenarios withing the classroom environment then actual consultants later in the program. They found that participants were invested in the learning process and experienced "deep level engagement with the tasks" (p. 205). The combination of the collaborative interactions and the use of reflective activities enabled the participants to gain a depth of understanding and practical application of the tasks.

The benefit of an authentic design was evident in other studies as well. One study conducted by Luo, Murray, and Crompton (2017) highlighted the presence of several Teräs and Kartoglu's (2017) authentic characteristics in their research. The purpose of the study was to analyze teacher perceptions of their experience engaging with an authentic curriculum design. One of their three RQs analyzed participant perspectives on the impact of an authentic learning setting content centered on real work tasks. They found that incorporating *authentic tasks* enabled participants deliberate time to investigate relevant (*reflection)*, complex problems while learning from the diverse problem-solving perspectives from their peers (*collaboration)*. The scholars also concluded that the use of the authentic environment improved teacher confidence for novice teachers learning the desired technical skill centered in the PD.

The link between authentic design and teacher-efficacy is in the specific and actionable aspects of teacher preparation. Efficacy scholars have noted insistently that task-specific experiences are beneficial for building one's self-beliefs to act (Bandura, 1977; Honicke & Broadbent, 2016; Tschannen-Moran & Hoy, 2001). The exposure to the sources of information (i.e., mastery experiences, vicarious observations, verbal persuasion, and physiological and emotional cues) create situation-specific instances for individual to grow their self-beliefs.

Banas's (2014) study supported this conclusion. In her study, 60 preservice teachers who were exposed to PD which incorporated experiences, which met the authentic learning characteristics, felt more confident towards engaging in the behaviors taught during the session. Authenticity creates direct opportunities for teachers to apply and transfer their learning to their lives (Bandura, 1977).

Although practical application and relevancy are foundational to authentic curriculum, what's less clear in the literature is who owns the attribution. In the literature, scholars often express authenticity as a characteristic of the instructional design and less as an integration of the design, design team, and learner. For example, the Kearney et al. (2012) definition I provided earlier noted that authenticity is the "extent to which tasks are realistic," offering less clarity on perspective of realism makes the determination. In contrast, Behizadeh (2015) offered specificity by clarifying that authenticity was a matter of how the learners perceive the curriculum connects to their lives. In her description, the purpose of an authentic curriculum is to provide the learner with a curriculum they deem relevant to their context (Behizadeh, 2015). Therefore, to consider the effectiveness of an authentic PD event is to assess the functionality of the program to address the requirements and concerns of the educators, from their position (Darling-Hammond, 2009; Darling-Hammond et al., 2017; Desimone, 2009).

Teacher-efficacy and Collaboration

The relationship between teacher-efficacy and collaboration was also apparent in the literature. The act of developing a sense of efficacy is psychological phenomenon that is influenced through individual and collective measures (Bandura, 1977; Goddard et al., 2015; Tschannen-Moran & Hoy, 2001; Zhou, 2019). Scholars who subscribe to the social-cognitive perspective of learning have argued that teacher-efficacy is more than an accumulation of

individual attributes (Bandura, 2001a; Ciampa & Gallagher, 2016; Goddard et al., 2015; Strickland-Davis et al., 2020). Instead, teachers operate within organizations and communities both within and outside of formal PD settings and these interactions impact individual self-perceptions of their abilities.

Within the PD environment, collaboration can influence the quality of, and ability to, facilitate efficacy development. Collaborative learning is a generic learning method in which two or more students engage in the learning process and has theoretical roots is social constructivist theory (Vygotsky, 1978), social cognitive theory (Bandura, 2001), and the community of practice model (Capra, 2014; Garrison & Cleveland-Innes, 2005). Darling-Hammond and her colleagues (2017) conducted a meta-analysis on the use and value of using collaboration for teaching faculty development courses. In their findings, they discovered that out of the thirty-five studies examined, thirty-two were explicit that collaborative inquiry had a positive impact on teacher development. They argued that in the context of today's classroom settings, collaboration was not only relevant but also a crucial element to learning in the professional development setting (Darling-Hammond et al., 2017; Desimone, 2009). Supporting this importance, Bedford and Rossow (2017) studied the impact of building a professional learning community during a training event had on teacher development. They concluded that the collaborative approach built a sense of community, increased teacher empowerment and confidence, and provided a mechanism for better transfer of learning materials from the training to the classroom, suggesting the beneficial implications of this strategy both for and post the professional development events.

The use of collaborative learning has strong support for increasing the overall mental resource capacity of the learning group (F. Kirschner et al., 2009b; P. A. Kirschner et al., 2018; Paas & Sweller, 2012; Zambrano et al., 2019); the level of task complexity achieved (P. A.

Kirschner et al., 2018; Zambrano et al., 2019); and overall knowledge, experience, and confidence of learners (Caza & Nelson, 2019; Ciampa & Gallagher, 2016; Legrain et al., 2019). In a study investigating the differences between individual and collaborative problem solving efficiency, F. Kirschner et al. (2009a) observed that the presence of collaborative integration strongly impacted the effectiveness of the participants' ability to problem solve and the level of complexity they could handle in the learning environment. The team divided the 70 participants, assumed to have equal prior experience with the learning material and tasks involved in the study, where some learners remained solo and other learners encountered collaborative learning groups. They concluded that collectively the collective approach maintained an advantage in that each group member utilized less mental effort and resources required to carry out the complex tasks, thus lowering cognitive load for individuals while increasing work capacity for the group. The ability for individuals to divide information processing and mental requirements lowers the potential for learners experiencing mental overload (Zambrano et al., 2019, 2019).

I also discovered in the literature was the decision to incorporate collaborative strategies in the instructional design required additional considerations. A potential consideration involved a relationship between the learner's prior experience and the use of collaboration learning strategies (Kirschner et al., 2018; Paas et al., 2003; Zambrano et al., 2019). In instances where the learners do not have subject experience and embedded in an environment without prior rapport with other learners, the use of collaborative learning strategies can overload cognitive load (P. A. Kirschner et al., 2018; Retnowati et al., 2018; Sweller, 2010; Zambrano et al., 2019). The potential reason for the overload was that learners expend cognitive resources towards processing the new instructional material and on learning the social and team dynamics required for newly forming groups to be successful (Kirschner et al., 2018). As noted earlier, the

presence of cognitive overload impacts working memory capacities and therefore the effectiveness of the learning environment.

Similarly, Kopparla and Goldsby (2019) discussed the relationship between efficacy building and collaboration. In this study, they explored the role of prior group experiences on the learning process. They found that the use of collaborative strategies was effective when the group has an established sense of community together (Akcaoglu & Lee, 2016). This group relationship can be pre-existing (P. A. Kirschner et al., 2018) or developed within the learning environment through formalized community building methods (i.e., scaffolded experience) within the curriculum (Akcaoglu & Lee, 2016; Kopparla & Goldsby, 2019). These studies highlight the critical role that group rapport and relationship have the efficacy of using collaborative learning strategies.

The benefits of collaboration extend beyond the formal learning environment of PD as well. Collaboration or community among teachers in an educational setting also impacts an individual's sense of efficacy towards their practice. The direct connection between a healthy collaboration and teacher-efficacy in the literature suggested that the psychological benefit from these interactions helps individual perceptions of their practice. In one study, Voelkel Jr. and Chrispeels (2017) examined the relationship between professional learning communities and teacher-efficacy with 310 teachers and principals from 16 schools. Relying on self-reported survey data, the researchers found that in the districts that incorporated characteristics of collaborative environments (e.g., shared vision, collective action strategies, and sharing teaching practices) demonstrated higher levels of individual teacher-efficacy towards implementing classroom management changes. The act of engaging in meaningful dialogue and support with colleagues was a protective measure which assisted teachers with a coping mechanism. This

point was also supported by a qualitative study conducted by Wilcox and Lawson (2017) which investigated the impact of collective engagement on teacher-efficacy. Through focus group interviews, they first discovered that teachers who operated within an environment with effective collective engagement viewed their interactions with peers as less competitive and more cooperative. The participants expressed a willingness to engage, group problem solve, and support teaching innovations. Secondly, the researchers noted a connection between collective engagement and resilience. Participants associated with lower collective engagement expressed their experiences with change and directions as causing more stress and anxiety than the participants from stronger collaborative environments. The second finding was of particular interest as the research on teacher-efficacy indicates that higher efficacy often amounts to more abilities to handle change or cope with disruptions (Bandura, 1977; Putwain & von der Embse, 2019; Tschannen-Moran & Hoy, 2001). Research has highlighted that organizations that prioritize collaborative engagement among teachers improves confidence (Goddard et al., 2015), motivation (Voelkel Jr. & Chrispeels, 2017), and resilience (Putwain & von der Embse, 2019; Wilcox & Lawson, 2018) and are possibility intertwined with efficacy development.

Teacher-Efficacy and the Crisis Environment

Thus far, the argument I proposed consisted of a reframing of the developmental process of teacher-efficacy. Contrary to many studies in the literature, the development of teacher-efficacy is not linear process, but instead involves a web of influencers that are interconnected in the process of establishing a sense of efficacy. Our path to understand this web requires a consideration of, among others, the variations of prior experience, the instructional design and structure of a PD experience, and the quality and nature of collaborative engagements. However, a discussion regarding a more holistic perspective on teacher-efficacy requires the recognition of

the influential role of the context. Scholars have acknowledged that the environment plays an intricate role in shaping, constraining, and molding how the factors in the interconnected web influence one's sense of efficacy (Bandura, 1977, 2001a; Tschannen-Moran et al., 1998). Although the term "environment" was broad in its representation in the literature, the sentiment across the literature was consistent in referring an individual's surroundings, conditions, or interactions. For instance, areas such as the impact of a school context or institution (Skaalvik & Skaalvik, 2010, 2017), changes in learning settings (Alqurashi, 2016; An, 2018; Putwain & von der Embse, 2019; Skaalvik & Skaalvik, 2017; Thomas & Mucherah, 2014), or even social factors such as culture (Phan & Locke, 2016; Simamora et al., 2019). The noticeable gap, however, was the lack of research exploring how the unique elements of a crisis, such as the COVID-19 pandemic, impacted how one develops their sense of efficacy.

Crisis events are environment considerations that are unique to explore. A crisis presents disruptions and often involves a series of obstacles that require attention from everyone impacted by its presence. One popular method for characterizing a crisis was introduced by the United States Army during the U.S.-Soviet Union Cold War in the 1980s. At that time, military strategist and senior leaders were concerned with a new wave of warfare they labeled as a VUCA, as the emerging environment were becoming more *volatile, uncertain, complex, and ambiguous* (Codreanu, 2016). *Volatile* refers to the nature, time-compression, or magnitude of the disruptions or fluctuations of the crisis (Codreanu, 2016; Horney et al., 2010); *uncertain* is the lack of predictability in the situation (Hadar et al., 2020; Horney et al., 2010); *complex* means the presence of confounding elements which create chaos (Horney et al., 2010); and *ambiguous* is the haziness or duplicity of meanings regarding the current conditions (Hadar et al., 2020;

Horney et al., 2010). These four elements offer a helpful frame for identifying the difficulties and pressures created during a crisis.

For the COVID-19 pandemic specifically, both volatility (i.e., time-compression) and uncertainty seemed to be the more prevalent factors impacting academic environments and the process of learning environments during the rapid shift to distance education (Blankstein et al., 2020; Hadar et al., 2020). As many scholars have concluded, proper design for a successful online learning experience, to include PD, requires rigorous planning to produce a conducive learning environment (Garrison & Cleveland-Innes, 2005; Moore, 2019; Simonson et al., 2019). However, this crisis did not afford such opportunities as this crisis necessitated (Bozkurt & Sharma, 2020)a time-critical response. As a result, the term *Emergency Remote Teaching (ERT)* (Hodges et al., 2020; Whittle et al., 2020) gained popularity as a more accurate characterization for what occurred.

Emergency Remote Teaching (ERT)

The combined impacts of time-compression and uncertainty of information caused a disruption to the teaching and learning process. As the requirements for developing distance education are extensive, the way in which academic professionals needed to adjust their programs to deal with the crisis required a new way of thinking. Bozkurt and Sharma (2020) and Hodges et al. (2020) each provided arguments that, *emergency remote teaching* (ERT) better categorized what this shift and learning environment entailed during the pandemic. Their arguments noted the time-sensitivity and limited duration of the circumstances justified the use of "emergency" as qualifier. A crisis is an emergency in that they cause instability and require immediate action to resolve (Karalis, 2020).

In the consideration of emergencies, emergency remote teaching was a strategy of delivering a temporary learning experience using a set of instructional methods to solve a specific problem (Bozkurt & Sharma, 2020; Hodges et al., 2020). The overall objective was to ensure learners were able to access, engage, and progress with their programs as quickly as possible, even at the sacrifice of high-quality education (Hodges et al., 2020). Bozkurt and Sharma (2020) also added that the learning process involved more than just learning. Meaning, in addition to the transfer of content or skillset development, educators needed to use consideration and empathy of student circumstances in the instructional design process. With regard to the additional considerations, Blankstein et al. (2020) conducted one of the early COVID-19 related studies on student experiences. In their study, they sampled a large group of college students (n=15,677) and analyzed self-reported survey data regarding their curriculum needs, wellness, and challenges during the pandemic. Of interest, they examined activities students found difficult during the shift in learning environment. The top three trouble areas were “balancing family, household, and school responsibilities”; “time management”; and “finding quite space for completing coursework”. Although this study did not include a qualitative component to explore individual circumstances or their context, there was a logical relationship which connected these difficult problem areas to the social and emotional impacts presented by the COVID-19 environment. The presence of additional stressors, anxieties, and uncertainties can have profound impacts on cognitive capacities such as mental clarity and attention (Shields, Doty, et al., 2017; Shields, Sazma, et al., 2017; Sweller, 2010) and also and intrinsic motivation to engage in learning (Ciampa & Gallagher, 2016). The results of this study supported Bozkurt and Sharma's (2020) claim that due to the unique milieus of crisis, the

instructional design approach might better serve learners with adaptions to support student specific needs.

Stress, Learning, and Teacher-Efficacy

The dynamics of a crisis often introduce stressors that instructional designers should contemplate and mitigate when able. In considering the COVID-19 pandemic specifically, individuals had to manage health and safety and economic instability, while simultaneously adapting to a new learning setting (Blankstein et al., 2020; Karalis, 2020). The challenge during these situations involves the management of mental resources. The elements, components, or obstacles an individual must overcome, the less cognitive capacity they must engage the task at hand.

Some circumstances offer opportunities for individuals to prepare for upcoming changes, however crises, like the COVID-19 pandemic, disrupt rapidly. The presence of acute stress or anxiety from recent changes, society events, and life circumstances can impact one's ability to learn or process new information negatively (Shields, Doty, et al., 2017). This connection between stress and learning was well-documented (Shields, Doty, et al., 2017; Shields, Sazma, et al., 2017). In times of stress, the more an instructional design requires learners to integrate multiple concepts or premises, while learning new material, the less effective that design will have on the learning process (Sweller, 2010, 2020). Shields, Doty, and colleagues (2017) studied the impacts of recent life stress exposures on learning performance. In this study, they discovered that as individuals reported higher levels of stress from recent events, the lower their academic performance was for both short-term and long-term memory tasks. Similarly, in their meta-analytic analysis of 113 studies, Shields, Sazma, et al. (2017), concluded that the presence,

timing, and longevity of stress can impact the ability to recall, code, or store information long-term, thus impacting the learning process

The impact of stress was also connected to a teacher's sense of efficacy. Generally accepted, the lower the efficacy level, the less resilient an individual can handle stress while performing their task, action, or behavior (Bandura, 1977). In a relevant study, Putwain and von der Embse (2019) explored the relationship between the demands from imposed curriculum changes, levels of teacher-efficacy, and perceived stress. They provided two findings of interest. The first, as consistent with the efficacy literature, was that the impact between the imposed curriculum changes and stress varied by teacher-efficacy level. When presented with lower demand levels for curriculum changes, teachers that reported higher levels of efficacy consistently indicated lower perceived levels of stress than teachers with a lower sense of efficacy. However, their second finding indicated that the expected advantages between higher and lower efficacy levels were less prevalent as the demands for curriculum changes increased. The two findings possibly suggest that although higher efficacy might offer resilience (Bandura, 1977, 1993), at a certain point that advantage was negated. Unfortunately, the study did not investigation potential reasons for this dynamic, however the study was purposeful in showcasing the impacts external forces can have on efficacy.

Pressures of Crisis Timeline on Instructional Design

During a crisis, the duration of a professional development event might be constrained by the time available. The rapid transition to ERT meant professional development and training was also compressed. As Darling-Hammond et al. (2009) noted, the duration of the faculty development influences the learning effectiveness. In alignment, Desimone (2009) also highlighted that teacher growth requires an adequate duration for effectiveness. While both

scholars mentioned sufficient duration as important, the specific threshold for what constitutes enough is ambiguous (Darling-Hammond, 2009; Darling-Hammond et al., 2017; Desimone, 2009). In fact, the degrees of separation in what constituted a rule of thumb varied significantly. In her meta-analysis, Desimone (2009) suggested that 20 hours of contact spread over time if enough, while Darling-Hammond et al. (2009) noted studies showing 80 hours as showing positive results. To note, each of the scholars are clear that a specific duration is unclear, but both are explicit in that the tailored use of the contact time is significant.

As the literature on crisis-specific professional development was limited, exploring the limited research conducted on short-term professional development provided a useful supplement for understanding the impacts from time-compressed learning environments. Spatz et al. (2019) conducted a study which they analyzed the impacts of a short-term professional development on the learning experience. The purpose of this study was to investigate how well teachers were able to implement a new strategy with limited preparation. In this study, the participants implemented the approach after only receiving a half-day of faculty development with the new material. Contrary to the prevailing conclusion that professional development should consist of a longer duration, spread out over time (Darling-Hammond et al., 2017; Desimone, 2009), this study offered an alternative perspective to factor. Their explanation for the successful implement was attributed to the following two design characteristics: the program had a narrowly content-focused and had actionable resources teachers could transfer immediately (Darling-Hammond et al., 2017; Desimone, 2009). Therefore, the conception of duration might be less important than the degree to which the content is tailored and offers authentic learning outcomes with practical resources.

The previous point regarding short-duration professional development has implications for thinking about instructional design during a crisis. Although a compressed learning engagement was less optimal, achieving a successful design was capable with focus, clarity, and intentional design. An even broader notion was the need for flexibility. The more disruptions that are present from a crisis, the more flexibility the pedagogical approach should assume. Flexible pedagogies are ideal in response to a crisis as they are learner-centered and present options regarding student choices, instructional strategies, and resources to provide a conducive learning environment (Putwain & von der Embse, 2019). Supporting this idea, Huang et al. (2020) postulated instructional design during the pandemic and presented dimensions of a flexible pedagogy. The dimensions included: student choice of sections and sequence to complete (Kleickmann et al., 2015); a range of learning materials students can use in the curriculum (Sweller, 2010; Sweller et al., 2019); and the use of multiple instructional approaches including a range of media modalities (Anmarkrud et al., 2019). The dimensions of the flexible pedagogy showcase a level of empathy and responsiveness to individual student needs. In the end, facilitating a learning environment that promotes the healthy development of teacher-efficacy during a crisis setting, requires flexible design strategies which account for the range of cognitive, psychological, social factors that influence our ability to perform.

Conclusion

Over the course of this chapter, I discussed my theoretical foundations, the conceptual framework which guided this study, and a comprehensive review of the literature covering the dimensions of my conceptual framework on teacher-efficacy. The two theoretical foundations included biopsychosocial model for learning, the intersection of biological, psychological, and social forces to understand development (Engel, 1980), and teacher-efficacy, an individual's

judgement on their abilities to organize, plan, and implement teaching functions (Tschannen-Moran & Johnson, 2011). By exploring the literature considering these two foundations and the context of the study, a conceptual framework depicting an interconnected web of influences became the method for understanding the extant research on teacher-efficacy as appropriate to a crisis context such as the COVID-19 pandemic. The elements of the framework included the co-dependent relationships between teacher-efficacy, professional development, learning and development, collaboration and community, and environmental pressures presented during crises.

While the exploration of this literature base helped create the foundation for this study, there were three notable gaps evident in the research. The first was regarding the paucity of qualitative research regarding teacher-efficacy development. Many studies in this domain are quantitative-focused and provide insight into correlational relationships with teacher-efficacy. Insightful, however, the degree to which teacher-efficacy was understood within a given context is limited by the single-methodological approach. Previous scholars have acknowledged the need for more qualitative-focused research (Glackin & Hohenstein, 2018; Goddard & Hoy, 2000; Tschannen-Moran & Hoy, 2001). While there have been some increases in this direction, the scope remains sparse.

