

University of Montana

ScholarWorks at University of Montana

Graduate Student Theses, Dissertations, &
Professional Papers

Graduate School

2020

CRISIS AS A CONSTANT: UNDERSTANDING THE COMMUNICATIVE ENACTMENT OF COMMUNITIES OF PRACTICE WITHIN THE EXTENSION DISASTER EDUCATION NETWORK (EDEN)

Danielle Maria Farley
University of Montana, Missoula

Follow this and additional works at: <https://scholarworks.umt.edu/etd>



Part of the [Organizational Communication Commons](#), and the [Other Communication Commons](#)

Let us know how access to this document benefits you.

Recommended Citation

Farley, D. (2020) Crisis as a Constant: Understanding the Communicative Enactment of Communities of Practice within the Extension Disaster Education Network (EDEN).

This Thesis is brought to you for free and open access by the Graduate School at ScholarWorks at University of Montana. It has been accepted for inclusion in Graduate Student Theses, Dissertations, & Professional Papers by an authorized administrator of ScholarWorks at University of Montana. For more information, please contact scholarworks@mso.umt.edu.

CRISIS AS A CONSTANT: UNDERSTANDING THE COMMUNICATIVE
ENACTMENT OF COMMUNITIES OF PRACTICE WITHIN THE EXTENSION
DISASTER EDUCATION NETWORK (EDEN)

By

DANIELLE MARIA FARLEY

Bachelor of Arts, University of Montana, Missoula, Montana, 2017

Thesis

presented in partial fulfillment of the requirements

for the degree of

Master of Arts

in Communication Studies

The University of Montana

Missoula, MT

September 2020

Approved by:

Scott Whittenburg, Dean of The Graduate School
Graduate School

Joel Iverson, Chair
Department of Communication Studies

Greg Larson, Co-Chair
Department of Communication Studies

Laurie Yung, Co-Chair
Department of Society and Conservation

Table of Contents

Abstract	iv.
Introduction	1.
Review of Literature	3.
Extension Disaster Education Network (EDEN)	3.
Crisis Communication	6.
Three Stage Model of Crisis Development	8.
Pre-crisis	9.
Crisis	10.
Post-crisis	11.
Social Learning Theory	13.
Communities of Practice	14.
CoP Theory	16.
RQ1	20.
RQ2	21.
RQ3	22.
Chapter 2: Methods	23.
Procedures	23.
Interviews	24.
Participant observation	26.
Data Analysis	28.
Chapter 3: Results	29.
Mutual Engagement	30.
Information/ resource sharing	32.
Collaboration	36.
Informal relationship building	39.
Negotiation of a joint enterprise	41.

Shared Repertoire	44.
Common language	44.
Stories	46.
Social Support	48.
Discussion	52.
CoP	52.
Mutual engagement	53.
Negotiation of a joint enterprise	56.
Shared repertoires	57.
Social support as CoP	60.
CoP and crisis communication	64.
Conclusion	70.
References	73.
Appendix	82.
Semi-structured interview guide	82.

Abstract

Farley, Danielle Maria, M.A., September 2020

Communication Studies

Crisis as a Constant: Understanding the Communicative Enactment of Communities of Practice within the Extension Disaster Education Network (EDEN)

Chairperson: Joel Iverson, PhD.

Crisis is a constant of our reality. We are caught in the continual and inevitable cycle of crisis development. Whether it is a natural disaster, international conflict, or disease outbreak; knowledge is central to our ability to prepare for, respond, and recover from crisis. Knowledge is a social process that requires active participation (Wenger, 1998). CoP theory explains how knowledge is accomplished through the communicative practice of mutual engagement, negotiation of a joint enterprise, and shared repertoires (Iverson & McPhee, 2008). The Extension Disaster Education Network is a CoP that is longstanding, enacts knowledge, and is focused on preparing for, responding to, and recovering from crisis. The main goal of this research is to understand how knowledge is accomplished within EDEN using CoP theory. This research uses qualitative methods to in the form of semi-structured interviews and participant observation fieldwork at the Annual EDEN Meeting held in Spokane, WA, September 2019. A total of thirteen EDEN members participated in interviews and 25 hours of participant observation were recorded as data. Three key findings and implications are identified regarding both theory and practice as it relates to CoP theory, social support, and crisis communication. First, this research provides support for the use of CoP theory to analyze and understand the knowledge processes in an organization. Second, social support was identified as a specific and pervasive communication strategy that EDEN members use to accomplish knowledge through mutual engagement. This finding expands literature on CoP theory and illuminates how to facilitate meaningful engagement through the four functions of social support including informational, emotional, tangible, and belonging support. Lastly, this research contributes to crisis communication theory and reveals how to maintain the flow of knowledge and relational connection between stakeholders throughout the stages of crisis development through the lens of CoP theory.