A second notable gap in the literature to understand a teacher's sense of efficacy dealt how self-beliefs are impacted during a contingency or crisis environment. While crises have their fair share of obstacles to overcome, they do offer an opportunity to observe and investigate how theoretical concepts manifest during a change in contextual circumstances. The lack of research in this space implies practitioners must rely on non-crisis related studies to inform their classroom management or professional development practices. The third gap in the literature

regarded the lack of emphasis on exploring the sources of efficacy-development. Typical studies either explored the impacts of teacher-efficacy on performance or other conditions such as flexibility or resiliency. The lack of investigation of sources has restricted our understanding of (a) what informs one's efficacy development and (b) how sources converge or interplay to promote growth of one's self-beliefs.

In the proceeding chapters of this study, I build upon my analysis in this literature along with the gaps I discovered, and I offer a research study of teacher-efficacy through the lens my conceptual framework. In the next chapter, I explicate the methods I utilized in this study to investigate teacher-efficacy in this regard. The major elements of this discussion consist of a description of my positionality and its influence on my research design; design components such as participant recruitment criteria, data gathering specifics, and analytical procedures. This chapter concludes with the strategies I implement to assist trustworthiness determinations by the reader. By the end of the next chapter, the reader should be able to create a link between the limitations of the current body of research on teacher-efficacy (as presented in this chapter) with my decision to incorporate a case-study approach as my primary method for exploring the subject.

Chapter 3: Methods

The reach of the COVID-19 pandemic was substantial. Teachers and administrators confronted a series of obstacles in their attempt to present a meaningful learning experience for their learners. Some of the challenges included how to consider a learning environment amid an educational disruption, how to prioritize learning objectives while balancing the social-emotional needs of learners, and how to ensure the teaching staff felt prepared to facilitate learning riddled with uncertainty and change. These challenges along with the nature of the pandemic offered a unique, naturalistic environment for scholars and practitioners to explore elements of the teaching and learning process.

Accordingly, for this qualitative, single-case study, I examined the concept of developing teacher-efficacy as situated during a particular case's hasty transition from face-to-face classroom to a temporary virtual environment, known as emergency remote teaching (ERT). What's was notable about this transition was that teachers had to prepare for this monumental shift while considering an array of factors, such as building their individual practice, protecting their individual health, monitoring the well-being of students, and dealing with a new learning environment. Often, teachers leverage professional development (An, 2018; McKim & Velez, 2017), high levels of existing efficacy (Tschannen-Moran & Hoy, 2001; Tschannen-Moran & Johnson, 2011; Zee & Koomen, 2016), and collaborative engagement (Goddard et al., 2015; Voelkel Jr. & Chrispeels, 2017) as mechanism for coping with change. The challenge though was in the effectiveness of these strategies in this setting, as the conditions of the pandemic were quite unprecedented.

In general, military faculty were not exempt from dealing with the plight of the circumstances as they too were subjected to the elements of the pandemic. However, as

servicemembers, military faculty have experiences not all faculty privy too as they are integrated into a professional ethos dedicated to preparing and responding to crises and conflicts. As a result, my interest in exploring how one case of military professionals operated during the transition was of significant. In the case centered in this study, the military faculty course graduates, the professional development (PD) course they attended, and the design team that constructed the PD experience offered a unique combination to investigative this shift. Accordingly, this case assumed both an instrumental and intrinsic value to the teacher-efficacy body of literature.

The instrumental value pertained to this case's opportunity to provide insight into one approach of promoting efficacy development during a contingency. While the goal of this research was not for readers to draw broad generalizations from the findings, this study offers the reader the ability to juxtapose the takeaways from this context with a particular crisis or circumstance of their local context (Stake, 1995). The extant literature on efficacy development during a crisis or contingency is sparse, and the findings and implications of this study contributes to a much-needed body of literature. Additionally, the intrinsic value unique to this case was in the involved the opportunity to bring visibility to the military perspective regarding course design, learning, and preparation. In many ways, military organizations are well-versed in both planning and responding to contingency or crises in time-compressed environments (Crane et al., 2019; Meredith et al., 2011), which are competencies not often present outside of the military environment.

For the remainder of this chapter, I provide insight into my research design methods by introducing my positionality relevant to this study, my research problem statement, design

components such as sampling procedures, data management, and analysis procedures, and it concludes with the elements I implemented to offer trustworthiness to the research design.

Positionality Statement

Positionality, according to Bettez (2015), involves our process of revealing the meanings and values we have negotiated regarding the assemblage of identities, personal experiences and social statuses that influence our research. I acknowledge that my beliefs, values, frameworks, and paradigms cannot be separated from the research process (Josselson, 2013; Lincoln & Guba, 1985). As the researcher, I acknowledge my position and influence were integral instruments a part of this study

For my positionality, I grappled with the complicated nature of my identities as a military officer, an educator, and as an academic scholar. First, as the case in this study involved professional military education, my direct associations with the military offered both an insider and outsider perspective. I entered this research endeavor with 16 years of active-duty service, which included assignments throughout the operational Air Force dealing with a range of crise situations and conflict world-wide. In addition, I have had various involvements with teaching, designing, and assessing professional military education. Of relevance to this study, one of the positions I held included overseeing a faculty development unit responsible for onboarding inbound officers new to the educational environment. Furthermore, as a former employee of one of the participating organizations, I have taught in their in-residence program, experienced their cultural norms, and engaged in their organizational practices, including the emphasis on unit morale, collective participation for organizational changes, and the socialization of characteristics such as military resiliency and contingency response as part of a larger military service ethos.

Even with insider knowledge, I engaged the study simultaneously an outsider. Some of my assumptions and knowledge I carried from my previous engagements were no longer applicable as I was assigned to external organization at the time of the study. For example, one of the presiding regulations of military education, the Officer Professional Military Education Policy (OPMEP), changed since my departure from the military schoolhouse. The newly published guidance altered which content areas were emphasized and how the institutions needed to deliver and assess their curriculums. While these changes did not impact this study directly, the shift in policy prompted the need for me to consider other potential areas where my experiences did not align with their current context. More applicable to this study was my lack of familiarization with the leadership staff and organizational personnel. As with any organization, changes in leadership introduces new norms, culture, and operating procedures. Therefore, I recognized the severity of participant perspectives as opposed to relying on a potentially dated conceptualization of the environment. My decision to use open coding, reflexive notetaking, and member-checking throughout the process helped crosscheck the 'baggage' I brought into the research study with the participant's perspective (Bettez, 2015; Merriam & Tisdell, 2016).

Position on Humanizing Research and Case Studies

My identity as an academic scholar played a significant role in this study's design. Throughout my academic tenure, my experiences with critical, post-modern, and post-structural scholarship (Green, 2014; Irizarry & Brown, 2014; Paris, 2011) influenced elements of my identity. An outcome of this exposure contributed to a larger philosophical belief that all my research endeavors, regardless of its genre, would include aspects of humanizing design characteristics. To approach a research design with a humanizing lens means to center the

participants as individuals and not as artifacts or mere data points (Paris, 2011). Fundamental characteristics of humanizing research involves prioritizing our interactions with participants using dignity, respect, and care for their experiences and who they are as contributors in the knowledge gathering journey (Green, 2014; Paris, 2011).

Although qualitative case study research involves the investigation of humans, cultures, and societal norms, philosophical perspectives regarding strategies, tactics, and design varies substantially among scholars (Merriam & Tisdell, 2016), leaving the potential for researchers to disregard, or perhaps exploit, elements of humanity. In the case study literature specifically, debates regarding whether cases studies are abstract phenomena or a units of analysis bounded by a specific case (Merriam & Tisdell, 2016; Yazan, 2015) exemplify potential vulnerabilities for participant exploitation.

In my study, I centered humanizing practices as there was a potential for exploitation inherent to the context. From the participant perspective, each of them engaged in time-sensitive, stress inducing efforts during their transition to emergency remote teaching during the pandemic. None of the participants volunteered or requested to make the transition outright, they all performed their functional responsibilities simply because of their professional ethos. Considering this aspect, I chose to avoid an independent evaluation or assessment regarding the quality or effectiveness of their program or approach. Instead, maintaining a participant-centric strategy embedded a constant reminder of the human element of this study.

Using the influence of humanizing research practices, I emphasized three guiding principles in the design: (1) be inductive and exploratory in nature; (2) emphasize diverse participant experiences for knowledge generation and triangulation; and (3) provide thick description of natural context. The strategies included utilizing an inductive analytical design

which countered popular approaches in teacher-efficacy literature (Glackin & Hohenstein, 2018), and offering greater participant influence on analytical findings process through member checking (Josselson, 2013; Merriam, 1998).

Position on Learning

Finally, my identity as an educator has shaped my perspective on what it means to engage in learning. My philosophy on education consists of theories rooted in sociocultural learning theories and cognitive psychology-based learning methods. Combined, the two beliefs contribute to a perspective that learning is a result of consistent interactions over time. These interactions include collaboration and meaning making through social engagements (Retnowati et al., 2018), the way in which we as individuals interact with information and content cognitively (Sweller, 2020), and our interactions within (and with) an environment (Alqurashi, 2016).

Research Questions

The heart of this research effort involved the development of teacher-efficacy during a crisis. Under study was a distance education professional military education organization that pivoted a PD course to help transition a group of faculty from an in-residence teaching program to emergency remote teaching. To address this interest, the following research question and two sub-questions were the basis of this investigation:

> **Research Question:** How does a crisis environment influence the conceptualizations of developing teacher-efficacy within a professional military education setting?
>
> **Sub-question 1**: How did a crisis shape the way a team of course designers planned and implemented a professional development course to promote the growth of teacher-efficacy?

Sub-question 2: How did the involvement in the PD program affect teacher-efficacy perceptions for military faculty transitioning to ERT?

As discussed in the previous chapter, the conceptual framework in this study included an interconnected web of teacher-efficacy influencers (i.e., individual self-beliefs and experiences, professional development and instructional design, collaboration through community, and the contextual environment). In addressing the gap in the literature regarding our lack of knowledge of how these influencers interact in a crisis, I leveraged the above RQ and two SQs to address this shortfall. First, I sought to understand the design context, principles, and choices made by the design team to promote efficacy development; and second, I compared that with the course graduates perception of their efficacy to illuminate patterns and themes in the data.

Design and Methods

To examine the above research questions, I incorporated a qualitative case study design as the guiding approach to investigate the development of teacher-efficacy during the pandemic. According to Merriam (1998), case studies are appropriate when isolating the object, or case, in its natural setting is necessary to explore the depths or discover new meaning regarding a phenomenon (Merriam & Tisdell, 2016). A qualitative case study is especially useful when dealing with an educational setting as teacher practices involve nuances and intricacies. Therefore, the use of inductive collection methods and data triangulation postures the researcher to gain in-depth characterizations of the case (Merriam, 1985; Moss et al., 2019). For this study, the case study approach offered the structure needed to discover and explore the interconnections or convergences the faculty relied upon to promote teacher-efficacy development (Glackin & Hohenstein, 2018).

Qualitative Case Study

As a popular research method, the case study design is ideal when naturalistic inquiry, holistic and comprehensive interpretation, or inductive discovery of knowledge is desired regarding a bounded entity (Denzin & Lincoln, 2003; Lincoln & Guba, 1985; Merriam, 1998; Merriam & Tisdell, 2016; Stake, 1995; Yazan, 2015). Although these elements overlap with the much broader notion of qualitative research, the case study approach serves particular functions. Merriam and Tisdell (2016) noted that the case study method was distinct in that the specific characteristics, known as the unit(s) of analysis, drives the study and not a generic phenomenon or topic. Cases emerge because of their uniqueness, specificities, and complexities a part of an "integrated system" (Stake, 1995, p. 2). This system might involve people, organizations, policies or other factors bounded within a given context (Merriam & Tisdell, 2016; Stake, 1995; Yazan, 2015). In this study, the case study design was integral for me to capture the intersection of three significant elements, (a) the process of developing teacher-efficacy, (b) a group of military professionals engaged in a PD course, and (c) the COVID-19 pandemic environment (the last two elements discussed more in the next chapter). While each of the three elements are common in many environments, the combination created a unique unit of analysis.

In addition to the bounded nature of case studies, perhaps the other most notable characteristic was the incorporation of multiple data sources. Regardless of the position scholars present in the case study literature, a consistent requirement involved the necessity for researchers to analyze the case using multiple sources (Merriam, 1998; Merriam & Tisdell, 2016; Stake, 1995). The opportunity for exploration and discovery of knowledge was rich with the availability of data sources. As this interest area had various sources and avenues for exploring the case, this design structure offered a framework for me to situate and analyze multiple data

contributors and achieve an in-depth understanding of the teacher-efficacy development process in the context of the pandemic (Merriam, 1985, 1998; Merriam & Tisdell, 2016; Stake, 1995; Yazan, 2015). The three types of data in the study included semi-structured interviews from the designers (n = 3) and course graduates (n = 4); archived documents (e.g., curriculum and design documentation, such as program outcomes, syllabus, and other supporting materials); and course artifacts (e.g., discussion boards and course assignments). The population was two-fold. The first group of participants included three PD design team members responsible for creating and implementing the vision and the curriculum. The second group included four military faculty members who completed the PD between May and July of 2020. The triangulation of both interview groups, archived documents, and course artifacts offered multi-layered depth and a holistic perspective the case (Jonsen & Jehn, 2009; Stake, 1995).

Participant Sampling and Recruitment

Generically speaking, the purposive sampling technique was the overarching strategy I utilized for both participant groups. The idea of a purposive (or purposeful) sampling technique is that the researcher has a desire to discover or explore a particular area of interest and therefore selects participants they believe will offer the greatest insights (Merriam, 1998; Merriam & Tisdell, 2016). Purposive sampling is compatible, and frequently associated, with a qualitative case study research approach (Farrugia, 2019; Merriam & Tisdell, 2016), as researchers attempt to gain a comprehensive, in-depth understanding of the unit of analysis. Purposive sampling simply denotes intentionality in sample selection. While this study included purposive sampling techniques, my implementation of this method varied slightly for each sample group to adjust for the different group characteristics.

As COVID-19 safety restrictions hampered accessibility to participants, I incorporated the use of gatekeepers within each organization to assist the recruitment process. Using previous relationships in each organization, I recruited a gatekeeper from each organization based upon their positive rapport within their workplaces, their knowledge of the current individuals in their organization, and the involvement with the emergency remote teaching transition. In the end, the gatekeepers were vital for participant recruitment. In a time where the faculty were consumed with transitioning their teaching, the gatekeepers ensured, and communicated, that this research study would have minimal disruptions to their valuable time. To counter the accessibility limitations, I developed a list of explicit criteria and elicited the assistance of a gatekeeper within each organization for participant identification and recruitment (Merriam, 1998).

For the course design team, I was able to use a prior relationship gain access to the organization, understand the basic dynamics of the team, and locate a gate keeper to assist with my recruitment. For this group of participants, my goal was to locate the individuals that had direct exposure and influence with the development of the PD course. As such, I provided the gatekeeper with the following criteria as a guide for their recommendations:

(1) direct contribution to the design or implementation of the program
(2) explicitly identified as a design team member by the organization
(3) member's role was distinct from other team members

Imposing the selection criteria offered clarity and focus regarding the types of course designers I felt had the level of association with the PD and an opportunity to gain perspectives from a diverse set of functional roles. For the course graduate participants, I also utilized a purposive sampling technique to tailor the group of potential participants. Using similar rationale, I sought out the assistance of a gatekeeper and had them utilize the following criteria for their search:

(1) must have completed the PD program

(2) gained virtual teaching experience post-PD completion

(3) cannot share more than one of the following demographic criteria with other participants (e.g., race, gender, career-field, educational experience or teaching experience)

The first two criteria were baseline prerequisites to meet the bounded requirements of the case. The third criteria, however, had a different purpose. I specified this item with the desire for participant diversity using the maximum variation sampling strategy (Glaser & Strauss, 1967). Maximum variation is a specific approach designed to locate a heterogenous set of participants, intentionally (Glaser & Strauss, 1967; Merriam & Tisdell, 2016). The maximum variation strategy offered the opportunity to overlay case study methodology with humanizing research practices. In other words, this technique allowed me to center my analysis around participant experiences while also seeking out perspectives from the range of diverse voices within the military population. The significance of this strategy was to help break the trend that minoritized groups of individuals, including those often suppressed or marginalized, are only associated with deficit-oriented research (Green, 2014; Paris, 2011; Tuck & Yang, 2014). However, in the end, the actual demographics of participants did not align with the third criteria or maximum variation strategy. Participant recruitment succumbed to schedule and workload availability.

After receiving the respective list of potential participants from each gatekeeper, I contacted each of the individuals directly. Through email, I provided everyone with initial research information, including my email recruitment verbiage and copy of the informed consent document (see Appendix A). I requested that everyone read, pose questions, sign, and return all required documents prior to any follow-on study actions. All participants completed the

necessary actions and returned digitally signed copies of the informed consent prior to the interviews.

Data Sources

Multiple data sources helped facilitate an in-depth perspective of the case (see Table 1 for sources of data). A use of multiple data sources in case study research is a necessity to reach a holistic understanding of the case and its characteristics (Merriam, 1998; Stake, 1995). As Merriam (1998) indicated, using a compendium of data sources is required to experience "the case in its totality" (p. 161). Data gathering in this study occurred in two primary phases, which were recursive and continual to allow for the subsequent gathering of other sources as needed (Merriam, 1998).

The purpose of the first phase was to contextualize the program by understanding the environmental considerations from the crisis and the design elements of the PD program. Data sources included semi-structured interviews with the course designers along with archived documents (e.g., course artifacts and instructional design materials such as course objectives, desired outcomes, syllabi, curriculum items, discussion board posts, and course assignments). For the second phase, my purpose was to examine the influence of the teacher preparation program using course graduate teacher-efficacy as the guidepost. In this phase, the semi-structured interviews with the course graduates became the primary data source, with archived documents and course designers interview data as supplemental in this phase (Merriam, 1985, 1998; Stake, 1995).

Table 1

Sources of Data

Type of Source	Example of Source
Semi-structured interviews	Interviews with three course designers Interviews with four course graduates
Digital course documents	Course outline Course readings and student assignments Discussion board postings
Digital artifacts	Presentations on course intent, outcomes, and purpose Course curriculum map & flow

Interview Data

The semi-structured interview was a critical component to this study's design. Qualitative scholars have argued that the interview is the well-established staple in the field as it vital to understanding elements involving people (Josselson, 2013; Merriam & Tisdell, 2016). As Josselson (2013) explained, the interview provides qualitative researchers the vehicle to investigate the depths of participant experiences, meaning-making, cultural interactions, or the nuances contained within the phenomena of interest. The interview is ideal for building rapport with participants, showing interests in participant concerns, and co-constructing meaning with the participant, each of these characteristics critical in incorporating humanizing elements in research (Green, 2014; Irizarry & Brown, 2014).

Archived Document and Course Artifacts

In addition to the semi-structured interviews, documents and artifacts were vital data sources. The data types included course artifacts, such as curriculum maps, presentations produced about the course, and student products from the course implementation, and archived documents, such as course readings, course assignments, and access to the Canvas Learning

Management System course template. In qualitative case study research, the use of multiple data sources is the gateway towards a trustworthy, holistic, thick description of the phenomenon of interest (Merriam, 1985, 1998; Onwuegbuzie et al., 2012).

Archived documents had two functions in this research study (Bowen, 2009). The first was to help elucidate the nature of the participants' environment. The second was to corroborate findings from other sources. Combined, these two functions were integral in the design strategy to triangulate data between the multiple sources. For example, during my interview sessions with the design team members, they communicated how the uncertainty from the compressed timeline required changes to the PD. However, the archived facilitated course discussion boards and announcements provided the sentiment, the scope, and the characterization of the change in the actual setting.

Data Gathering

Prior to commencing data gathering, I obtained the necessary site and population approvals from both organization's commanding authorities, institutional review board approval, and the Department of Defense's Human Research Protection Office approval to use military personnel and service-related documentation. Once approved, all parties received copies of the documentation.

Interview Process

The general flow of the interviews was also similar among each of the participants. Upon receipt of required participant consent and documentation, participant coordination regarding the logistics and timing occurred through email. As this study took place during the COVID-19 pandemic, every participant interaction, to include my coordination with the

gatekeepers, aligned with Center for Disease Control guidance and my approved IRB protocol. Accordingly, all interviews were conducted and recorded over Zoom.

In an attempt to build rapport with each of the participants, we spent time prior to the recorded portion of the interview to engage in informal dialogue (Josselson, 2013) and also cover administrative items. In these initial moments, I recapped a brief overview of the research study, participant rights and confidentiality areas from the informed consent letter and provided expectation management on what to expect in the interview. In several instances, this pre-recorded portion lasted 15-20 mins in which we also discussed connections, our backgrounds, and shared interests. These opening engagements helped establish a more informal, conversational-style interview where I perceived both parties were comfortable interacting (Josselson, 2013).

Once each of the participants signaled their readiness, I switched the interview to audio-only and recorded the discussion. During the interview, the semi-structured nature of the protocol offered variations between the participant groups. With the PD design team participants, the three major themes for my semi-structured discussions included exploring the learning outcomes of the PD in the context of the pandemic transition, how the characteristics of the pandemic that impacted the planning process, the learning environment, and course implementation, and their perspective on facilitating learning to prepare the military faculty for the ERT environment (reference Table 2 for sample questions from the interview sessions).

Table 2

Sample Interview Questions

Category	Interview Questions
Design and Planning	How did you all think about your inbound students? In other words, what assumptions did you make in terms of their prior experience or knowledge, maybe how did that factor into instructional design?
Crisis Changes	One comment that you made was about the changes for this course. Can you help me understand those changes, maybe for as much you were privy to some of the rationale behind those changes?
Course Vision and Intent	One that I want to pull on is, you highlighted this social learning component and in your words is like the backbone strategy. Can you help me understand what was your thought process of that being the backbone for the PD?
Course Vision and Intent	If you look at a ratio between your course presenting more theoretical ideas versus practical competencies, how would you describe the weight of effort of your course?

With the course graduate participants, the emphasis of my questions regarded their perceptions of their readiness to perform their ERT classroom management functions, the actions or events leading up to their teaching session, and how they responded to their teaching environment. Each of the interviews followed a basic structure. The initial prompt was a reflection prompt to have the participants discuss their how they view themselves as educators. The opening prompt was, *tell me a little bit about who you are as a teacher, maybe some experiences that you have*? From there, the direction of the conversations morphed for each of the four individuals as I delved into their outlooks on readiness. For example, Nathan, one of the course graduates in the study, arrived at his organization as this transition was occurring and he mentioned he did not any formal teaching experience. With him, I veered the conversation immediately to the PD course, as this was his first introduction to his position as an educator. I opened with the following prompt:

You arrived to [your unit], you were told that you're going to transition to this virtual teaching environment, and then you are presumably thrown in immediately into this e-school [PD] teacher preparation program. What was that like for you?

(Follow-up question) Can you tell me a little bit about your experience in the [PD]?

Each of the interview sessions progressed through the themes mentioned above, narrowing to specific ways each of the graduates felt about their teaching strategies leading up to and during their first ERT experience. With each set of questions, my purpose was to explore the agent-means relationship of teacher-efficacy (as discussed in Chapter 2) regarding how each person assessed their readiness, the factors they attributed to this assessment, and what teaching behaviors were an outcome of this assessment. An example of this flow occurred during my interview with one of the course graduates, Robert. In response to a question regarding his confidence for facilitating higher order thinking in the ERT environment, he described how his formal teaching background played a significant role in how he felt entering his teaching session. In noticing in clear absence of the PD in his response, my follow-up question sought to parse out the sources of his sense of efficacy. I asked, *what I gather is, yes, you were confident, but you attribute the strength of your confidence to your previous experiences. In that regard, what role did the PD have in moving the needle forward for you?* This questioning technique allowed each of the interview sessions to minimize the focus on outcome assessments (i.e., *I was successful at performing X* or *conducting Y)* and concentrate on the elements of their self-beliefs and sources of their belief systems. At the conclusion of all seven interview sessions, I queried each of the participants on their interest to participant in follow-on interviews, as required, and for member checking. All individuals indicated they were interested in both opportunities.

Archived Documents

I requested and received approval for all archived documents from the lead program designer for the PD. All the requests and correspondence regarding access occurred via email. Once approved, I gained access to archived documents in two mediums, either email or through a credentialed website. Documents that pertained to the planning, creation, or structure of the PD were sent through email by gatekeeper. These documents included products such as the course purpose and learning outcomes, course flow, and the curriculum map. Other documents such as the archival course sessions, lesson content, and course assignment were accessible through the institution's Canvas learning management system (LMS).

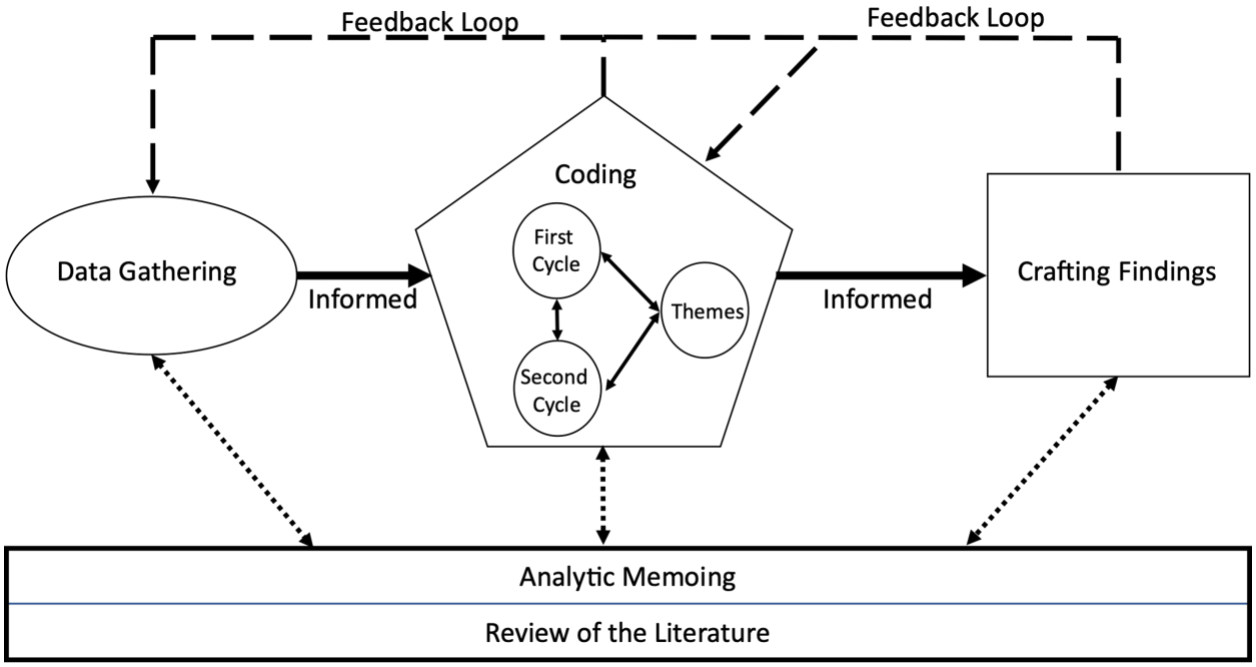
Data Analysis Procedures

The two defining characteristics that best describe the data analysis structure in this study were iterative and inductive. As an iterative entity, Stake (1995) argued that analysis is our act of deconstructing our experiences, observations, and impressions and applying a meaning to them. As every stage of a research effort presents new exposures and experiences, data analysis truly begins in the formative steps of a study. Stake even postulated that "there is no particular moment when data analysis begins" (p. 71), fighting the notion that research occurs as a neat, well-defined sequence of events. In this study, several pre-research study conversations with members of the two organizations (a process I used to gauge interest and willingness to participate) initiated thoughts, questions, and interpretations that drove investigations into new areas of literature and design considerations. One of the items I captured in my analytic memos from these early discussions drove my curiosity into military resiliency and crisis management, which I later uncovered as a significant theme.

Data collection, analysis, writing, and reviewing had a cyclical, iterative interaction as each step informed prior and future steps in the process (see Figure 3 for depiction of this cycle). The graphic highlights the natural progression of my research design in how data gathering informed the coding process (will discuss further in next section) and then my crafting of findings, as indicated by the solid line. Each element acted as a feedback loop which updated a previous step in the process, noted by dashed line. Finally, throughout the process I used my review of the literature and my analytic writing to generate meanings for interpretations but also to improve each element of the process, as noted by the bidirectional dotted lines.

Figure 3

Iterative Design Flow



The second characteristic of my data analysis revolved around my use of induction in the study. Inductive analysis was critical for investigating the data fully (Fram, 2013; Glaser, 1965; Merriam & Tisdell, 2016), allowing me to utilized the raw data to discover patterns and themes (Denzin & Lincoln, 2003; Glaser & Strauss, 1967; Merriam & Tisdell, 2016). This approach

aligned with my onto-epistemological and axiological perspectives as inductive strategies helped maintain a participant and a case-focused approach in my interpretation. As Merriam (1985) and Stake (1995) have argued, the merit of case study is in the discovery how a concept or phenomenon applies as a result of, or within, the boundaries of the case. That is to suggest that the phenomenon is only of interest as it has manifested within the case. The path to gain knowledge and understanding of the case, therefore, required a mechanism which allowed the participant experiences and perspectives to have significant roles as data sources. Consequently, this method offered flexibility for detecting a range, and depth of the participant's teacher-efficacy development (Glackin & Hohenstein, 2018) and opportunities to humanize the design by centering the participants' expressions (Green, 2014).

As with many elements with the research process, the methodological lines are not as clear cut in practice. My desire to conduct an inductive analytical approach was the anchor I utilized to avoid the pitfalls of finding what I set out to discover initially (Ryan & Bernard, 2003b). In implementation, my process consisted of managing a delicate tension between a priori knowledge and framing and grassroots discovery. This balance was evident in the maturation of the interview data. The foundation of my original interview protocol was rooted in the well-established a priori concepts from the four sources of efficacy (Bandura, 1977; Tschannen-Moran & Hoy, 2001) and Glackin and Hohenstein's (2018) qualitative assessment framework. Yet, my decision to use a semi-structured, non-fixed interview style was my strategy to acknowledge the rigidity of using established frameworks can be limiting in when investigating complex subjects (Glackin & Hohenstein, 2018; Ryan & Bernard, 2003a; Strauss & Corbin, 1990). Instead, I relied on an iterative process, namely the constant comparative analysis

method, to guide my analysis and facilitate the my transition between theoretical orientations and empirical discovery (Glaser, 1965; Merriam & Tisdell, 2016; Onwuegbuzie & Leech, 2007).

Coding and Constant Comparative Analysis (CCA)

The foundational element of my analytical strategy was the CCA technique. CCA is a structured approach for analyzing data in which raw data is reduced into thematic codes through a systematic process of comparing units, concepts, or expressions in data (Glaser, 1965; Ryan & Bernard, 2003b). Historically speaking, this method of analysis was used by scholars as a canon for grounded theory (Fram, 2013; Glaser & Strauss, 1967; Merriam & Tisdell, 2016; Onwuegbuzie et al., 2012). However, in more recent literature, some have argued that CCA is not inherent to ground theory solely, but actually aligns with a variety of qualitative methods (Fram, 2013; Merriam & Tisdell, 2016; O'Connor et al., 2008).

CCA assumes a more fundamental role in offering a researcher a deliberate and structured analytical strategy (Merriam & Tisdell, 2016). Particularly, scholars have noted that this technique was beneficial for novice qualitative researchers discovering how to navigate and account for an entire data set. In fact, while investigating CCA prevalence in research, O'Connor et al. (2008) discovered that out of 229 dissertations that referenced grounded theory methodology in keywords the most prevalent of the five themes (35%) were instances in which the researcher utilized CCA outside of a grounded theory research design. That is, many scholars incorporated CCA as an analytical framework independent of generating a new theory. Fram (2013) reflected on her decision to use this approach by claiming that an adapted CCA model offered her a systematic method to analyze data inductively while departing from the classical grounded theory methodology of developing a new theory. For my study, CCA provided a means to explore a plethora of connections, relationships, and meanings in the data (Glaser & Strauss,

1967; Onwuegbuzie et al., 2012). As the data consisted of three major nodes (design team interviews, course graduate interviews, and archived data), CCA offered the ability to gain a holistic perspective of the case. I expressed CCA by using a cyclical process which consisted of two general categories, first-cycle coding (compared and refined raw data into codes) and second-cycle coding (transitioned codes into patterns and core themes) (Miles et al., 2020; Saldaña, 2013). Of note, I departed from using the traditional coding terminology of open, axial, and selective coding (Onwuegbuzie et al., 2012) for specificity and to avoid misrepresenting my process as a grounded theory approach.

Coding. The coding process was inductive in order to allow flexibility in the thematic direction of the codes (Glaser, 1965; Glaser & Strauss, 1967; Onwuegbuzie et al., 2012; Saldaña, 2013). Since this data included interviews with two groups of participants, the course designers, and the course graduates, I conducted the following coding process for each of the groups separately to enable comparison among the groups. The initial actions began with a transcription of the recordings, a surface level review, and the underlying of phrases that seemed key to efficacy development. During this review, I jotted generic labels in the margins to categorize initial thoughts and items of interest and tracked my perspective using analytical memos. Example labels included *teaching skills, assumptions, values for design, instructional strategies, challenges,* and *teaching context.* After my first cursory examination, I followed the recommendations of Bowen (2009) and Ryan and Bernard (2003b) and conducted a second reading of the transcripts before proceeding to the remainder of the first and second cycle coding (Miles et al., 2020; Saldaña, 2013).

First Coding Cycle. The first cycle of coding included line by line processing of the interview transcripts and reflexive memos from the archived documents. Like my initial review,

I coded the data through interpretative notations using phrases or descriptors in the margins (Saldaña, 2013), characterizing either a phrase, line, or section of data (Miles et al., 2020; Ryan & Bernard, 2003b). The coding types included In Vivo (direct participant verbiage), descriptive coding (basic topic of a passage), or concept coding (a word or phrase representing a broader idea in the data) (Miles et al., 2020). My process consisted of highlighting units of data and prescribing an alphanumeric code (e.g., CDJ04) which identified the data group (CD-course designer), individual (J-John) or in the case of an archived document (AD), and the page number of the transcript or memo (04-page 4).

The comparative element to my analysis started within each transcript. As I processed each line, paragraph, and discussion section, I posed two questions for my CCA method, as suggested by Ryan and Bernard (2003b), (a) *what is the text about?* and (b) *how does it relate to previous statements?* The result of this step was a distinct 'narrative' for each participant (for the interview data), and each analytic memo, that showcased repetition and dimensions of codes for each (Onwuegbuzie et al., 2012; Ryan & Bernard, 2003b). After completion of each document, I transferred the codes to an electronic codebook categorized by the initial generic codes I created in the first step.

Second Coding Cycle. The purpose of the second coding cycle was to engage in an iterative process of connecting, refining, and searching for patterns in the data (Fram, 2013; Miles et al., 2020; Saldaña, 2013). Miles et al. (2020) stated that pattern coding, "is a way of grouping those summaries into a smaller number of…themes" (p. 161). In this step, I explored the codes within each participant group by the generic labels by linking codes that were related by repetition or by their similarities or differences in expression (Corbin & Strauss, 1990; Onwuegbuzie et al., 2012; Ryan & Bernard, 2003b), then repeated for the codes for the other

participant group. From there, I compared the patterns and higher-level codes between the two participant groups, and the analytic memos, and again reviewed for repetition and comparative analysis. In this process, I incorporated two additional questions, *if codes are similar, are there differences in degree or* kind and *what type of information is missing?* The first question allowed me progress beyond superficial themes in search of themes that classify the "discrete happenings" (Ryan & Bernard, 2003b, p. 87) within the data. This benefit of this process what evident through the progression of theme #1 from my findings, *Perceptions of authenticity influences efficacy-development.* The initial theme I discovered revolved around the frequent use of *practical skills* by the participants. However, as I engaged in the comparative analysis using the additional analytical questions, I was able to detect the discrete elements of the data which revealed conflicting dimensions among of the participants (discussed in more detail in Chapter 4). Finally, Miles et al. (2020) heeded the concern that although building patterns is a natural, the challenge is avoiding getting "locked too quickly into naming a pattern" (p. 101). As a result, my process of reviewing, questioning, connecting, and negotiating meanings among the codes occurred throughout several iterations.

Trustworthiness of Design

Trustworthiness in qualitative research refers to the overall impression of the quality of the research design (Merriam & Tisdell, 2016; Rose & Johnson, 2020; Tracy & Hinrichs, 2017). In effect, trustworthiness is an attribute the reader prescribed as they evaluate the means of the study, considering the alignment of methods to implications, the representation of participant-centered methods, voices, and within case generalizations (Merriam, 1998; Stake, 1995; Tracy & Hinrichs, 2017). Tracy and Hinrichs (2017) and Rose and Johnson (2020) argued that readers develop this impression by assessing the systematic rigor of the research design, the credibility

of the researcher, and the accuracy of findings from a within case perspective. However, as each research designs differs in epistemological and paradigmatic influence, methodological choices, and overall purpose and the makeup of trustworthiness fluctuates among studies. For this study, I leveraged three techniques to influence the reader's impression on trustworthiness of this design: thick description, triangulation of multiple data sources, and member checking.

Thick Description

The use of thick description in a qualitative case study is paramount. Thick description is the act of providing rich illustration and fullness of the characterization of the case. This process is critical to offering the reader opportunity to devise individual interpretations, determine if transferability is appropriate, and assess the researcher's findings for coherence and consistency (Denzin & Lincoln, 2003; Lincoln & Guba, 1985; Merriam & Tisdell, 2016; Tracy & Hinrichs, 2017). In this study, there were two areas I accentuated with the use of thick description to improve the quality of my research. The first area involved my contextualization of the case. For case study research, the context, conditions, or setting in which the case occurred is a critical factor that allows readers to evaluate findings (Merriam, 1998; Merriam & Tisdell, 2016; Stake, 1995). In the tradition sense, thick descriptions are typically descriptions of fieldwork or other direct observations from the field (Denzin & Lincoln, 2003; Merriam & Tisdell, 2016; Rose & Johnson, 2020). In this study, "fieldwork" took the form of a digital review of the PD course curriculum and therefore I focused my thick description on illustrating the course and the context of its environment throughout my findings. The second area I applied thick description was in my characterization of my positionality. As the data gathering and analytical instrument in this study, the necessity of providing a clear, detailed positionality description was unquestionable. The way I negotiated my multiple identities not only influenced my analytical findings but also

my descriptions of the case context. Therefore, the reader must have as much clarity into what I presented to the case as the details of the case itself.

Triangulation

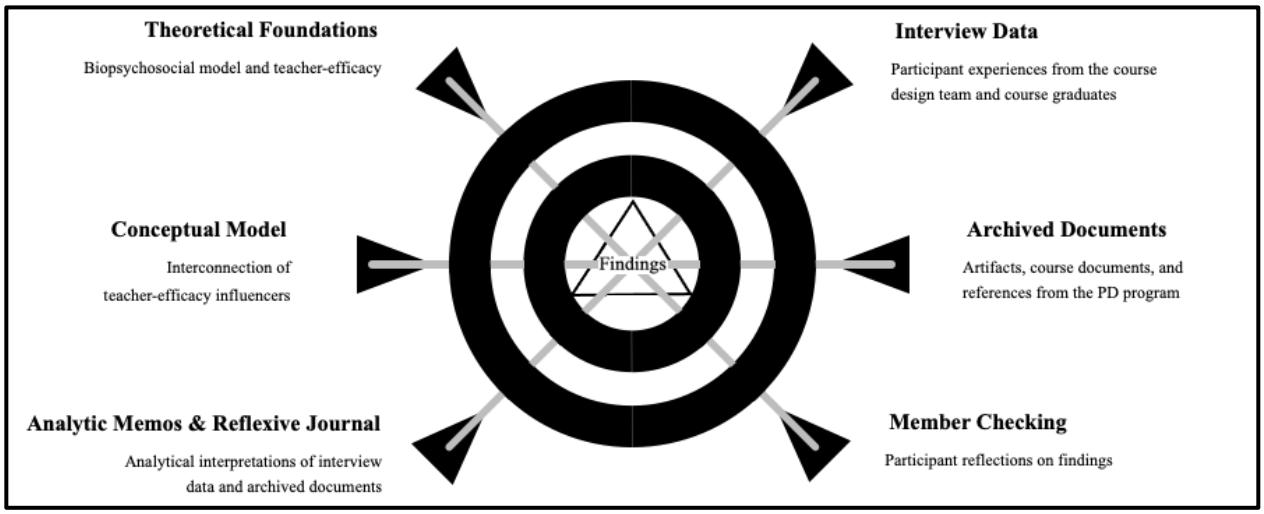
The second technique I leveraged to bolster the trustworthiness of this study was triangulation. Triangulation is process by which a researcher incorporates a multiplicity of sources, angles, or methodical choices to increase the accuracy of interpretations and findings in a study (Merriam & Tisdell, 2016; Tracy & Hinrichs, 2017). According to Merriam and Tisdell (2016), triangulation is "probably the best-known strategy" (p. 244) researchers can use to build trustworthiness and increase the quality of a research design. Figure 4 is a depiction of how triangulation took form in this study. The figure highlights how my theoretical framing (Fram, 2013), participant perspectives through the interview data (Tracy & Hinrichs, 2017), reflexive memos to highlight my experiences (Bettez, 2015) and archived documents from the PD program (Denzin & Lincoln, 2000; Erickson, 2012; Merriam & Tisdell, 2016) converged to illuminate the findings in this study.