Introduction

In 1993, catastrophic floods struck the Mississippi River Basin inflicting severe damage to Midwestern communities, particularly in Missouri. This historic flood took the lives of 32 people and caused billions of dollars of damage. The impacted states lacked the capacity and resources to effectively deal with the immediate demand for information, expertise, and recommendations for recovery. During the crisis, Missouri Cooperative Extension agents called upon their Extension neighbors in Illinois, Indiana, and Iowa for information and material resources to deal with the destructive effects of the flood that threatened both human, animal, and plant life. The Mississippi floods of 1993 marked the start of a multi-state collaboration between Cooperative Extension Services across the country to improve the delivery of material and informational resources to citizens affected by disaster, formally known as the Extension Disaster Education Network (EDEN). One major outcome of the 1993 flood response was the capacity for Extension agents in neighboring states to share resources and information about how to approach response and recovery that was lacking in individual states. Based on these lessons learned, the Land Grant system of Cooperative Extension proved to be an effective channel to share diverse expertise and developed resources that apply to crisis preparedness, response, and recovery (EDEN, 2019).

EDEN's mission is "to reduce the impact of disasters through research-based education" (EDEN, 2019). Their mission is carried out by enhancing each community's ability to prepare for, prevent, mitigate, and recover from crises (EDEN, 2019). In 2019, EDEN celebrated 25 years of success and commitment to collaboration by bridging the flow of information from local, state, and national resources during times of crisis. To understand EDEN is to understand crisis communication. They are a group of people that assist each other as a community and

collectively learn from one another to respond in times of crisis. In other words, the network of resources and stories they share make EDEN members better in their practice as crisis communicators individually and collectively as a community.

One potential influencing factor on a communities' ability to successfully navigate and communicate during times of crisis is their ability to share information and cultivate knowledge from lessons learned (Sellnow & Seeger, 2013). Communication channels critical information to the many stakeholders involved in crises, allowing for the reduction of uncertainty and a prescription of action for stakeholders affected (Sellnow & Seeger, 2013). Beyond sharing information, EDEN has also built an interconnected organization. One way of understating EDEN's ability to organize and share information for crisis preparedness, response, and recovery is through the lens of Communities of Practice theory (CoP) (Iverson & McPhee, 2002; Wenger, 1998). CoP theory explains how people come together with a common goal to participate in knowledge cultivation (Iverson & McPhee, 2002; Iverson & McPhee, 2008; Iverson, 2011; Wenger, 1998). This theory is developed based on assumptions from social learning theory which explains that people exchange information and share knowledge through social processes (Lave & Wenger, 1991).

Using Wenger's (1998) theoretical framework of CoP, I examine how EDEN applies knowledge sharing practices in the context of crisis development. EDEN was chosen as a case study for their communicative enactment of CoP in the context of crisis communication. By understanding how EDEN enacts CoP, I provide a deeper understanding of how they cultivate knowledge during pre-crisis, crisis, and post-crisis stages of development. I offer insights on how CoPs may be an effective resource for continued engagement throughout the stages of crisis development, particularly in the context of crisis, natural disaster, and biosecurity. The intention

of this research is to reveal how CoP's, such as EDEN, play a role in crisis prevention, response, and recovery by examining their communicative enactment of three CoP characteristics: mutual engagement, negotiation of a joint enterprise, and shared repertoire (Iverson & McPhee, 2002; Wenger, 1998).

This research begins with an overview of EDEN as a CoP situated within the larger Cooperative Extension system. Following, I review the literature of crisis communication within the three stage model of crisis development and examine the progression of CoP theory. Next, I provide details guiding the research questions and qualitative methods of semi-structured interviews and participant observation. Lastly, I offer an outline of results and a discussion of three key findings that address theory contribution, practice, and future research for CoP theory and crisis communication.

Literature Review

Extension Disaster Education Network (EDEN)

To fully understand EDEN it is important to understand the history of USDA Cooperative Extension. In 1860, “farmers made up 58% of the labor force” (United States Department of Agriculture - Agriculture Research Service (USDA-ARS), 2019, p. 1). During this time, President Lincoln determined the need to strengthen agricultural research and support for farmers around the country. In doing so, he established Land Grant universities that are provided federal funding for food and agriculture research and outreach in every established state. These institutions are now formally known as 1862 Land Grant universities. The Land Grant universities drastically improved farmers ability to increase quality of production and gain access to valued agricultural research. However, this system was not inclusive of all citizens (USDA-ARS), 2019).

In 1890, African Americans petitioned to the USDA that they should have access to the same opportunities and resources as white citizens. In doing so, a new tier of Land Grant universities were established to include African American citizens at “historically black universities” (USDA National Institute of Food and Agriculture, 2019, p.1). These universities were granted USDA federal funding during a point in history where segregation was still prevalent in the south of the United States. Now, these Land Grant universities are known as 1892 universities. On a similar note, 1994 land grant institutions were established to include Native American universities on tribal land. Additionally, in 1996 Sea Grant institutions were established for Extension and research for coastal environments, marine areas, and the great lakes (USDA, 2019). In sum, there are now four categories of Land Grant institutions that are referred to by their year of establishment (1862, 1890, 1994, 1996).

USDA Extension is the outreach component of the Land Grant system that was designed to provide farmers with research-based information and support in every county of every state in the United States of America. Extension agents foster relationships with communities by working directly with farmers and by living in the community. USDA Extension is unique because they are a federally funded program that has access to local, state, and national resources, while embedded and connected to local communities. This is one reason Extension agents took on the role of disaster relief during the 1993 floods of the Mississippi. Local agents had access to state and national resources. Furthermore, local Extension agents have established pre-crisis relationships in the community. Through these preexisting relations, Extension agents have a more comprehensive grasp of the needs of the community than that of outside support such as the Federal Emergency Management Agency (FEMA) or the Red Cross. As one EDEN member describes, “When it comes in time of disaster, we don't only engage and are a trusted

source, but we have access to expertise. We can facilitate things. We have the relationships built at a local level which allows us to connect state and national resources quickly. So, EDEN is really Extension on Redbull.” (Julie, participant interviewee). The reach of EDEN is an important detail to consider in understanding their success in sharing information through crisis communication as an active, longstanding, and geographically dispersed CoP.

As described on the official EDEN (2019) webpage, the major lessons learned from the original organizing efforts in response to the 1993 floods are as follows:

- Citizens looked to Extension for resources and expertise related to disaster recovery, mitigation, and preparedness, but individual states lacked the capacity, research-based information, or expertise to address the multitude of issues/needs resulting from a major disaster such as this.
- The emergency management community discovered that the Land-Grant system could be a tremendous asset.
- Extension had a role related to emergency management, but faculty were not prepared technically prepared to play that role.
- There was a need for more coordination and standardization of recovery recommendations by the various emergency response agencies.
- The impacted states lacked the capacity and resources to effectively deal with the magnitude of requests for information, expertise, recommendations, technical assistance, community planning, recovery issues, ect.

This list illustrates the need for EDEN and the evolution of their organizing efforts. EDEN membership is completely voluntary. Institutions, rather than individuals, are EDEN members. Institution representatives serve as delegates with one person serving as a point of contact for each institution (EDEN, 2019). As such, each EDEN member holds positions within the Land Grant system and choose to join the network freely. In other words, EDEN is situated within the formal Land Grant system but operates outside of formal agreements and responsibilities outlined at a national level. As described earlier, EDEN is longstanding CoP with 25 years of organizational history. They started as four Extension agents from four different states, and now

include membership from 42 out of 112 Land Grant institutions across the United States (EDEN, 2019).