Member Checking

The third element I included for trustworthiness was the member checking strategy. Member checking is a technique used by the researcher to solicit participant feedback and gauge reactions regarding the initial findings of this study (Merriam & Tisdell, 2016). In addition to the value of participant feedback, the process of receiving participant perspectives acted as an additional data source, as members explained whether the findings were representational, relevant, or meaningful (Iivari, 2018; Tracy & Hinrichs, 2017).

Figure 4

Triangulated Data Sources



This additional data offered another tool to help triangulate my findings. This idea was supported by Iivari (2018) and her findings regarding the influence of member checking on researcher interpretations. She concluded that a researcher's interpretations are enhanced when the participants can challenge the findings, offer follow-on explanations, or verify the representativeness of the findings.

Each participant received my initial findings and had the opportunity to provide their reflection. Along with the findings, I included an electronic comment matrix to capture each participant's perspective (see Figure 5 for a completed matrix example). I used the completed participant matrices to engage in a separate round of CCA, comparing their comments to each other's and to my initial findings. I concluded the member checking process in one of three directions in my findings: (1) maintained the themes as verified by participants; (2) conducted

Figure 5

Example of Completed Member Checking Matrix

Research Participant Comment Matrix			
Theme	**Accuracy of Representation (Agree or Disagree)** ***Does this theme represent your experiences?***	**Comments or Reflections** **Please expand on your response regarding accuracy.**	**Recommendations (If any)** **Space for additional thoughts or recommendations**
Theme 1: Perceptions of authenticity influences efficacy development	Agree	I think the consolidation of inputs from the timing constraints and concerns of the instructors represents a valid holistic look at the concerns and development of the PD experience.	None at this time.
Theme 2: Collaboration as a force multiplier	Agree	Overall good synopsis and characterization of the value of collaboration.	None at this time.
Theme 3: Resiliency precedes efficacy	Agree	I concur with the synopsis as noted in leaning on previous experience and relationship from face-to-face and translate into the digital environment.	None at this time.
Additional thoughts or comments			

follow-up with participants as required and then refined original interpretation for stronger representation; or (3) used original theme and described the conflict of interpretations.

Conclusion

In this chapter, I detailed the elements of my research design for the purpose of providing both clarity and transparency to my research design. The discussion included how the qualitative case study design was optimal for investigating this case which involved an educational settings (Merriam, 1998). Additionally, this approach allowed me to discover the nuances of teacher-efficacy as situated during the PD course, the pandemic context, and the perspectives of the participants (Glackin & Hohenstein, 2018; Merriam & Tisdell, 2016). Moreover, the natural alignment between a qualitative methodology and humanizing research practices enabled a data-collection strategy which centered the participants, and organizations, with dignity (Paris, 2011). The combination of my positionality statements, my research methods, and the findings in the proceeding chapter offer the reader opportunities to make determinations regarding the quality, rigor, and accuracy of this study.

In the next chapter, I convey my analytical findings from the case study. The chapter includes a thick description of the case, the participants, and the PD course. Following that section, I discuss the three thematic findings that I discovered as I triangulated the sources of data I mentioned in this chapter. The three finding, (1) *the two-sides of authenticity*; (2) *collaboration as a force multiplier*; and (3) *resiliency precedes efficacy*, also contribute to an interconnected web of teacher-efficacy influencers for the participants. Therefore, I also discuss the themes as an integrated concept as well.

Chapter 4: Findings

The purpose of this chapter is to explicate my interpretive findings from this qualitative case study. At the center of this case resided a professional development (PD) course experience which assisted the military faculty in preparing for their transition to emergency remote teaching. The course graduates, the PD course design team, and the course curriculum contributed to a layered and diverse set of data for understanding the challenges and strategies of developing a teacher's sense of efficacy while immersed in a crisis environment.

A critical component for constructing these interpretive findings was the constant comparative analysis technique. This method presented a structured analytical approach to examine my multifaceted data sources systematically (Glaser, 1965; Onwuegbuzie et al., 2012) and create opportunities to explore the discrete occurrences (Ryan & Bernard, 2003b) underlying the case . As a result, the findings in this chapter represent my comprehensive interpretation of the data in response to the following questions:

Research Question: How does a crisis environment influence the conceptualizations of developing teacher-efficacy within a professional military education setting?

Sub-question 1: How did a crisis shape the way a team of course designers planned and implemented a professional development course to promote the growth of teacher-efficacy?

Sub-question 2: How did the involvement in the PD program affect teacher-efficacy perceptions for a group of military faculty transitioning to ERT?

In this chapter, I address the research questions by providing a detailed description of the case and its context and characterizing each of my three themes separately for depth of understanding.

Case Description

As the focus of this study involved teacher-efficacy development of military faculty in the context of the COVID-19 pandemic, there were three critical characteristics that bounded my selection of this case: (1) time: proximity to the start of the pandemic shutdowns, (2) affiliation: military personnel, and (3) structure: a formal preparation program to transition faulty to the online environment.

Time-bounded

First, proximity was significant to capture the gravity of the circumstances. Between the months of March and July 2020, the military implemented various COVID-19 related restrictions which had profound implications on professional military education (PME). One of the major restrictions prohibited non-essential travel to many of the short-duration (20 weeks or less) developmental programs. In response, many of the PME programs created temporary, virtual courses to continue the educational process. In late March 2020, the two organizations involved in this study partnered to prepare the educators for their distance education teaching experience. In less than a month later, the military faculty started their formal education transition with the PD program.

Military Affiliation

Second, military affiliation introduced a unique participant element. Military personnel are exposure to several cultural milieus of significance for a crisis environment. Regardless of the branch of service, military organizations bare responsibility for ensuring personnel preparation for handling the range of potential operations, contingencies, and conflicts that can arise globally. As leadership, personnel, and mission sets are ever-changing, the professional ethos within the military anchor to a culture of readiness (Nindl et al., 2018), a culture of

resiliency (Gutierrez et al., 2021; Meredith et al., 2011; Nindl et al., 2018), and a culture of teaming (Goodwin et al., 2018). The intersection of these cultures equips the military servicemember with the mindset and competencies needed to handle disruptions during a combat situation or in a daily workplace environment.

The participants included in this study were from one of two PME organizations. The first group of participants were from a distance education unit responsible for developing and managing distance education for their respective military service branch. In this capacity, they oversaw faculty on-boarding and development for personnel entering a distance education teaching role in their organization. The three participants, under the respective pseudonyms John, Maria, and Sara, were representatives of a team of faculty and administrators responsible for the planning and implementation of the PD program in the study (see Table 3 for specific demographics). John, the only active servicemember of the design team participants, was the lead designer for the PD program. He had extensive knowledge within his organization and was well-versed at designing and redesigning distance education faculty training and on-boarding. Maria and Sara were both civilian faculty members with terminal degrees in education and design. Maria, both a designer and one of the PD course facilitators, started two months before the pandemic began, but had vast experience and credentials in technology design and faculty development. Sara also had extensive knowledge in faculty development and focused heavily on human-centered designing. Prior to the pandemic, she was involved with helping the organization reconceptualize their distance education faculty onboarding process and design. The second group of participants were four military faculty who attended, completed, and conducted one ERT session post-PD graduation. The four individuals, under the pseudonyms Brian, Charles, Nathan, and Robert, were assigned to a PME school responsible for providing in-

residence education for military officers. The four participants were active military officers with diverse career specialties from one another, varied in prior face-to-face teaching experience, and in educational experiences. Although none of the participants had ever taught distance education prior to this transition, Brian and Charles had at least one year of teaching a similar curriculum face-to-face in their school's in-residence program. On the other hand, Nathan and Robert were newer arrivals to the organization, as both arrived at the start of the ERT transition period. Nathan had limited experience teaching as a prior flight instructor and Robert had the most extensive prior teaching experience of the four. Robert had a master's degree in education and had years of experience teaching formal education in both secondary and higher education settings.

Formalized Professional Development Setting

Third, the formal structure offered fixed content to analyze. The course for this single case occurred between May and July of 2020. Over a span of five weeks, 60 military faculty engaged in the PD course. The course was a three-part, sequential curriculum design. The first two sections were self-paced asynchronous learning structures where learners engaged with the digital curriculum materials as a cohort and without facilitator involvement. The participants completed the curriculum at their own pace with prescribed points for collaborative discussion among course participants. In these two sections, the curriculum focused on foundational knowledge and concepts of teaching and navigating a learning management system (LMS).

Table 3

Participant Demographics

Group	Pseudonym	Sex	Rank	Experience
Course Designer	John	Man	Major	Lead program manager; certification in online instructional design; certification in designing effective social learning
Course Designer	Maria	Woman	Civilian-Ph.D.	Learning Architect and PD course facilitator; extensive experience in instructional design and technology, teacher education, project management, and program evaluation; Ph.D. in Learning Environments and Educational Studies
Course Designer	Sara	Woman	Civilian-Ph.D.	Program designer; extensive experience in faculty development and design; Ph.D. in Learning Design and Technology
Course Graduate	Brian	Man	Captain	3 years of PME in-residence teaching
Course Graduate	Charles	Man	Captain	1 year of PME in-residence teaching
Course Graduate	Nathan	Man	Major	No prior PME teaching; training instructor in previous job
Course Graduate	Robert	Man	Major	No prior PME teaching; Master's degree in education; extensive prior teaching experience (adolescents and adults)

Note. Even though race was as a discriminant for maximum variation, the actual participant makeup was not racially diverse, and therefore was omitted in this table.

Examples of the curriculum content in these sections included an orientation to the online teaching instructional approach, learning theories that emphasized social learning in online environments, and elements of readiness to include teacher identity and teacher readiness. Although self-paced, there were several discussion board touchpoints for individuals to interact

with their peers through prompts from the learning material. For example, after completing an *Online Teaching Readiness Survey*, the learners were able to respond to the following prompt in their online discussion board area:

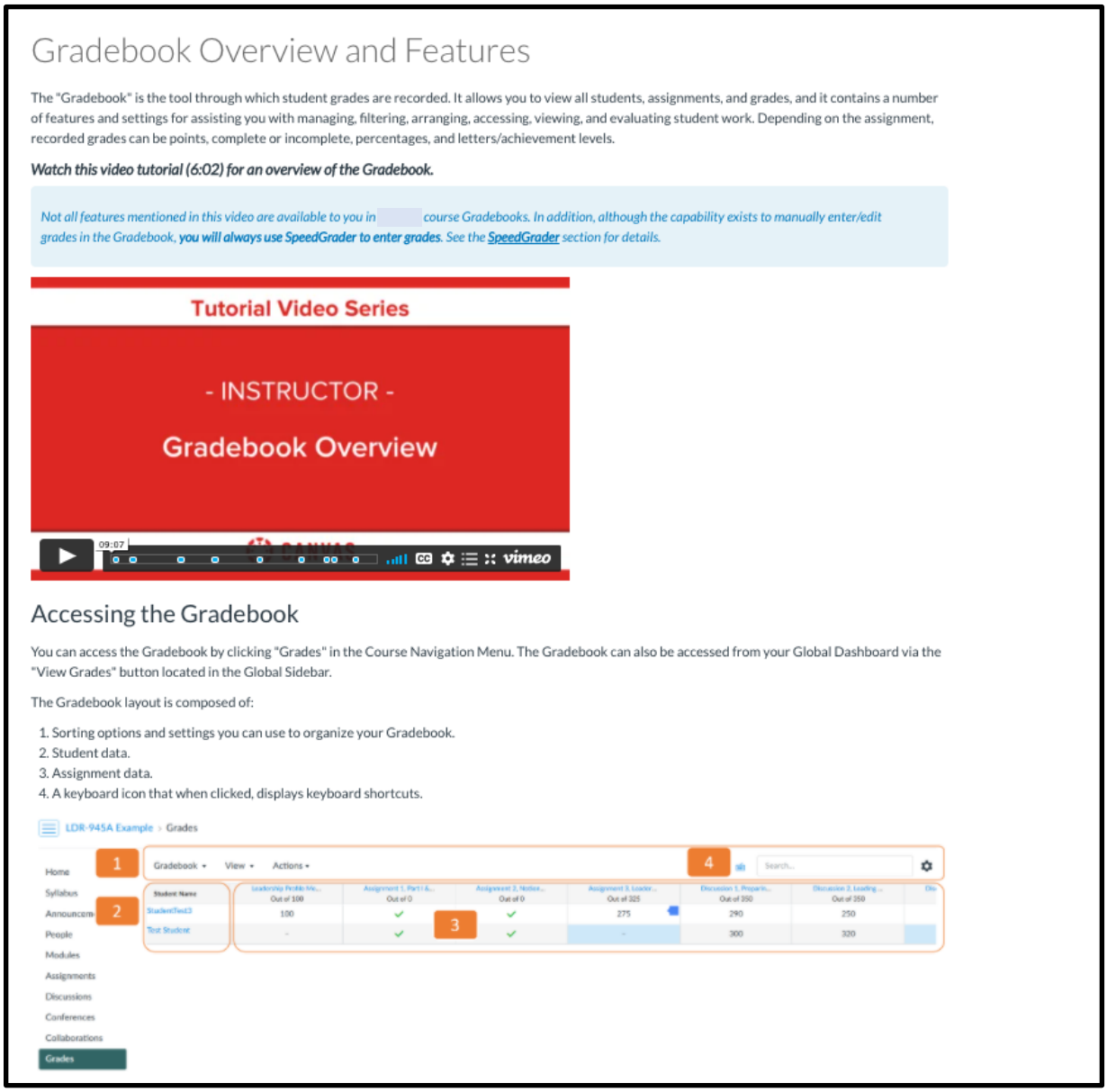
> Based on the results of your Online Teaching Readiness Survey, share one glow (an aspect of your current practice that aligns with online teaching) and one grow (an area you want to develop). Share any insights or questions your results may have raised.

In both self-paced sections, the learners encountered multi-media content which included concise text-based references, infographics, videos, and knowledge retrieving quizzes to process (see Figure 6 for a sample lesson using multi-modal content).

The third section of the program also included an asynchronous design structure. However, this section involved a facilitated course design in which the design team divided the learners into three seminars to manage group size during the experience. Throughout this section, the learners completed individual and collaborative assignments, along with several discussion board interactions with their peers and course facilitators. As expressed by the designers, a primary goal of the PD was to develop introductory skills that were directly transferrable to the ERT setting. Among these skills included the course graduates knowing how to "navigate the online space" to facilitate learning and "using the LMS [learning management system" to perform functions like managing discussion board threads and manipulating the electronic gradebook, as indicated two of the designers, Sara and John. The goal, as described by the team, was to help the military faculty establish confidence and building proficiency on baseline competencies first.

Figure 6

Screenshot of Multi-Modal Curriculum Content in the PD's Self-Paced Sections



For all intents and purposes, the PD was a practical course. In describing the course, the design teams referred to the PD as "practical" in direct form: "everything had some practical spin on it", "it's total 100% practical", and "they're also getting all of that practical piece" and indirectly as well: "relevant to their circumstances", "scenarios that's often encountered", and "authentic to their workplace". The designers manifested the "practical" element of the course

through tactile skills the course graduates needed to function in the ERT environment. For example, one of the two self-paced sections of the PD focused entirely on the mechanical skills of course facilitation. In this section, the learners experienced three-learning modules, *Course Interface & Navigation*, *Account Settings,* and *Tools & Grading Features*, which contained approximately 4-6 hours of how-to tutorials.

Upon completion of the PD course, the course graduates returned to their organization and prepared to engage in their first ERT teaching experience. In the short timeframe between the PD and their class start date, the four participants engaged in several last-minute training sessions, curriculum updates, and other administrative requirements required by their various squadrons [a military organization structure comparable to an academic department in this organization].

The course graduates conducted their ERT session between July – August 2020. They engaged in a 5-week program where they experienced various changes and adaptions to the curriculum and schedule, as the cohort of course graduates, their administrative staff, and their students adjusted to the new learning environment. Their course was entirely virtual and included an asynchronous component (i.e., learning interactions at different times and different locations, such as discussion board posts) and a synchronous component (i.e., learning interactions occurring in different locations but at the same time, such as live course sessions).

Findings

The outcome of my constant comparative analysis and triangulation of the multiple data sources revealed three themes in response to the research question in this study (see Figure 7 for depiction of themes). The three themes were indictive of the elements and considerations for how the participants facilitated teacher-efficacy development during the pandemic transition.

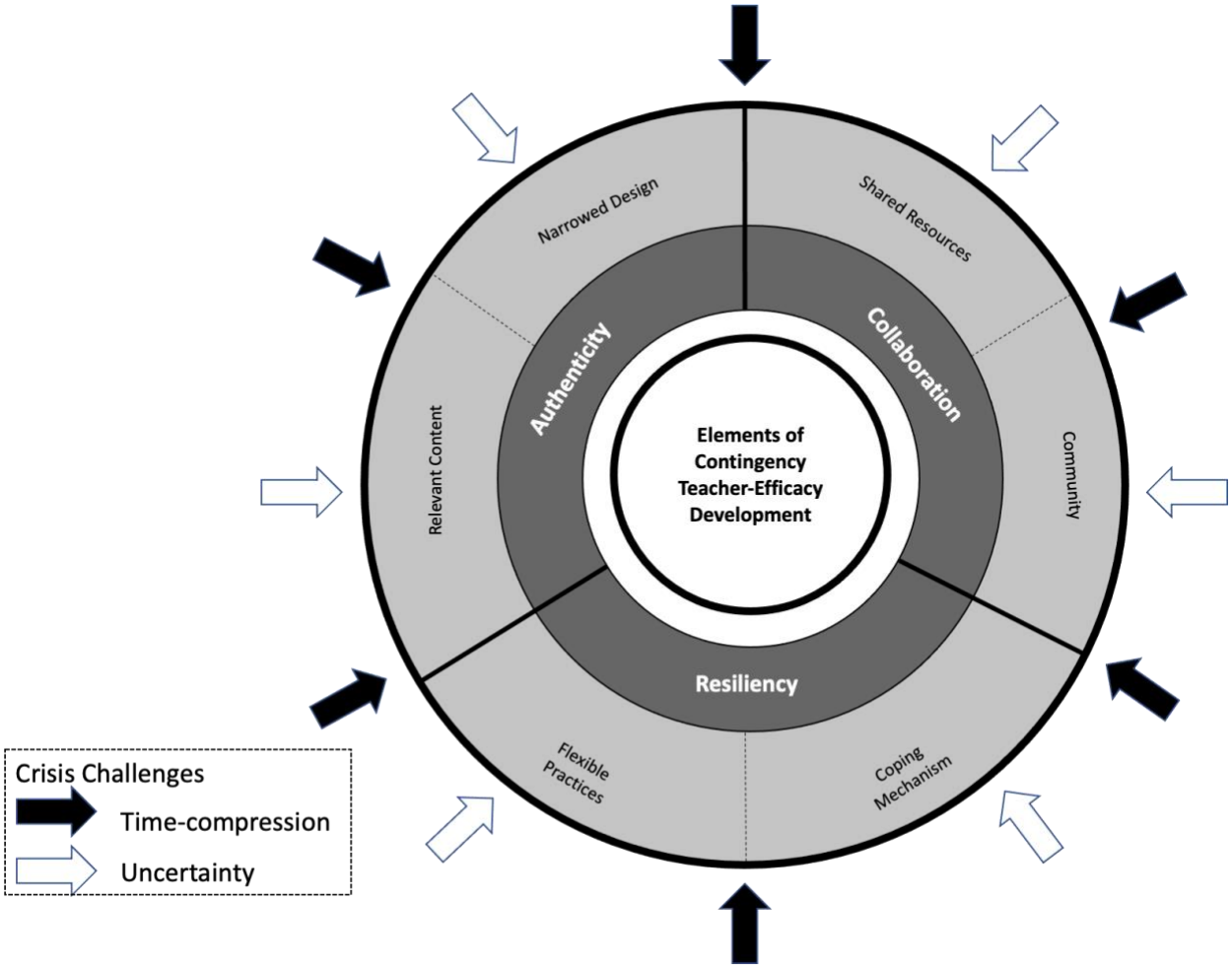
The themes consisted of (**Theme 1**) p*erceptions of authenticity influences efficacy-development,* (**Theme 2**) the use of *collaboration as a force multiplier*; and (**Theme 3)** how *resiliency precedes efficacy* development. The first theme, *perceptions of authenticity influences efficacy-development,* dealt with the impact of authenticity on the development of the teacher's sense of efficacy. The connection involved how the participants perceived the explicit content in the curriculum and appropriateness of that content as connected to the pandemic environment. The second theme, *collaboration as a force multiplier,* referred to the pervasiveness of collaborative engagement strategies to propel efficacy development in multiple areas and situations within the case, to include the learning environment and the ERT operating environment. The third theme, *resiliency precedes efficacy,* was an unexpected finding that involved the instances of flexible practices and adaptations present during the efficacy building process, a counter to the notion that resiliency indicates higher-efficacy (Bandura, 1977; Glackin & Hohenstein, 2018; Tschannen-Moran & Hoy, 2001). Figure 7 is a depiction of the themes as contributing to the efficacy building process, the key elements of each theme, and the pandemic challenges that shaped the participant's perspective on this development.

Theme 1: Perceptions of authenticity influences efficacy development

The important relationship between authenticity and the developmental process of building teacher-efficacy was evident in the data. Authenticity and teacher-efficacy were interwoven how the collective participants described their PD experience, their mindset towards the teaching practice, and the transition process to the ERT environment. To a degree, authenticity was a type of litmus test the participants utilized for assessing the merit of the various entities of the PD program. Down to the individual. terms such as "relevant", "authentic", "practical", "connected to", and "relatable" shaped their perspectives on the ways in

Figure 7

Themes for Teacher-Efficacy Development



Note. The figure depicts the teacher-efficacy influencers as expressed through the three themes in this study. The inward facing arrows represent the two VUCA characteristics of the crisis that influenced all elements of teacher-efficacy (black = time-compression; white = uncertainty).

which the PD experience impacted the course graduates' self- beliefs regarding their various functions within their teaching practice. What I discovered was that the notion of authenticity consisted of two dimensions, content and context, and the perceptions within each group of participants differed regarding its influence on efficacy development.

First, the connection between the PD's foundational elements of the course content and the course graduates' expressions of efficacy was clear. During the interview sessions, the four course graduates spoke extensively about the presence of "basic" and "mechanical" skills of the PD, and they tended to express higher levels of efficacy in these areas. For these skills, such as "operating the LMS" for asynchronous discussion boards and grading functions, the course graduates communicated their sense of confidence in the tone and texture of their positive expressions. Some of the comments regarded more general acknowledgements. For example, Brian described how he "had a pretty good idea" on how to "run Canvas" in terms of the "buttonology for a discussion post" and "all the other technical stuff." In a similar vein, Charles discussed how he felt confident in his ability to conduct the mechanical elements of teaching and classroom management. He offered the following the reflection to this point:

> I would say, it was to the point and I learned the skillsets, I think, that they were going for with the specific modules or the courses, [such as] how to facilitate a class, how to manage a roster, [and] how to navigate Canvas. Mechanically and also just learning those skill sets, I think, they did a great job…mechanically skillset-wise the course, my instructors did a good job of teaching how that might look like and how we would accomplish it through Canvas.

In other discussions, the graduates articulated their confidence with more specific examples of the basic skillsets. A clear concern for the course graduates as they transitioned to ERT was their desire to be comfortable performing the actual teaching tasks they would encounter in their classrooms. The ability to have concrete experiences assisted their uneasiness. For example, Brian and Nathan identified that their knowledge and exposure to utilizing the electronic gradebook made teaching in the new environment a little easier. Nathan described how

he left the PD with a moderate level of confidence for performing the functions needed to process a rubric. Although he, and the other course graduates, noted desires to have higher levels of confidence upon entering their virtual classrooms, they did concede that the time constraints did not allow for more development. Nonetheless, the skill development offered by the PD curriculum corresponded with the types of skills the course graduates perceived as having moderate to high levels of efficacy. The consistency and frequency of this association regarding the content pointed to relevancy and representation as characteristics of authenticity pertinent for efficacy. The relevancy of the content, however, was only one dimension. The data also revealed another consideration regarding the connection between authenticity and efficacy within the context of the pandemic environment.

The pandemic was fraught with obstacles to include time-compression and uncertainty as two of the major disruptors. These characteristics impacted elements of planning and design, course implementation, and even the mental preparation of the learners. The sentiment from the collective group of participants emphasized these challenges. For example, time was repeatedly mentioned as a prohibitor. Sara, one of the designers, discussed how time was a factor. She noted that, “We had like a month, really like a month or a month and a half to build out a three-pronged or a three-step approach,” with the real challenge that, “I have to package that so that it's meeting them at their level. I could have something that's very relevant and very authentic but is way above their skills or agency to tackle right now.” Similarly, Maria, another designer, noted that, “There wasn't much choice in their [the course graduates] involvement in it, and there wasn't much time to wrap their head around the idea that they were going to be instructing online.” Brian, one of the course graduates, summed up the sentiment from the teachers. He stated, “From the very beginning, that was something I definitely struggled with was, within a

compressed timeline, what specific things do I need to do to set us up for success." Although time can be a factor in any setting, the level of emphasis on time-compression, and uncertainty, highlighted the severity of the issue for the participants in this case.

The crisis obstacles drove a tension in how they perceived the types of authentic representations should have been present in the PD. From the design team's perspective, an authentic curriculum in the context of time-compression and uncertainty involved the contemplation of learning and development from both a knowledge and acquisition perspective as well as psychological well-being standpoint. During my interview sessions with the design team, they described their learners not only as "novice" and "lacking experience" but also as "absolutely terrified," "overwhelmed", and "scared". They conveyed how their concerns about the learners, including the "fairness" of them having to learn a complex subject matter quickly and the stressors from the pandemic, influenced their design choices substantially. Their outlook fueled consternations regarding what was feasible in a course design and drove the necessity for a "bare bones" curriculum, focused on the "basics". To them, authenticity meant approaching skill development through a Maslowian-lens as they seemed to prioritize "survivability" of performance, emphasizing the "essential" competencies the teachers needed to get through their temporary ERT stint.

The PD program manifested authenticity as a simplistic learning environment, tied directly to the immediate skills deemed necessary by the course design team. The design team's solution to narrow the PD to foundational knowledge, skills, and necessary action only was their mechanism to build confidence while minimizing opportunities to overload or overwhelm the learners. Sara emphasized this point during our interview as she reflected on her thought process during the design. She recalled posing questions such as, "What are the little steps that we can

help for people to again, feel confident, feel comfortable, feel safe, so it feels like it just happens, even though we know there's actually a lot of cognitive and behavioral work going on behind the scenes?" As the team was limited in both time and their knowledge of the learner's specific requirements, the focus essential skills became a way to ensure the course graduates would function and not "flounder", as John stated. For example, the capstone project, an *Instructor Playbook*, exemplified their value for tailored immediacy, relevancy, and authenticity. This collaborative project required learners to examine their specific situation and design a guide they could use as a quick reference during their practice. In my interview with Maria, she offered a perspective that tied the utility of the assignment to their perspective of authenticity as survivability. She stated:

> Because you know that a lot of the things that you're going to be learning now, you'll probably forget with everything else going on. Just collect some of the things that you really want best tips, practices, whatever kind of resources that you think are going to be beneficial to you and put those into your playbook. Those are the things we focused on. What are the essentials that they're going to need? Not necessarily what's going to produce the optimal online learning instructor's triage.

While the designers viewed authenticity through a "survivability" lens, the course graduates had an alternative view that the crisis context necessitated exposure to other skillsets. The graduates mediated the connection between authenticity and their sense of efficacy through a desire for hands-on application of more advanced subject matter. In part, they maintained this sentiment as they believed their prior experiences, albeit not in online instruction, provided them with a suitable foundation to handle the "buttonology" independently. For example, Charles offered an example of his expectation, by saying, "I know how to post on the discussion board. I

can do this. What I don't know how to do is I don't know how to facilitate and get people to continue to respond in a discussion board" or in a synchronous learning setting. Furthermore, Nathan lamented the fact that the mechanics were the focus in the PD course. He stated:

> The first week was super frustrating and seemed for a lot of them, at least a lot of the fellows, we have all done some type of online learning before. I didn't need a course that taught me how to walk through and create a discussion post or how to post an announcement onto Canvas.

Nathan's comment was evidence of a larger idea from the course graduates that the PD was helpful but insufficient in using the limited time to build the graduates' sense of confidence. Charles emphasized this point by stating, the "[PD] I think did a really good job of giving us some mechanics to, I guess, navigate Canvas, but it's only one facet of instruction."

Although the course graduates expressed higher efficacy towards the mechanical asynchronous skills, their efficacy waned as they discussed areas of their teaching practice not covered during the PD. As we discussed specific concerns or anxieties the faculty had towards ERT, they highlighted: "grading written assignments", "utilizing the technology in a synchronous format", or monitoring and boosting learner motivation as some of the major factors. The lack of development in these areas made them uneasy. Brian said, "It was a little uncomfortable doing it virtually the first time," as he described his apprehension to conduct synchronous lessons virtually. Their need for "reps", or application of skills, was centered in their comments regarding their confidence. In my discussion with Nathan, the graduate with the least amount of teaching experience, he acknowledged his confidence improved slightly during the PD, but suggested that the lack of application was a hinderance. He reflected:

> My confidence level for an online discussion board higher-level thinking was between zero and ten, probably a four because I had not been able to demonstrate it before. I have the concepts but there was no place for me to practice it. I think the [PD] instructors had a difficult task set out for them because how do you teach that when you don't have a bunch of fake students or you don't have a class of students to go through and you have a senior instructor watching over your shoulder while you go through and grade everything, right? And then say, "Hey, this is how you could have done much better." The way [PD] was set up there wasn't good method for the students to get feedback on how they were spurring that higher-level conversation.

Using the same characteristics as the design team, the need for relevant experiences, a tailored design, and the pandemic environment, the course graduates offered an alternative perspective on what an authentic course design should have entailed. To them, the combination of their perceived experiences (referring to their exposure to LMS as students and prior face-face teaching) and the time-compressed learning environment, meant the PD should have represented the more challenging elements of their future environment, as opposed to the basic skillsets.

Theme 2: Collaboration as a force multiplier

The second theme I found from within the data regarded the way in which the participants leveraged collaboration to extend efficacy building opportunities throughout the process. Innately, teacher-efficacy can be individualistic as each person has a unique set of personal circumstances they reference for their self-beliefs. However, in this case I found that the circumstances surrounding the pandemic caused the participants to incorporate a collective mindset in their approach. The elements of the pandemic were disruptive and introduced barriers that needed consideration within the learning environment. As alluded to in the first theme,

some of those barriers included the potential increase in cognitive overload due stressors related to learning new content quickly, concerns about the health and wellness from the pandemic, an onslaught of competing in priorities and responsibilities due to the timeline, and a general uneasiness about transitioning to an unknown environment. From my interviews with both sets of participants, their comments highlighted a deliberate strategy to use collaboration as a force multiplier for developing positive mental beliefs towards the ERT responsibilities.

First, the design team shared a perspective that collaborative engagement was essential to developing the future online teaching faculty. As I discussed their use of collaboration in the PD, the three design team members mentioned how it was the "backbone of…the whole instructional strategy", how it "buil[t] a foundation [for] a community of practice", and how it provided a "better experience" for learners. Their emphasis on the importance of collaboration was evident through their strategy to build social learning engagements throughout the course, spanning both the self-paced and facilitated portions of the course. The PD's curriculum included three asynchronous discussion boards during the self-paced portion of the course in which the learners reflected and interacted at the peer-peer level regarding curriculum content. The low stakes collaborative environment (i.e., ungraded and without direct observation from the course facilitators) offered touchpoints in the course for learners to build rapport and learn team dynamics prior to engaging in collective problem solving. This strategy was critical as the facilitated course involved a consistent peer-peer engagement throughout the sequence of curriculum assignments.

Building on the previous point, collaboration enabled a conducive learning despite the crisis circumstances. One of the challenges with this transition was the compressed timeline of the transition. Although the PD's design centered around essential skills, the collaborative

learning strategy offered increased opportunities to cover additional ground during the allotted time. During my interview with John, the lead program director, he recognized the need to capitalize on every learning opportunity. John highlighted that since the course graduates would also be colleagues in their ERT setting, that the strategy to incorporate collaborative engagement would facilitate an informal environment "where colleagues are supporting each other's learning" in and out of the classroom setting. The design team understood that the environmental constraints meant they needed learning to occur in and around the PD. John further commented that, "[Collaboration] starts to get into aspects of social learning where the real meat and potatoes happens outside that formal learning space and in those informal settings." On a similar point, Sara emphasized the role of collaborative engagement to extend peer-peer support both within the PD and outside. She reflected the following:

> That's why it was, again, really important for people to share their artifacts and work together on a team, because we can't cover everything, right? If the serendipitous conversation between a complete online novice and someone who has quite a bit of experience online, but not specifically in [our PD] or not specifically on Canvas, that they're going to mentor each other. We know in education [that the] peer effect matters.

In addition to the opportunities from the PD design strategy, collaborative engagement also allowed the course graduates to utilize collective strengths to compensate for areas of weaker efficacy. The graduates described how their community provided mentoring, development, and a sense of security during the uncertainty. Brian, one of the course graduates, spoke to this integration as he described how the PD provided deliberate time for the course graduates, with prior teaching experience, to offer "feedback and mentorship with newer instructors." Similarly, Charles, another course graduate with face-to-face teaching experience,

highlighted an example of the community-first approach within his small group during the PD. He stated, “We had one [individual] in particular that just [arrived] and they didn't really understand the whole instruction thing, so we all did our share [and] made sure that everyone succeeded within our little cohort.”

The four teachers shared this mentality to ensure everyone had the resources and confidence to succeed permeated into their first ERT session as well. The teachers discussed how they established a communication network to provide tangible strategies others in their organization could implement. The teachers with experience assumed a “screw pride” approach, as avowed by Charles, and prioritized the group over individual needs. Their investment in collaboration assisted each course graduate to feel prepared to perform. Nathan, the course graduate with the least amount of teaching experience, highlighted how the group openly shared resources they found for their practice. He mentioned how faculty would relay “skills or even other tools that other [teachers] found and shared internal to each other.” He provided two reflections of personal experiences of how this interaction took place, by saying “Hey, this is what I'm doing for my icebreaker tomorrow” or “Here's an expectation of what you should see from your [class].” Open sharing included resources but also insight in practices. Collaborative engagement also offered the teachers opportunities to imitate each other on task they felt less confident in performing. Charles offered a reflection on this point when he stated, he “basically emulated” how other instructors facilitated online discussion boards. The ability for each of the teachers to leverage the capabilities within the community enabled growing in individual efficacy. This point was highlighted well by Nathan, as he discussed the impact collaborative engagement had on his grow in confidence. In response to me gauging his self-beliefs on his ERT tasks, he offered this example about grading:

> Probably, left [the PD at] like a four,…we had one paper that we were given to grade but not a lot of opportunity to discuss after…not really an opportunity to discuss the why or the how behind that. Then coming out of [my ERT experience], I would say the course itself was more of a learning environment for me than anything else. I'm probably sitting at an eight or a nine there now with confidence that I can do this well and repeatable. But I would say overall, I'm sitting at a 10 because I now understand how to reach out to my other instructors and go[.]

Theme 3: Resiliency precedes efficacy development

The final theme I uncovered from the data was an unexpected finding and dealt with the relationship between resiliency and teacher-efficacy. From a theoretical perspective, a teacher displays elements of resiliency in their practice as they construct a higher sense of efficacy in a particular domain (Bandura, 1977; Glackin & Hohenstein, 2017). However, in my analysis of the data in this case, the connection between resiliency and teacher-efficacy had a reverse relationship. Resiliency precedes and even promoted efficacy-development. The collective participants leveraged resiliency strategies to overcome the challenges they experienced during the pandemic environment. More specifically, resiliency materialized on two primary fronts: (1) as flexible strategies in the PD to mitigate uncertainty and (2) as confidence in adapting to change before the ERT experience.

First, the implementation of flexible practices in the PD facilitated efficacy development. A point of emphasis in my interview discussions with the designers was their lack of knowledge of the inbound learners (i.e., the course graduates) and their requirements. Sara highlighted that they “didn’t have much information” which made the course facilitators feel like they “we were playing catch up”, as mentioned by Maria. In response, what I discovered was the design team

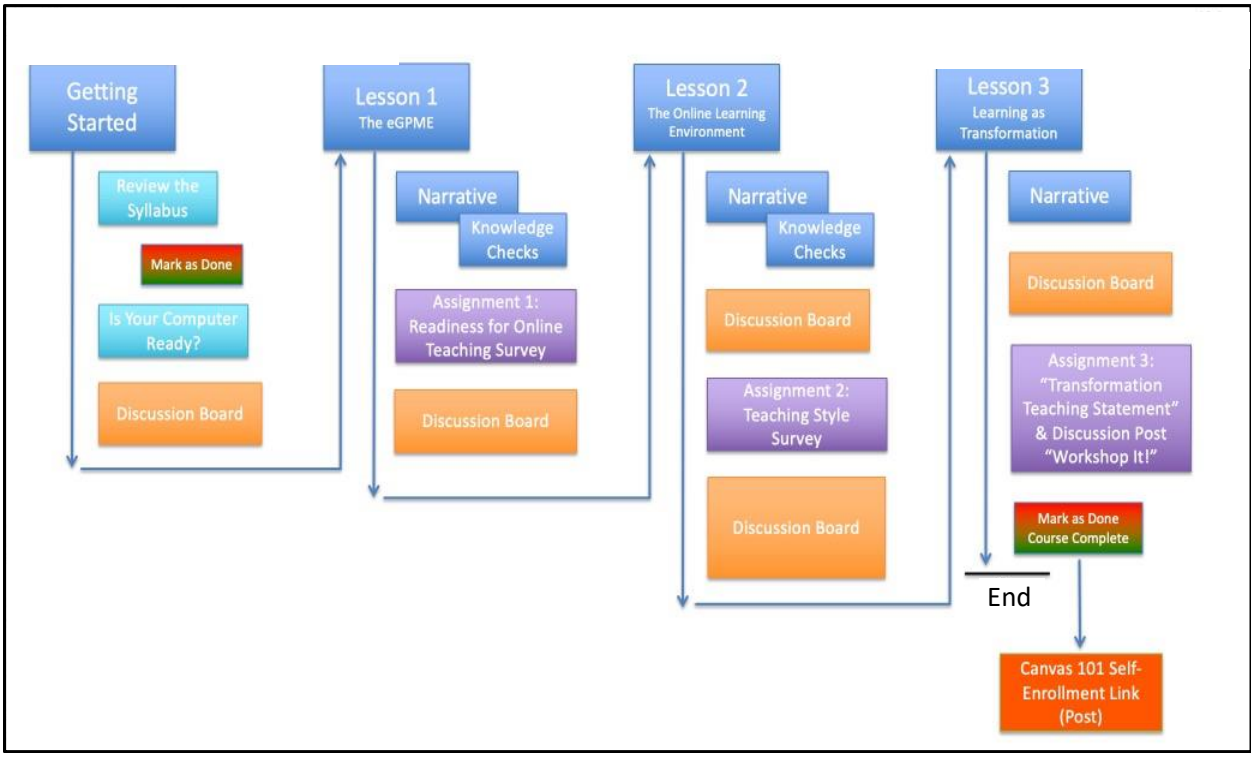
utilized flexible strategies for to address the uncertainties of the pandemic, to ensure learners had baseline of knowledge, and to provide learner centric learning experience addressing actual needs. For example, the self-paced sections included pre-planned flexibility to counter their uncertainties. The structured flexibility appeared in the form of learner autonomy and self-directedness in the design. The self-directed nature of this design precluded the need for each learner to dedicate equal time in the learning environment. Instead, each learner dictated their time and engagement required to process the foundational concepts based off their own level of experience (see Figure 8 for depiction of the event-based flow of the curriculum). As Maria mentioned during our interview discussion, the team was concerned about the learners "onslaught of responsibilities" and wanted to limit unnecessary stress induced by the PD.

Another example of flexible practices during the PD was evident in the facilitated section of the course. In this example, flexibility appeared in the form of a dynamic, mid-course shift which occurred in response to the learners. One significant consequence of the designer's lack of knowledge of the learners was that there was "a learning curve" that occurred for the facilitators during the PD, as noted by Sara. In my discussion with Maria, she described how she felt like the original design of the PD was insufficient for addressing the needs of the learners. During one segment of our conversation, she described how she felt compelled to connect with the attendees to better understanding their concerns. Maria reflected:

> One thing that was helpful was we asked them for the icebreaker like, "What are things that you are concerned about with this upcoming process?" One thing that kept coming up was they were concerned about how they would foster engagement with students in an online environment because they are used to being able to do that pretty easily in a face-to-face setting, but they really didn't know how that was going to work online.