Crisis Communication

Crises are almost always unexpected events (Ulmer et al., 2019). To distinguish between troubling events and crises, Hermann (1963) identified three characteristics separating crises from other unpleasant occurrences including surprise, threat, and short response time. The characteristic of surprise suggest that crises differ from other unpleasant events because they come at an unexpected time with a level of intensity that is beyond expectations. (Herman, 1963; Sellnow & Seeger, 2013; Ulmer et al., 2019). Such conditions distinguish crises from other unpleasant events. For example, the National Oceanic and Atmospheric Administration (NOAA) identifies the months between August and October as hurricane season for specific regions of the United States. By nature, hurricanes are destructive and powerful storms that bring strong winds, flooding, and heavy rainfall. Despite the destruction associated with hurricanes, not all hurricanes are categorized as a crisis. Modern technological advancements in satellites allow for specialists to predict the severity and location of impact. In other words, hurricanes require a short response time and pose an immediate threat but are often lacking in the condition of surprise for all to be considered a crisis.

As described by Sellnow & Seeger, (2013), “crises involve a radical departure from the status quo and violation of general assumptions and expectations, disrupting the “normal” and limiting the ability to anticipate and predict” (p. 6). Threat, the second characteristic of crises, states that, “all crises create threatening circumstances that reach beyond typical problems” (Ullmer et al. 2019 p. 6). Threats can affect financial security, physical and psychological wellbeing of stakeholders, and the environment. For example, in 2013 the porcine epidemic

diarrhea virus (PEDv) was first reported in the United States causing high mortality rates in pigs and piglets with an extreme economic impact for the pork industry (Neumann et al., 2015; Sellnow et al., 2019). An estimated 8 million pigs died within the first year of PEDv, at a rate of about 100,000 pig deaths each week, resulting in an economic loss of more than 1.8 billion dollars for the swine industry (Neumann, et al., 2015). The financial and physical threat of PEDv was partially a result of not having a vaccine or established communication channels to prescribe a course of action to stakeholders (Sellnow et al., 2019). Whether financial, physical, or social; threat is the measure of loss significance in a crisis.

The last characteristic of crises is short response time. The threatening nature of crises means they must be addressed quickly. Effective communication must immediately follow the crisis to reduce the inherent uncertainty involved in crises (Sellnow & Seeger, 2013; Ulmer et al., 2019). This can be difficult as voices of authority do not always have adequate information to provide immediately following a crisis. Again, consider the PEDv outbreak in the swine industry. Veterinarians and animal scientists did not expect the disease to spread as quickly and widely as it did. Simultaneously, veterinarians and animal scientists needed to work quickly to control the spread of PEDv by providing consistent and accurate information to the affected stakeholders (Sellnow et al., 2019). Setting the tone for response and recovery efforts is key in reducing uncertainty and panic. One of the most frustrating and distressing aspects of a crisis is the urgency of a situation, which stems from the fact that crises come as a surprise and introduce extreme threat (Hermann, 1963).

Knowing how to respond to a crisis can be a daunting task. One advantage EDEN members have as crisis communicators is the ability to share diverse expertise and engage in practice, lessons learned, and stories of the success and failure from their individual practice that

informs the greater network of how best to communicate and prepare for looming crises. Furthermore, EDEN offers a support system for network members to call into action during a crisis. The lessons learned from working through a crisis are then shared back to the overall network, providing insight and expertise to others that may experience a similar situation. In sum, EDEN is in constant motion. Members participate in knowledge creation as a CoP throughout the stages of crisis development that will be explored below.

Three Stage Model of Crisis Development

Dimensions of time are significant factors in the development of a crisis. According to Sellnow & Seeger (2013) the nature of crises are, “time-ordered, time-dependent, and time-sensitive” (p.38). One way to approach crisis research is through a chronological lens of development that indicates the incubation, onset, and resolution of a crisis (Sellnow & Seeger, 2013). The three stage model of crisis development explains that crises evolve over time and are grouped into three categories: pre-crisis, crisis, and post-crisis (Sellnow & Seeger, 2013; Seeger, 2006; Ulmer et al., 2019). This widely used framework for crisis analysis provides a lens for understanding specific stage related details and communication approaches to an evolving crisis (Coombs, 2012; Coombs, 2007; Sellnow & Seeger, 2013).