Figure 8

Depiction of Self-Paced Section Flow of PD



From the design team's perspective, the course graduates indicated weaker areas of their efficacy through their concerns and anxieties regarding teaching areas not addressed by the PD. The PD team, including the design team and course facilitators, introduced a series of dynamic adjustments. The major changes included "moving…deadline[s]", removing assignments less appropriate for the short timeframe (e.g., "Teaching Statements"), and the introduction of optional synchronous sessions (e.g., live Zoom sessions) to address the course graduates' concerns in real time, as highlighted from an announcement page from one of the facilitated course seminars. The adjustment influenced both the designers and the course graduates' perspective. John, the lead course design, commented that the synchronous sessions were "probably the most valuable thing that was really done for the students," in reference to them tightening the usability of the curriculum to their learners. The course graduates' sentiment

towards their beliefs of the skills emphasized during the shift were favorable. They noted that the disconnect between what they needed and what the PD provided was problematic, but the shift "[flexed] to meet our needs" showing how to "successfully facilitate a discussion board" as noted by Nathan. On a similar point, Robert discussed how the PD course facilitators did well at talking through the "positives, negatives, and challenges withing facilitating discussion through asynchronous means."

In addition to the flexible practices within PD course, resiliency strategies were also significant in assisting the course graduates in handling their teaching endeavor, despite their lack of teaching experiences in online environments. Without question, the course graduates understood the gravity of the situation as expressed concerns, and even reticence, towards their tasks. They communicated their hesitation using phrases like, we had "some apprehension", "lack of expertise", and that the faculty was "bashing their heads" trying to plan with all the uncertainties. However, even with their expressed trepidations, the teachers utilized their confidence in their ability to adapt to change as a coping mechanism. First, they possessed a mentality that change was a standard occurrence. In my discussion with Brian, he captured the sentiment of the group succinctly in saying, "I've been teaching here for three years and no two classes [were] identical, [we were] conditioned to a lot of change happening from class to class, I wouldn't say it's old hat, but you come to expect it and then be able to adapt to change." Next, not only did they adapt but they welcome the opportunity. Charles exclaimed that, "We wanted more freedom. We wanted more opportunities to be flexible. I would say, we welcomed flexibility."

The course graduates also understood that their self-beliefs would impact their students' experiences. In turn, they incorporated other strategies of resilience to project higher efficacy in

their practice, a plan to compensate for lack of skills until they gained first-hand experiences. Brian and Charles discussed how they would replace online teaching strategies with tactics from their face-to-face practices they were more familiar with delivering. Specifically, Brian mentioned this replacement strategy as he commented on his sources of confidence. He mentioned, "I would just make sure I asked questions that were familiar to how I would ask them in the [face-face] classroom." There were also traces of more creative forms of resiliency. During my conversation with Robert, he described how he found ways to manufacture confidence until he had actual experiences. He discussed how he would either conduct practice sessions with his family, having them act as students as he practiced using new tools and strategies. Finally, one point I found interesting was when Robert and I discussed how he discovered projecting confidence before he had the requisite experience helped him maintain his, and his students', composure during his ERT experience. In particular, he reflected on his teaching mindset by mentioning, "I would say enough to fake it 'til I make it, because the course content was close enough to what we were teaching, to give the gravitas to the students that we knew what we were talking about." In essence, the act of demonstrating confidence provided a buffer until he gained hands-on experience.

Conclusion

In this chapter, the discussion centered on the three findings from this qualitative case study exploring teacher-efficacy development during the COVID-19 pandemic transition to emergency remote teaching. The inductive approach provided a vehicle to investigate, analyze, and discover themes of teacher-efficacy through a PD course design, the design team participants, and the military faculty course graduates who taught in an ERT environment post-PD completion. The result consisted of three themes that overlapped on several elements,

((**Theme 1**) p*erceptions of authenticity influences efficacy-development,* (**Theme 2**) the use of *collaboration as a force multiplier*; and (**Theme 3)** how *resiliency precedes efficacy* development. In the next, and final chapter of this study, I delve into a discussion regarding the larger significance of these findings. This discussion includes how the themes are situated within the literature base and how of these findings also represent a larger takeaway regarding the complex nature of the teacher-efficacy construct. The chapter concludes with a perspective of the theoretical and practical implications of these findings and opportunities for future research studies.

Chapter 5: Discussion

The intent of this final chapter is to provide a concluding section to tie together the findings, the literature, and methods into a synthesized discussion. The flow of this chapter consists of three primary components. The first section includes a brief synopsis of my findings from Chapter 4 along with a discussion regarding how the themes interact with each other and the broader literature base I introduced in Chapter 2. Next, I build the discussion by characterizing the implications of this research by providing three transferable lessons readers my consider beyond this study. The last element of this chapter highlights the limitations of this study and potential areas for future research.

Summary of Findings

As a recap, the purpose of this single-case, qualitative research design was to explore teacher-efficacy development from the perspective of professional military education faculty involved with the transition to emergency remote teaching during the COVID-19 pandemic. As the data sources included semi-structured interview data from a group of PD design team individuals and a group the military faculty who attended the PD, and the archived documents from the course, the decision to proceed with a case study approached was necessary to gain an in-depth, holistic understanding of the environment (Merriam, 1998; Stake, 1995). To facilitate this investigation, the following research question, and two sub-questions framed this study:

Research Question: How does a crisis environment influence the conceptualizations of developing teacher-efficacy within a professional military education setting?

Sub-question 1: How did a crisis shape the way a team of course designers planned and implemented a professional development course to promote the growth of teacher-efficacy?

Sub-question 2: How did the involvement in the PD program affect teacher-efficacy perceptions for a group of military faculty transitioning to ERT?

The analytical method for exploring this research question was the constant comparison analysis technique. This method offered a structured approach to analyze the data comprehensively, through a continual comparison of lines, codes, and themes across data sources (Fram, 2013) and inductively, by allowing the themes to represent the data directly (Glaser, 1965; Onwuegbuzie et al., 2012; Ryan & Bernard, 2003b). The outcome of this approach was the identification of three themes, (**Theme 1**) the p*erceptions of authenticity influences efficacy-development,* (**Theme 2**) the use of *collaboration as a force multiplier*; and (**Theme 3)** the notion that *resiliency precedes efficacy* development. Within each theme there was an individual and collective element to its contribution to influencing teacher-efficacy.

Theme 1: Perceptions of authenticity influences efficacy-development

For the first theme, the influence of authentic learning experiences to facilitate efficacy development was evident in the data. To mitigate the negative impacts from the time-compression and uncertainty of the pandemic, the design team represented authenticity in the PD through a curriculum which emphasized concrete skills that were "practical", "relevant", and focused on the "essential" elements of teaching distance education. During the PD, the course graduates learned and applied skills fundamental to online teaching functions such as operating and navigating their learning management system, creating and facilitating an asynchronous discussion board, and manipulating an electronic gradebook. Although, the PD lightly covered other content areas, these skills were the emphasis within the curriculum. The slant of this curriculum, using a narrowed design of concrete and relevant skills as an authentic course design was supported in supported in the literature. Fundamentally, authentic course designs deal with

how well the content is a representation of the future operating environment (Kearney et al., 2012; Teräs & Kartoglu, 2017). Scholars such as Kearney et al. (2012) defined authenticity as the degree to which the curriculum represents the realistic tasks and behaviors teachers encounter in the classroom. Similarly, Tian Luo et al. (2017) and Teräs and Kartoglu (2017) each provided characteristics of authentic design that suggested learners should engage in authentic tasks that are relevant to their environment and that allows them to perform the skills and knowledge they have acquired.

The findings indicated that authentic content had an influence on efficacy development. According to Glackin and Hohenstein (2018), teachers often convey the nuances of their efficacy using expressions, sentiments, and language when discussing their classroom management tasks. As I found with the course graduates, they communicated their efficacy towards their teaching functions consistent with how well content was represented in the PD. Among the four course graduates, their language expressed their abilities to handle the "mechanical" and "buttonology" skills. Comments, such as Brian's note that he "had a pretty good idea" how to run Canvas, were indictive of their affirming perspectives towards these types of skills. In this regard, the alignment between authentic elements of the PD and the more positive sense of efficacy was consistent with previous findings in the literature (Banas, 2014; Honicke & Broadbent, 2016; Luo et al., 2017). For example, scholars such as Banas (2014) and Luo et al. (2017) concluded in their respective studies that teachers tend to improve their self-beliefs after they had direct engagement with authentic skills in a development opportunity.

Furthermore, while there was an alignment between the authentic skills in the PD and efficacy beliefs, there was also another element to this relationship. Each of the four course graduates also spoke at length about a series of less concrete skills. These skills included

knowing how to build community and relationships with their learners and facilitating high order thinking in discussions as two notable examples. Unlike the previous set of concrete skills, the four participants, at varying degrees, were less efficacious regarding these functions upon entry into their ERT session. At times during the interview discussions, the course graduates lamented the lack of direct exposure to these other skills in the PD. From their perspective, the combination between the time-compressed learning environment and their belief that they had enough experience to learn the basic skills, meant the focus of the PD should have involved hands-on exposure to these other less concrete and less intuitive skills. This position diverged from the design team's perspective that they should limit the complexity in the curriculum to reduce cognitive overload and help manage stress.

The distinguishing element that explained this rift to promoting efficacy connects to one of Teräs and Kartoglu's (2017) nine characteristics of authenticity, *authentic assessment.* This characteristic suggests that the degree to which the course graduates were able to perform a given task determines authenticity. From this perspective, an important connection between presenting an authentic course design and increasing efficacy centered around improving a teacher's proficiency through hands-on application (Bandura, 1977; Luo et al., 2017; Teräs & Kartoglu, 2017). Several scholars have concluded that when experiences are direct and tailored to the specific task or behavior to be developed, they have a strong opportunity to impact a teacher's sense of efficacy (Bandura, 1977, 1993; Tschannen-Moran et al., 1998a; Tschannen-Moran & Hoy, 2001). (Tschannen-Moran et al., 1998) elaborated by noting that the degree of influence is connected to how well specific experiences represent the actual classroom tasks. In essence, the more teachers engage with the actual tasks they are expected to perform, the more likely their efficacy improve. Bandura (1997) referred to these engagements as mastery

experiences, which scholars have consistently noted as strong sources of influence to one's efficacy (Bandura, 1977; Kopparla & Goldsby, 2019; Tsui, 2018; Wyatt, 2015). From the design team's perspective, presenting an authentic design required a balance of decisions which considered the environmental elements. The application of skills requires time, which was a scarce resource during the PD. The time element was critical. The literature highlights that the advantages of direct application are evident when time allows: cognitive processing of learning materials (Desimone, 2009; Luo et al., 2011; Teräs & Kartoglu, 2017); consistent and in-depth feedback and reflection (Darling-Hammond et al., 2017; Desimone, 2009; Lauer et al., 2014); and active participation for information transfer (Lauer et al., 2014). Therefore, the benefits from not inducing stress from either rushing or short-changing the curriculum, potentially overshadowed the lack of efficacy growth in the more advanced skills.

Theme 2: Collaboration as a force multiplier

For the second theme, the participants in this study leveraged collaboration as a force multiplier to overcome the environmental obstacles of the pandemic and facilitate the efficacy building process. In the military, the term "force multiplier" is meaningful in operational planning and mission execution as it represents a concept or capability that allows individuals or units to achieve greater power, reach, or advantage beyond what is possible without them (Hurley, 2005). In this study, the influence of collaboration on efficacy shared a similar sentiment as the participants, design team and course graduates, insinuated how collaboration amplified the development and sustainment of the teacher-efficacy both during the transition period and the ERT experience.

In the general sense, the literature on teacher-efficacy development supported the influential connection between collaboration and efficacy. Many scholars have concluded that

collaboration was foundational as an individual's sense of efficacy requires both individualistic and collective measures to cultivate (Bandura, 1977; Goddard et al., 2015; Strickland-Davis et al., 2020; Zhou, 2019). For example, Bandura's (1977) seminal work on efficacy development included two sources of efficacy information, *vicarious experiences* and *verbal persuasion,* both which were predicated on social interactions for their contributions.

In this theme, there were two components that highlighted the multi-componential influence of collaboration: (a) collaboration facilitated more optimal learning opportunities and (b) community distributes confidence for individual performance. Specifically, the participants leveraged collaboration as a tool to extend the learning potential, utilize the strengths of others in the group, provide psychological support to each other, and compensate for areas or skillsets the course graduates were less confident in performing. During the PD, collaboration was one of the primary pedagogical strategies the design team utilized to promote a better learning environment by building individual efficacy. The basis of the design team's strategy was to promote efficacy development by reducing the amount of cognitive load stressors they introduced through the curriculum. Although the literature on the overlap between cognitive load management and teacher-efficacy were scant (Feldon et al., 2018, 2019), the connections are apparent as scholars have concluded that collaboration improves cognitive thresholds and capacities for individuals (Sweller, 2020; Zambrano et al., 2019) and bolsters efficacy development (Kopparla & Goldsby, 2019; Wilcox & Lawson, 2018). For example, Zambrano et al. (2019) noted that collaboration created a shared mental model which can reduce the harmful impacts of mental overload on the learning process (P. A. Kirschner et al., 2018; Paas & Sweller, 2012; Zambrano et al., 2019). In their investigation of this relationship, they found that when learners utilize collective experiences to solve complex problems, they achieve higher performance with lower levels of

cognitive load during the process. Similarly, Feldon et al. (2018) postulated that mechanisms that decrease cognitive load, such as collaborative engagement, also act as influencers of efficacy construction. In their study, they noted how their participants varied in their perceived efficacy levels as related to the presence, or lack, of extraneous load reduction techniques in the curriculum they experienced. Additionally, scholars have found that benefits of collaborative engagement also include advantages to psychological elements. For instance, the use of collaborative engagement improves teachers' motivation (Goddard et al., 2015), access to direct resources (Voelkel Jr. & Chrispeels, 2017), and observational opportunities to learn from other experiences (Strickland-Davis et al., 2020; Voelkel Jr. & Chrispeels, 2017). In the teacher-efficacy literature, these elements are all direct contributors to bolstering one's sense of efficacy through mastery experiences, vicarious observations, and verbal persuasion (Bandura, 1977; Goddard et al., 2015; Tschannen-Moran & Hoy, 2001).

In addition to the impacts on the learning environment, the use of collective engagement was also critical to building individual efficacy outside of the PD environment. The course graduates expressed a reliance on community and social interactions to augment individual beliefs while each teacher developed the requisite experiences to improve their confidence. The four course graduates described how community was their vehicle for offloading the burden involved in individual preparation. Collective engagement was their strategy to create conducive learning by distributing information sharing among the group, improving capacity for volume and complexity of information, and a network of support. Their community of practice shared strategies, tactics, and products openly as a method to pre-empt individuals from losing confidence due to a lack of knowledge or resources. The participants in this study also communicated how they engaged in formal and informal development sessions for additional

readiness, which created opportunities for observation and imitation of instructional practices. In support of this notion, Tsui (2018) found that the use of vicarious experiences supported teacher-efficacy development as they provided novice teachers a model to imitate and experienced teachers the vehicle to offer feedback on techniques and skills. This finding aligns with Bandura's (1977) position that, outside of mastery experiences, a major source of teacher-efficacy is obtained through vicarious observations of other more experienced teachers.

Finally, during my interview sessions, the course graduates conveyed that the collaboration in their ERT teaching environment had direct, positive influences on their practice in the classroom. This connection was also consistent with previous findings in the literature. Scholars have described how a collective approach, through professional learning communities, mentoring, or co-teaching strategies (Bedford & Rossow, 2017; Strickland-Davis et al., 2020; Voelkel Jr. & Chrispeels, 2017), among faculty improves each teacher's engagement with their students (Voelkel Jr. & Chrispeels, 2017) and their individual confidence towards conducting classroom management functions (Goddard et al., 2015; Voelkel Jr. & Chrispeels, 2017).

Theme 3: Resiliency precedes efficacy development

The third theme was an unexpected finding. What I discovered was the critical role resiliency strategies and tactics had on the development of the course graduates' sense of efficacy. The elements of resiliency were evident in several capacities in the data. First, the design team showcased resiliency strategies in the PD using a series of flexible design practices. As suggested in the first theme, the connection between an instruction providing experiences specific to student needs and requirements, and cultivating a teacher's sense of efficacy is significant (Desimone, 2009; Kopparla & Goldsby, 2019; McKim & Velez, 2017). However, the pandemic environment challenged the design team's ability to map a curriculum to the learners

as there was uncertainty regarding the future ERT environment. In response, the designers leveraged a combination of pre-planned (e.g., the self-paced sections in the design) and dynamic (e.g., a mid-course adjustment during the implementation) flexible strategies as mechanisms to provide a learner-centric design without having detailed knowledge of learner requirements. The self-paced section provided the learners flexible decision-making authority to determine the amount of time, effort, and mental resources needed to process course information. The participants also described how the PD course had a mid-program shift in focus to adjust to the situational needs identified by the course gradates. All seven participants cited how the removal of course assignments, the refocus of discussion topics to learner interests, and the addition of the face-to-face synchronous sessions as critical to the developmental process in the PD. Although the literature connecting the role of flexible practices in developing efficacy was limited, the role of these design habits on facilitating a conducive learning environment was evident, especially during a crisis environment. In support of this idea, Huang et al. (2020) and Hadar et al. (2020) each concluded that flexible practices enabled classroom environments to address the psychosocial needs of learners during the COVID-19 disruption. Similarly, in my study, the flexible practices bridged the gap between the design team's intent to offer an authentic learning design and the uncertainties present in the circumstance. The connection then, albeit tangential, was significant to the overall process of facilitating growth in efficacy.

In addition to the flexible strategies incorporated during the PD course, resiliency strategies seemed integral in forging efficacy during the course graduates teaching experience. Although the military faculty were not experienced in facilitating online education, the collective sentiment of the four participants suggested they demonstrated an ability to adapt and cope with the changing environment of their first ERT teaching experience. The participants described

how they sought after and adjusted their pedagogical strategies to better resonate with their virtual students. The adjustments ranged from modifying classroom management techniques to adjusting the type of content interactions they facilitated. In effect, the participants' general confidence to handle change was a major contributor for allowing the military faculty to operate in the unpredictable, unfamiliar environment until their sense of efficacy towards ERT functions improved. The military faculty, who were novice to teaching in the virtual domain, appeared to harness resilient behaviors before they gained mastery experiences. These findings highlighted a relationship that countered previous findings. The dominant theme in the teacher-efficacy literature suggests resilient practices (i.e., flexibility and the ability to adapt) were indicators of higher teacher-efficacy, suggesting its role as an outcome (Bandura, 1977; Glackin & Hohenstein, 2018; Tschannen-Moran & Hoy, 2001; Wilcox & Lawson, 2018). The common belief was that teacher with a higher sense of efficacy have the requisite experience, exposure, tactics, and confidence to overcome the negative impacts from a change or disruption (Bandura, 1977; Glackin & Hohenstein, 2018; Wilcox & Lawson, 2018). For example, Glackin and Hohenstein (2018) examined dimensions of teacher-efficacy using their qualitative assessment framework. In their framework, they included one dimension they titled, *Flexibility and Disposition*. Regarding this dimension, they found that only teachers with higher sense of efficacy in their study developed new teaching methods, adjusted current practices, looked for opportunities to improve, and demonstrated a willingness to change. Their underlying idea, along with much of the literature, was that with efficacy comes the benefit of resiliency and the ability to respond to change (Bandura, 1977; Tschannen-Moran & Hoy, 2001). As the course graduates noted their strategies to adapt their teaching practices as well as their general willingness to

embrace flexibility, their ability to display resiliency during the development of their sense of efficacy was significant.

Synergy of Themes

The essential idea from the theoretical foundations in this study was that to understand complex constructs that involve human thinking or action we need to recognize the requisite interactions that occur for it to form (Engel, 1980; Gilbert, 1995; B. J. Zimmerman & Schunk, 2003). In this study there were various elements in play that presented the opportunity to examine through this interactive lens. The combination of individual experiences, cultural influences from military norms such as the culture of resilience and crisis planning, and of course, the external pressures presented by the COVID-19 pandemic, offered the ingredients to spotlight the dynamic nature of efficacy development. In particular, the COVID-19 showcased how impactful environmental influences can be for influencing psychological constructs. The participants communicated how the crisis challenged the learning environment by disrupting time and clarity of information (Hadar et al., 2020; Horney et al., 2010). They described how the time-compression (volatility) and uncertainty impacted the planning, delivery, and receptibility of the PD experience. The two disruptors created a learning barrier which reduced the available opportunities to engage in the necessary processing and reflection required for learning (Darling-Hammond et al., 2017; Desimone, 2009; Hemmings, 2015).

To counter the constraints of the crisis, the themes in this study were quite synergistic as they often enabled, supplemented, or overlapped each other to promote efficacy development. At first glance, each theme appeared to have a unique contribution to the learning environment. However, throughout the investigation, the evidence of a more holistic interplay among the themes within the efficacy development process became clear. In fact, detangling the

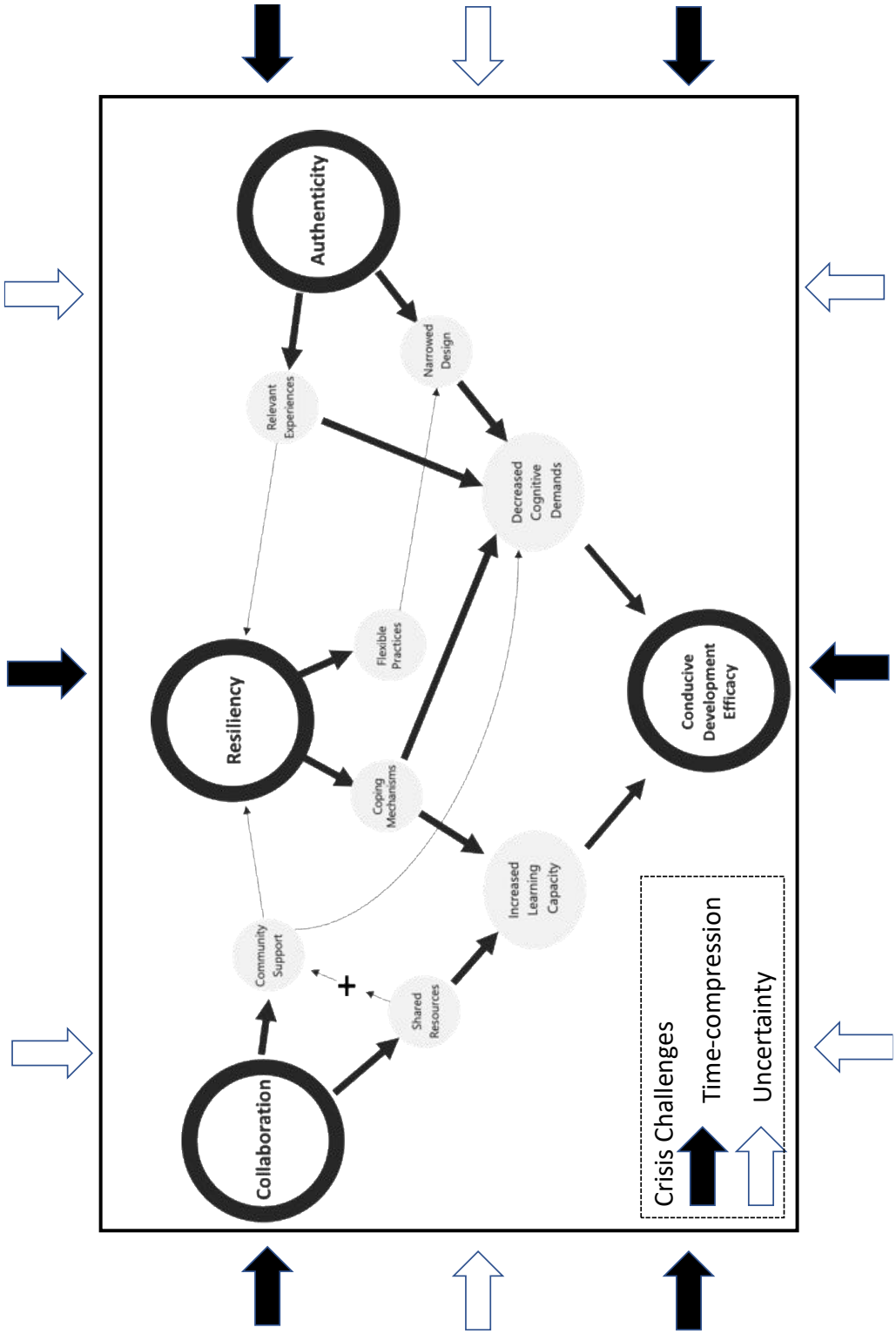
contributions and significance of one versus another posed challenges as there were noticeable overlaps. In the previous chapter, the figure titled *Themes for Teacher-Efficacy Development* (see Figure 8) depicted a basic organization of the themes, with the purpose of introducing the elements. However, the figure in this chapter serves the purpose of illustrating the interactions as made evident through the data in this case (see Figure 9, *Interconnection of Themes)*. The graphic flows from each of the three themes and follows their contribution to creating a conducive environment for promoting efficacy development. In the data, the need to increase learning capacity and decrease cognitive demands were the two foundational access points to facilitating efficacy growth. This recognition, that learning capacity and cognitive demands intercede for efficacy development (de Bruin & Van Merriënboer, 2017; Feldon et al., 2018, 2019), helped illuminate the interplay among the themes.

Some of the interactions were explicit. For example, the relationship between authentic experiences and resiliency were direct. For example, the course graduates justified their criticism towards the "essentials only" curriculum as they believed they had adequate exposure to learning management systems to self-develop. The exposure to relevant experiences, which by definition denotes an element of authenticity, created pathways towards resiliency (Meredith et al., 2011; Nindl et al., 2018). The course graduates were able to leverage previous experiences in dealing with change to assist their ability to cope. In addition, the ability for the both the design team and the course graduates to maintain flexibility during the PD enabled the design team to tailor the narrow curriculum to the direct needs of the learners. And combined, these two elements intertwined to decrease cognitive demand for the course graduates (Banas, 2014; Meredith et al., 2011; Nindl et al., 2018).

Moreover, there were two additional overlaps that required further exploration. One overlap involved the interplay of the authenticity and collaborative engagement to reduce cognitive overload. There was a concerted effort to decrease the volume of constituent learning elements demanded by the curriculum (Likourezos & Kalyuga, 2017; Sweller, 2010; Sweller et al., 2019) and increase the learning capacity for each individual through collective cognition (Janssen & Kirschner, 2020; F. Kirschner et al., 2009b; Zambrano et al., 2019). Although the literature on the connection between cognitive load management and teacher-efficacy was scant, there was a growing body of research noting the relationship connections, overlaps, and symbiosis of the two concepts (de Bruin & Van Merriënboer, 2017; Feldon et al., 2018; Likourezos & Kalyuga, 2017; Wu et al., 2012). For example, Wu et al. (2012) postulated, after concluding their study exploring the relationship between self-efficacy, extraneous load, and task performance, that a conducive learning environment must consider both the elements of task design (i.e., extraneous load) as well as learner self-beliefs (i.e., self-efficacy). Their conclusion contributed to a larger notion that self-beliefs are more than a tangential, seemingly parallel process to cognition and performance (Feldon et al., 2018). de Bruin and Van Merriënboer (2017) supported this notion in one of the rare studies that explored the two frameworks together. In their study, they argued three reasons cognitive load and efficacy theories are related (1) both are based in the psychology of learning and memory; (2) both use subjective estimates of learners; and (3) both focus on self-directed learning.

Figure 9

Interconnection of Themes



Another significant relationship involved the interplay between collaboration engagement and the resiliency strategies. Although the design team removed elements of the curriculum, the integration of collaborative engagement compensated for the loss of content as all the participants, the design team and course graduates, were able to interact, co-construct, and adjust learning direction based upon desires, needs, and interests. In essence, the flexible practices that contributed to the efficacy development was enabled by collaborative engagement. Moreover, collaboration bolstered the opportunities for resilient strategies to precede the higher senses of efficacy among the military faculty. Embedded in the interview discussions with the course graduates was the notion that their culture of collective participation of sharing resources, ideas, and training offered the participants confidence and security to be resilient in their classrooms. In the literature, there are discussions regarding the way culture can influence efficacy development (Phan & Locke, 2016). Phan and Locke (2016) support this idea in their qualitative study exploring culture and teacher-efficacy. They discovered that teachers who are associated with a culture that values community tended rely on social and cultural contributions more than individual mastery experiences to construct their sense of efficacy.

In the context of my study, the cultures of collaboration and resiliency in the military were strong influences. The first was the culture of collaboration demonstrated in the PD. As noted by John, one of the design team participants, collective engagement was a "backbone" of the curriculum design to foster the development, readiness, and efficacy of the learners. To a degree, this strategy exemplifies a broader significance and reliance on collaboration in the military writ large (Goodwin et al., 2018; Meredith et al., 2011). In a meta-review of 60 years of literature examining the significance of collaboration in military environments, Godwin, Blacksmith, and Coats (2018) synthesized their findings of how the military's culture of

collaborative development influences organizational performance and effectiveness in five themes: *Teams can be more effective than the sum of individual team members; Team cognitive processes play a significant role in team performance; Team processes and performance are cyclical, dynamic, and episodic*; *Multiteam systems matter*, and *Contextually rich environments enable teams to learn more effectively*. To this end, it is important to note that the PD course was not the sole interaction responsible for the forging the collaborative team environment among the course graduates. The larger culture of collaboration in military meant they created their community prior, during, and after the PD course. Therefore, the role and significance of the PD, in this capacity, was to offer touchpoints of collaboration for increasing learning capacity and sense of community.

The second cultural influence at play was the military's emphasis on resiliency. The culture of resiliency is significant as the professional ethos in the military require servicemembers and organizations to cope with a litany of environmental, psychological, and emotional changes within the professional setting (Meredith et al., 2011; Nindl et al., 2018). For example, in an examination of the degree to which evidenced-based resiliency practices and programs were evident in the military, Meredith et al. (2011) concluded that *positive coping* (managing stressful circumstances and seeking problem-solving actions), *teamwork* (flexible coordinated work among team members), *and belongingness* (integration and participant within a community environment) were widely employed tactics. The convergence of the military's culture of collaboration and its culture to build resilient personnel helped the course graduates harness a repertoire of mental readiness strategies which prepared them to handle the crisis environment. The result was a group of teachers, who were novice online teaching professionals, that demonstrated classroom management and teaching practices consistent, and

often reserved, for educators with more experience and a higher sense of efficacy (Glackin & Hohenstein, 2018; Tschannen-Moran & Hoy, 2001).

Lessons, Implications, and Recommendations from Findings

As the purpose of this study was not to offer generalized findings, the reader will need to make determinations regarding what and how the themes and patterns resonate within to their given context or circumstances (Tracey & Hinrichs, 2017). Tracey and Hinrichs (2017) argued that the reader uses their intuitive sense of the study's context to build connections between the findings of a research effort and the realities of their experiences. My hope is that even though this study involved a specialized population of military professionals, there are elements within this document that are usable to a wide range of audiences.

To assist, I reflected on the broader implications of this study and I found three areas that I submit as transferrable lessons for readers, future scholars conducting research in this area, or teacher practitioners to consider. In this regard, the following lessons are less about the potential for the reader to transfer the findings, competencies, or skills from this study. Instead, the transferability of these lessons lies in their potential to help progress the mindset, research approach, and practical application of the teacher-efficacy construct.

Lesson #1: Understanding teacher-efficacy requires a change in framing

One of the initial lessons from this study was that the teachers developed their sense of efficacy, not from a singular element or linear process, but from a complex integration of factors that interplayed in different forms, levels, and intensity. As a collective, the participants utilized direct and vicarious experiences, leveraged the power of the social environment to augment, protect, and promote their individual self-beliefs, and transferred efficacious beliefs they established through cultural norms and values within the military to handle the crisis

environment and construct their sense of efficacy towards ERT. Earlier in this chapter, I mentioned how the interplay of the themes created "challenges" for detangling each of the contributions. Perhaps, the plight was not an obstacle, but instead an indicator of a different way we need to frame our perspective of efficacy development. The nature of developing one's sense of efficacy is far removed from a formulaic response. The range of experiences, both within the task domain and external, interactions, and strategies that contribute to one's self-beliefs are extensive. Instead, we need to acknowledge and appreciate the complexity of the interactions at play (Gilbert, 1995). Teacher-efficacy, as with other psychological constructs, rely on the convergence of elements across the biological, psychological, and social (biopsychosocial) spectrum (Bandura, 2001).

The path to understanding a complex construct requires the use of a complementary framework. Teacher-efficacy is a multifaceted construct that requires in-depth exploration to understand (Bandura, 1977, 2001; Glackin & Hohenstein, 2018; Tschannen-Moran & Hoy, 2001). Accordingly, the interpretive design of this study allowed me to view teacher-efficacy development from multiple angles, abetting my intent to gain a more holistic view of the construct. This lesson, however, was not original. Various scholars have acknowledged and called for the use of qualitative methods to investigate teacher-efficacy for over two decades (Glackin & Hohenstein, 2018; Tschannen-Moran & Hoy, 2001; Wyatt, 2015). More prominently, Tschannen-Moran et al. (1998), one of the seminal works which popularized teacher-efficacy, mentioned how qualitative methods offer the "thick, rich description" needed to understand the construct and yet were "overwhelmingly neglected" (p. 242). Even with this appeal, the research trend remained heavily favored towards the use of psychometric instruments and statistical analysis, solely, to examine the construct (Klassen et al., 2011; Wyatt, 2018).

Merriam and Tisdell (2016) noted that the purpose of qualitative case studies is "to achieve an *understanding* [emphasized in the original text] of how people make sense out of their lives, delineate the process…of meaning-making, and describe how people interpret what they experience" (p. 15). In my process to understand, "delineate", and "describe" I discovered how the three constituent themes had independent contributions but ultimately connected to facilitate efficacy development. The triangulation of data sources not only bolstered the trustworthiness of my findings, but also created opportunities to "see" teacher-efficacy from multiple angles, perspective, and dimensions. For example, the significance of the dynamic shift in the PD was less perceptible during my initial review of the design team interviews. The magnitude of the course modification became apparent through its prevalence across the multiple data sources (e.g., interviews with course graduates and archived documents).

The combination of perpetually examining a complex construct through a narrow lens (i.e., a psychometric survey often narrowed due to validity and reliability considerations) results in an incomplete understanding of teacher-efficacy (Glackin & Hohenstein, 2018; Wyatt, 2015). To be clear, this implication is less about a criticism of quantitative methods outright, and more regards the consequences associated with relying on a single methodological approach to inform the larger body knowledge regarding the teacher-efficacy construct. In turn, our understanding becomes muddled with notions that efficacy is an outcome and not a process (Glackin & Hohenstein, 2018; Tschannen-Moran & Hoy, 2001) or that it's an immutable trait and not something we cultivate over time (Morris et al., 2017). Instead, the implications of this research demonstrate three points: (a) prioritizing participant knowledge and experiences offer vehicles to ensure efficacy development remains situated within the context of the environment; (b) using multiple data sources creates opportunities for holistic perspectives of the continuum of efficacy

development; and (c) conducting inductive analysis can help break the dogma of using templated explanations of what contributors of efficacy development.

Lesson #2: Crises drive a rethinking of the "sources" of efficacy

In the literature there is a prevailing acceptance and promulgation of Bandura's (1977) four sources of information as the contributors to one's sense of efficacy (Honicke & Broadbent, 2016; Morris et al., 2017; Tschannen-Moran & Hoy, 2001; Tschannen-Moran & Johnson, 2011; Tsui, 2018). The four sources offer a foundation for shaping our perspective on efficacy formulation however the dimensions may be insufficient as an inclusive categorization of the construct. Perhaps, in a broad sense, the components of the themes in this study align with these sources. For instance, the use of authentic experiences to build confidence in essential skills could fall under mastery experiences (Banas, 2014; Bandura, 1977; Luo et al., 2017). Even the use of community to learn how to perform a classroom function might align under vicarious experiences as the course graduates imitated practices modeled by other faculty members (Achterkamp et al., 2016; Hoover et al., 2012). The shortfall, however, in merely defaulting to these four sources exclusively is that we can obfuscate the intricacies, nuances, and complexities of the factors by deferring to the vague dimensions (Morris et al., 2017). For example, Morris et al. (2017) challenged the lack of inclusivity of Bandura's (1977) four sources by suggesting that the role and interpretation of knowledge and experiences does inform one's sense of teacher-efficacy, but do not "serve as a new source of information" (p. 820). In this study, the course graduates leveraged their prior knowledge and experience to generate, innovate, and mitigate crisis obstacles during their efficacy formulation. In this example, prior knowledge did not align neatly as a direct set of mastery experiences towards their ERT efficacy. Instead, the findings offered another suggestion about the sources of efficacy.

The influence of both collaborative engagement and resiliency were vital in promoting the teacher's sense of efficacy. From an insider's perspective (as a military servicemember), the presence of these factors was not a surprise entirely. As I discussed earlier, the military inculcates cultures of collaboration and resiliency as part of its professional ethos for peacetime and contingency operations. In a sense, servicemembers are adept at translating these cultures into strengths they can harness during challenges and disruptions (Meredith et al., 2011). As the COVID-19 pandemic involved a compressed timeline and a host of uncertainties, the design team and the course graduates relied on these strengths as primary sources to promote efficacy development.

Not all academic institutions, organizations, or professional learning communities have cultures of collaboration or resiliency. However, the lesson here is two-fold. First, search for potential ways to capitalize on strengths as primary sources for promoting efficacy development during a crisis. A strength-based approach is a type of intervention which focuses on an individual's positive attributes as a mechanism for overcoming a scenario or situation (Quinlan et al., 2012). Some findings suggest that teachers experience noticeable improvements in motivation and confidence when they encounter professional development programs that accentuate their strengths (Meyers & van Woerkom, 2017; Quinlan et al., 2012; Zwart et al., 2015). Considering the potential benefits, exploring opportunities to emphasize one's strength might be worthwhile regardless of how direct, or indirect, it is to teaching task at hand. The second portion of this lesson suggests the need to curate strengths or cultures in advance of a crisis. Crises are inherently unpredictable, both in terms of when they arise and how they will unfold. Instead of knowing how to react to a crisis, educators and academic institutions can learn how to respond. A response denotes a pre-planned set of actions or behaviors in preparation for

future unknowns. The list of potential options are extensive, and beyond the scope of this study, but considering ways to cultivate competencies of resiliency such as how to implement flexible pedagogies or social-emotional strategies (Blankstein et al., 2020; Hadar et al., 2020) might offer ways to prepare an organization for crisis response and crisis management. The military's culture of resiliency involves discussions and education, but the heart of this culture is fortified through the exposure to challenges over time. The more individuals faced challenges, change, and disruptions the more confident they can grow to handle future crises. Providing opportunities for educators to experience challenges outside of their everyday scenarios could offer passages towards building a culture of resilience.

In addition to the academic institutions responsible for organizational management and development, individual teachers can explore how they might transfer competencies they possess with a higher sense of efficacy into their practice. In this study, the military faculty were able to leverage their experiences and confidence in adapting to change and collaborative engagement to protect their performance until they gained experience. In other contexts, teachers might consider using a specific teaching strategy, a cooperative teaching method with a close colleague, or some other knowledge or skill that could embrace in their classroom. The intent is for teachers to locate any strength or capability they can transfer to the temporary environment to offset the learning curve required by the disruption.

Lesson #3: Development in a crisis requires sacrifice and intentionality

Although the events during the COVID-19 unsettled education in unprecedented ways, educators and instructional designers will need to understand how to deal with the unique characteristics of crisis including the volatility, uncertainty, complexity, and ambiguity they present (Horney et al., 2010). The speed of events combined with the lack of information can

pose considerable obstacles for designing and implementing a PD course to facilitate growth in efficacy. The result of the intentional actions to counter these environmental disruptions requires a series of difficult design choices. In this study, this process was evident in the design team's decision to emphasize "survivability" skills at the sacrifice of attempting to provide a complete developmental curriculum. In their decision to focus on essential skills only, the team also recognized, and accepted, the secondary impacts that the course graduates would not feel confident handling all teaching responsibilities they would encounter. However, their decision ensured the military faculty were confident in knowing how to initiate their teaching practice utilizing the resources from the PD and from the fellow colleagues.

Part of this sacrifice involved knowing what to present. When faced with a time-compressed environment, designers, and practitioners, might consider avoiding abstract or theoretical developments and prioritize their resources into hands-on applications (Desimone, 2009), especially regarding areas of lower expertise. The opportunity to gain exposure and proficiency for a task, prior to teaching, can create comfort and confidence (Darling-Hammond et al., 2017; Desimone, 2009; Luo et al., 2017). In lieu of such available opportunities, a creative approach to preparation might also be warranted. One creative approach to building efficacy with the lack of PD is through a strong community of practitioners. This element was clear in the study. The participants leveraged community to compensate for individual shortfalls. The sharing of tactics, strategies, and resources created a network support system the teachers were able to lean on for their individual confidence. This finding is consistent with prior research that claim collective engagement is beneficial for the individuals and the organizations (Goodwin et al., 2018; Trust et al., 2016).

The point is efficacy development during educational disruptions requires sacrifice but also a deliberate and focused planning strategy which considers the holistic nature of biopsychosocial factors. This includes establishing a clear vision of the knowledge, competencies, and skills the design team feels is feasible for the circumstances and providing pedagogies which connect with their learners and adapt to their needs. The feasibility assessment should consider, time available for learning environment, expertise of the PD faculty and staff, direct experiences of the learners to the task, and, as highlighted previously, indirect experiences (or strengths) that the PD can build upon. The combination of the actions can help foster an environment to promote healthy, and positive efficacy development (Hadar et al., 2020).

For ease of consumption, below is a consolidated list of key recommendations from this study for developing efficacy through PD during a crisis environment.

1. Delineate course competencies into categories such as: essential (foundational skills necessary to initiate role), important (skills vital for sustaining performance), and non-essential (peripheral skills that enhance performance).
2. Create a scaffolded design which emphasizes small actions and prioritize hands-on application (Kleickmann et al., 2015; Sweller et al., 1998).
3. Incorporate collaborative engagement to offset workload and build community among learners. (Note: Collaboration is effective when: groups are able to establish group and team dynamics before intense problem-solving tasks (P. A. Kirschner et al., 2018; Zambrano et al., 2019); and the task requirement exceeds individual experience levels (Janssen & Kirschner, 2020; P. A. Kirschner et al., 2018))

4. Foster community and communication through intentional feedback loops for facilitators and learners to express concerns, interests, or needs (Bedford & Rossow, 2017; Trust et al., 2016).
5. Implement flexible design strategies to handle changing environments or to adapt to learners needs (Huang et al., 2020). (Note: Huang et al. (2020) offers eight dimensions of flexibility for reference.)

Study Limitations

As this study occurred amid a global pandemic, one of the primary limitations involved the social and physical restrictions of COVID-19. Over the course of the crisis, many individuals and organizations implemented Center for Disease Control recommendations of limited social engagements and restricted access to facilitates. Albeit justified, the restrictions impacted the research design on several dimensions. One of the first areas impacted by this environment was my ability to facilitate participant recruitment, as my options were limited to the use of non-interpersonal communication strategies only (e.g., email). The loss of any face-to-face recruitment opportunities hindered the opportunity for me to influence the narrative of the research, emphasize elements such as my desire to gain diversity among participants, or respond to specific questions or concerns regarding the study swiftly and directly. There is, however, a growing body of literature regarding the use of information age technologies in the research process. Scholars have argued that the use of digital tools, like social media and email, for recruitment is the optimal method for reaching millennial participants (Burke-Garcia & Mathew, 2017; Dalessandro, 2018). The sentiment was that individuals tend to engage more in the digital environment than more direct recruitment methods, like posting flyers or making general announcements (Dalessandro, 2018). However, as an outsider to each of the two organizations in

my study, my use of email created a real sense of disconnect and isolation from the individuals within the organization.

The impact of being disconnected during recruitment meant I had less influence in participant identification and selection. As a result, I was not able to achieve any gender or racial diversity among the course graduate participants, and therefore had to forgo my consideration for the maximum variation sampling strategy. The purpose of this technique was to increase the range of experiences within the course graduate population (Glaser & Strauss, 1967; Merriam & Tisdell, 2016). This technique was of particular interest as the unbalance of racial and gender demographics in the military sometimes leads to a homogeneity of perspectives and experiences represented in the research body. While this limitation did impact my opportunity to build towards a humanized research design, this limitation did not impact the trustworthiness of my design strategy, analytical process, or findings.

Another limitation involved the timing of the study and the lack of field observations. The timeline of events between the start of the PD and the conclusion of the ERT class occurred within a matter of months. Due to the inherent delay caused by the design process and IRB approval, I was not able to conduct this study concurrent to these events. This resulted in a missed opportunities to include field observations of the planning and implementation of the PD program or the military faculty while they engaged in their ERT class session. Although, access to the PD course was available through archived documents, the inability to gather 'in the moment' observations impacted the comprehensiveness of the data gathering process. This loss resulted in fewer data sources for comparative analysis and triangulation. Field observations are an important component to triangulating case study research as they offer the researcher an observational perspective of the naturalistic environment (Merriam, 1998; Merriam & Tisdell,

2016; Stake, 1995). Stake (1995) mentioned observations are where the narrative and meanings begin to take shape. However, as my focus regarded the faculty's belief systems and judgments, and not teacher readiness or effectiveness, the use of interview data to explore the course graduates' sense of efficacy was sufficient.

Recommendations for Future Research

From the theoretical perspective, one's sense of efficacy should entail an individual appraisal based upon a range of sources along with the individual interpretations of experiences (Morris et al., 2017; Tschannen-Moran & Hoy, 2001). Although, (Bandura, 1977, 2001) argued that an individual forms their beliefs through a product of cross-flowing interactions between their biological makeup, internal psychological elements, and environmental influences, surprisingly there was a dearth of research investigates the depth or dimensions of the sources that contribute to efficacy development (Glackin & Hohenstein, 2018; Morris et al., 2017).

For twenty years, scholars have called for the need of more qualitative research for exploring teacher-efficacy (Glackin & Hohenstein, 2018; Tschannen-Moran & Hoy, 2001). While there has been an increase in qualitative studies, the literature base still lacked in this area overall (Glackin & Hohenstein, 2018). The use of a qualitative methodology in this study allowed me the opportunity to unmask the larger web of teacher-efficacy influences (e.g., collaboration, community, authentic instructional design, and resiliency) situated within a single study. The characterization of these findings diverges from the quantitative-dominated literature base, which often constrains sources of teacher-efficacy as having a linear, inclusive influence on the construct. As a general recommendation, future research regarding teacher-efficacy development needs to include more qualitative-influenced design structures to increase our aperture on the subject. To facilitate the increase in qualitative approaches, future research is

also needed regarding the methodological structures and frameworks for examining teacher-efficacy. Scholars such as Glackin and Hohenstein (2018) and Wyatt (2016) provided insight into this work with their respective models for analyzing teacher-efficacy. More discoveries in these areas would bolster the quality and trustworthiness of future research findings.

A second area for future research should involve the investigation of the sources of efficacy. Since Bandura (1977) published his four sources of information, the literature has remained stagnate in exploring, altering, or challenging what it means to influence one's sense of efficacy. These sources provided a foundation for contemplating the variation of influencers, but future research should examine the specificity of each source (Morris et al., 2017), how individual sources might converge or interplay (Milner, 2002), and what impact do external sources have on the task or behavior of interest. This last point is of particular relevance to the findings of this study, as they suggested the course graduates utilized their prior exposures in the military's culture of resiliency to help them cope with the rapidly changing environment and their sense of efficacy towards teaching in the new environment. Bandura (1977) acknowledged his uncertainty regarding the degree to which efficacious behaviors transfer across domains in his early work. Unfortunately, this uncertainty remains present. Future studies should focus on analyzing how well efficacious beliefs from general competencies (e.g., resiliency, innovation, public speaking, to name a few) or other non-tasked related skills might transfer or influence beliefs in other specific teaching areas (e.g., facilitating classroom discussions or other classroom management functions). The outcome of these findings could inform a larger body of work regarding subjects such how PD can better promote higher teacher-efficacy in the design. For the specific subject of resiliency and teacher-efficacy, scholars need to consider more research

with military faulty. Military faculty are underrepresented in the teacher-efficacy literature yet offered a unique perspective as they reside in a culture dedicated to building resiliency.

The final recommendation for future exploration involves frameworks for practical application. While generalizing teacher-efficacy development is difficult, administrators and practitioners might benefit from specific case-studies, handbooks, or reference guides that offer condense tips, procedures, or strategies for promoting efficacy in a crisis environment. Scholars could explore how individuals might process instructional design and planning with a compressed timeline or guides from locating the "essential" elements within a curriculum, as two examples.

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APPENDIX A

INFORMED CONSENT

AUBURN UNIVERSITY

ATTACHMENT 1

COLLEGE OF EDUCATION

DEPARTMENT OF EDUCATIONAL FOUNDATIONS, LEADERSHIP AND TECHNOLOGY

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

INFORMED CONSENT
for a Research Study entitled
"A Case Study Exploring Contingency Response Teacher Preparation for PME Distance Education as a Result of COVID-19"

You are invited to participate in a research study to examine contingency response teacher preparation for Professional Military Education (PME) distance education as a result of COVID-19. The study is being conducted by Dwayne Clark, a Ph.D. Student, under the direction of Dr. Carey Andrzejewski, Professor, in the Auburn University Department of Educational Leadership, Foundations, and Technology. You were selected as a possible participant because of your involvement with the [redacted] program and are age 19 or older.

What will be involved if you participate? If you decide to participate in this research study, you will asked to be interviewed once, with the option of a followup interview if required. Your total time commitment will be no longer than one hour per interview.

Are there any risks or discomforts? The risks associated with participating in this study are breach of confidentialiy. To minimize these risks, no specific participant identifers will be used or referenced in the research. Only code names will be recorded in the interview and in the analysis. Additionally, findings will focus on themes and codes and not specific individuals.

Are there any benefits to yourself or others? There are no direct benefits for participating in this study.

Will you receive compensation for participating? There are no compensations for participating in this study.

If you change your mind about participating, you can withdraw at any time during the study. Your participation is **completely voluntary**. If you choose to withdraw, your data can be withdrawn as long as it is identifiable. Your decision about whether or not to participate or to stop participating will not jeopardize your future relations with Auburn University, the Department of Educational Leadership, Foundations, and Technology, the Department of Defense, or Air University.

Participant's initial_____

The Auburn University Institutional Review Board has approved this Document for use from 06/24/2020 to ____
Protocol # 20-296 EX 2006

4036 HALEY CENTER
AUBURN, AL 36849-5221

TELEPHONE:
334-844-4460

FAX:
334-844-3072

www.auburn.edu

Your privacy will be protected. Any information obtained in connection with this study will remain confidential. Information obtained through your participation may be used to fulfill the educational requirements of my Ph.D. program, published in a professional journal, or presented at a professional meeting.

Note: The DoD will have access to study records to ensure subjects safety and regulatory compliance.

If you have questions about this study, please ask them now by contacting me (researcher) at dzc0063@auburn.edu or Dr. Carey Andrzejewski (primary advisor) at cea0011@auburn.edu. A copy of this document will be given to you to keep.

If you have questions about your rights as a research participant, you may contact the Auburn University Office of Research Compliance or the Institutional Review Board by phone (334)-844-5966 or e-mail at IRBadmin@auburn.edu or IRBChair@auburn.edu.

HAVING READ THE INFORMATION PROVIDED, YOU MUST DECIDE WHETHER OR NOT YOU WISH TO PARTICIPATE IN THIS RESEARCH STUDY. YOUR SIGNATURE INDICATES YOUR WILLINGNESS TO PARTICIPATE.

Participant's signature Date	Investigator obtaining consent Date
Printed Name	Printed Name

The Auburn University Institutional Review Board has approved this Document for use from 06/24/2020 to ____
Protocol # 20-298 EX 2006

APPENDIX B

INTERVIEW PROTOCOL FOR COURSE DESIGNERS

ATTACHMENT 3

INTERVIEW PROTOCOL FOR COURSE DESIGNERS

1. INTRO: MEET, GREET AND PLESENTRIES

A. Discuss the purpose of the research study

B. Discuss informed consent letter, rights of the participants, and how they might handle questions they perceive are uncomfortable

C. Discuss any questions, concerns or comments regarding the project or items of interest

2. CONDUCT INTERVIEW

A. Tell me a little bit about who you are…

i. Career field, degrees, current assignment?
ii. Teaching experiences…either formal or informal?
iii. Face to Face and remote teaching?
iv. Instructional Design

B. Before we discuss the [redacted] I thought it would be helpful to scope your overall outlook on your approach to teacher preparation for online (or remote) instruction?

i. Principles? Outcomes? Intent?
ii. When a student graduates your course, what knowledge, skills, attitudes, or competencies do you want them to have upon completion?
iii. Tell me about the individuals who attend your baseline [redacted]
iv. How confident are the graduates of the baseline [redacted] in delivering remote instruction?

C. I really want to spend time exploring the various elements of the [redacted] course?

i. Can you tell me about the [redacted] What do the students experience in the course? What are your expectations of the graduates…in terms of knowledge, skills, attitudes or competencies?
ii. You didn't have a lot to time to plan an instructional design process for this course, what type of planning process did you use to develop this course? How were you able to produce a course in short order?
iii. How did your thinking change for this course in light of the context?

iv. How was your instructional design influenced by potential student stress or anxiety from the presence of COVID-19?
v. Tell me about the [redacted] faculty-student coming through the [redacted]
vi. Can you tell me about the design sacrifices you made for designing this course specifically? Why did you make those sacrifices?
vii. What impact do you think those sacrifices have on the confidence of preparing your students to teach remote instruction? Quality of the course?
viii. In thinking about the instructional design of the [redacted], what elements of the course were critical for you to keep in order for this course to be successful?

D. In thinking about the [redacted] in terms of preparing teachers for remote instruction, can you tell me about specific design elements you feel specifically target teacher confidence in achieving the knowledge, skills, attitudes, competencies you discussed earlier?

E. In line with the previous question, any [redacted] design elements you feel are weaker, or missing, in building teacher confidence for leading contingency remote instruction?

F. Please think broadly about your ability to influence teacher confidence, especially given the current circumstances, and give me what you perceive are the three most powerful influences on teacher confidence for conducting remote instruction?

G. Last question… knowing what you know now and considering the limited time to transition you had to develop a transitional program for remote instruction, what is something the [redacted] could have done differently to help boost teacher confidence to teach remotely?

3. WRAP UP

A. Major summaries from our interview

B. Follow up interview or discussion, if necessary

C. Appreciation for their time

APPENDIX C

INTERVIEW PROTOCOL FOR COURSE GRADUATES

INTERVIEW PROTOCOL FOR COURSE GRADUATES

1. INTRO: MEET, GREET AND PLESENTRIES

A. Discuss the purpose of the research study

B. Discuss informed consent letter, rights of the participants, and how they might handle questions they perceive are uncomfortable

C. Discuss any questions, concerns or comments regarding the project or items of interest

2. CONDUCT INTERVIEW

A. Tell me a little bit about who you are…

i. Career field, degrees, current assignment?
ii. Teaching experiences…either formal or informal?
iii. Face to Face and remote teaching?
iv. Why did you start teaching?

B. Ok, so you just completed the [redacted] virtual class session. Several months ago, you were teaching face to face in the traditional classroom, and now you are here. Can you tell me about the journey, as an educator, from then to now?

i. As a teaching professional, how stressful has COVID-19 been for you personally, in terms of adjusting to all the changes and uncertainty?
ii. When did you first discover that you would have to teach your course remotely? Tell me about your thinking when this occurred?
iii. Can you tell me about any concerns that you had back then regarding your ability to provide your educational experience remotely?

C. In society, many teachers were asked to make the transition to remote teaching without any type of development or education. As you were able to complete the [redacted] I really want to explore your experiences as a student.

i. What [redacted]xperiences do you believe helped prepare you to teach remotely?
ii. What was it about those experiences that helped you?
iii. One vitally important element in teaching, and developing teachers, is understanding how their confidence is impacted at various points in time. Can

you tell me about how the [redacted] influenced your confidence in your ability to teach remote instruction effectively?

iv. Tell me a memorable story that would help me understand how you developed confidence in teaching remotely that you gained from the [redacted]

v. How did your colleagues influence your confidence to teach remotely during your [redacted] experience? Discussion board interactions or collaborative projects?

vi. Tell me about the feedback you received in the [redacted] which you thought influenced your confidence (positively or negatively)?

D. **In that period between the [redacted] and starting your remote class, identify for me some of the most prominent feelings and emotions that you experienced as you prepared to teach this class?**

i. Which of these feelings or emotions would you say raised your confidence?

ii. Which of those feelings or emotions would you say decreased your confidence?

E. **Even the best teaching programs may not prepare you for every situation you might experience as a teacher. Tell me about your remote class experience…**

i. Tell me about some of the teaching setbacks you faced during this remote session

ii. How did you deal with them?

iii. How did your setbacks impact your overall confidence in teaching remote instruction? Did this negative experience affect your subsequent teaching performance?

iv. Tell me about an experienced you felt confident in handling? How influential was the eIOC in preparing you for that experience?

F. **Are there other things we have not addressed that you feel the [redacted] played in influencing your confidence to teach remotely? Any factors outside of the [redacted]**

G. **Please think broadly about your confidence as a teacher during this unexpected, somewhat rapid transition to teaching remotely, and give me what you perceive have been the three most powerful influences on your teaching confidence in the order of magnitude.**

H. **Last question… knowing what you know now and considering the limited time to transition you to prepare for remote instruction, what is something the [redacted] could have done differently to help boost your confidence in teaching remotely? Wrap up**

3. WRAP UP

A. **Major summaries from our interview**

B. **Follow up interview or discussion, if necessary**

C. **Appreciation for their time**

APPENDIX D

PROFESSIONAL MILITARY EDUCATION: A BRIEF HISTORICAL ACCOUNT

This study was situated in a professional military education (PME) distance education setting. As this setting is less prevalent in the literature, this section offers a concise historical account of this environment for the reader's situational awareness.

Overall, the military distance education program has progressed in its capabilities, popularity, and usability as it has followed similar trends observed in the civilian education. Facilitated by the expansion of technology, distance education opportunities are vast and highly accessible throughout the Department of Defense (DoD). However, the journey to this current state over the last fifteen years has been quite dramatic. Writ large, the four U.S. military services Air Force, Army, Navy, Marine Corps, have followed essentially the same distance education trend line, progressing through three major learning models over this period, (1) a correspondence model, (2) an eLearning model, and (3) an asynchronous model (Note: at the time of this study, the United States Space Force did not have an established distance education program to contribute to this historical account). The correspondence approach of military distance learning can be traced as far back as World War I (and in some variation lasted until the mid to late 2000s (Kenyon & Flora, 2019). The military's correspondence model was better described as *distance learning*, as opposed to distance education. The purpose of the correspondence model in the military service was to provide the working professional the opportunity to improve individual knowledge acquisition and self-development while in the field, or at home station. In this setting, the learning model consisted of individuals using an independent study style of education. In the military's correspondence model, the behaviorist learning structure consisted of individuals engaged in self-study of the provided materials,

followed by a proctored examination. The sole interaction of the academic institution to decide if the learner was restricted to one's ability to pass the examination successfully.

The second significant milestone in the military's progression of distance education involved its implementation of an eLearning model which incorporated the use of the internet. In many ways, the explosion in popularity of the computer and the internet occurred early to mid 2000s. The DoD received pressure to modernize the force and reduce expenses and the internet provided an opportunity to invest in the *Advanced Distributed Learning (ADL) Initiative* (Duncan, 2005; Kenyon & Flora, 2019). Duncan (2005) argued that the DoD's investment into ADL was critical to it demonstrating its stance on the importance of distance education within the military service branches. eLearning increased the overall accessibility for military members, but the learning strategy was a repackage of the correspondence model (Duncan, 2005). The structure of the eLearning also included a behaviorist-led model of self-paced absorption of information followed by a rote learning assessment. This model did provide insight into using multi-media more frequently, the utility of faster version updates, discovery of gaming and simulations, as well as the need to think differently about instructional design (from an accessibility and graphics perspective).

The previous two milestones were limited in their overall educational rigor, however, the military adapted and incorporated educational development in the third, and current, milestone. Military educators started to incorporate learning environments rooted in theoretical principles which extend beyond traditional behaviorist notions. Around 2010, the military's distance education philosophy started showing traces of educational strategies including both social constructivism, learning is achieved through meaningful, real-world social interactions (Vygotsky, 1978) and cognitivism, learning requires active mental engagement for knowledge

acquisition (Yilmaz, 2011) considerations into the experience. For example, according to the Air Force's distance education organization, members now receive a student-centered, online learning experience tailored to their individual needs. In this experience learners are provided a variety of computer-based interactive learning activities and peer to peer engagements.

This shift towards the use of learning and developmental theories, as highlighted by the Air Force's distance education program example, initiated the need for faculty development of educators. The first two behaviorist-centered models did not include many faculty interactions with learners and consequently did not warrant the need for a pedagogical strategy, or robust faculty development. However, military academic organizations, namely the Air Force PME has recognized the importance of having a faculty development model (Van Der Werff & Bogdan, 2018).