An assumption of this model is that the stages of crises are not static. Rather, the three stages of crises are cyclical modes that allow for affected persons to make sense and characterize the evolution of events. As such, the three stages of crisis development establish distinct categories for response practitioners to prevent, respond, and recover through collective sensemaking in a fostered situated learning environment (Lave & Wenger, 1991; Sellnow & Seeger, 2013). Furthermore, lessons on producing effective crisis communication are described for the distinguished stages of crisis development and will be explored in the following sections

(Sandman, 2006; Seeger, 2006; Ulmer et al., 2019). Because EDEN members are crisis communicators, they engage in pre-crisis, crisis, and post-crisis communication. As such, the three stage model of crisis development is helpful to categorize the context in which EDEN members share information to prepare for, respond, and recovery from crises.

Pre-crisis. The pre-crisis stage of crisis development is often referred to as the incubation stage of crisis (Sellnow & Seeger, 2013; Ulmer et al., 2019). In other words, the pre-crisis stage involves conditions that can cause or aid in the development of a crisis. During the pre-crisis stage, critical details are judged for their level of threat and risk to the status quo. This stage typically includes warning signs that may lead to a potential crisis. Such warning signs can be long-standing or short-lived. For example, discourse related to the impact of climate change on agriculture production emerged with significance in the early 1970's. In 2018, the United States lost \$14 billion dollars from the impact of draughts on agriculture production (USDA, 2019). The long-standing debate of climate change impact is an example of a long-standing warning sign that lead to an economic crisis. When left unattended, warning signs develop into a crisis.

Communication channels critical information in the pre-crisis stage in the form of risk messages, warning messages of a specific and pending threat, preparation for the public in the case of a disaster or crisis (Sandman, 2006; Seeger, 2006). Risk communication is a distinguishing feature of the pre-crisis stage because it focuses on what may happen, not what already happened (Sellnow & Seeger, 2013). It is an interactive process of information exchange and opinion that socially constitutes perceived threat of a situation. Simply stated, risk communication is designed to avert a crisis in the pre-crisis stage rather than to work through a crisis (Sellnow & Seeger, 2013; Venette, 2006; Ulmer et al, 2019;). According to Seeger (2006), it is critical to develop partnerships and distinguished primary and secondary relationships during

the pre-crisis stage. Having established partnerships before a crisis allows for communication to flow to affected stakeholders during the onset, response, and recovery of a crisis (Sellnow & Seeger, 2013). Simply stated, it is important to know who to inform during a crisis and that process is more effective when relationships are already in place. EDEN is an exemplar of an organization that has these established partnerships and relationships at a local, state, and national level through the Land Grant system and within the EDEN network.

Crisis. The crisis stage is defined by the onset of a specific triggering event that causes disruption, recognition, and requires rapid response time (Sellnow & Seeger, 2013). The triggering event can be quick to occur, inducing a sudden potential for harm, like an explosion at a chemical plant (Ulmer et al., 2019). Other triggering events in the crisis stage can be slower to develop, like the slow progression of climate change impact on human, plant, and animal life. Such an event often causes panic, confusion, emotional turbulence, and a great deal of uncertainty (Sellnow & Seeger, 2013). Uncertainty can involve having lack of knowledge of a given circumstance or when previous conceptions of reality have little to do with the future (Makridakis & Taleb, 2009; Ulmer et al., 2019).

Every crisis carries with it some level of uncertainty. Ulmer and colleagues (2019) define uncertainty as, “the inability to determine the present and predict the future” (p.73). Those that experience a crisis are often not in positions of having agency to move from a place of uncertainty to a place of clarity (Sellnow & Seeger, 2013). Crisis induced uncertainty is quite different than the type of uncertainty people experience on a daily basis. Taleb (2010) explains that crises often create epistemological and ontological uncertainty. In definition, epistemological uncertainty as, “the lack of knowledge we have following a crisis” (p.133).

Communication during the crisis stage requires a rapid response that channels critical information to reduce uncertainty and promote self-efficacy to those affected (Ulmer et al., 2019; Seeger, 2006; Sandman, 2006; Venette, 2006). This is a delicate process. Self-efficacy messages provide people with information on how they can reduce harm to themselves through prescribed action (Sellnow et al., 2019). Literature in effective crisis communication claims that it is important to acknowledge uncertainty of an event and to avoid certain and absolute statements (Seeger, 2006; Ulmer et al., 2019). In other words, it is important to reduce uncertainty but to openly acknowledge areas where there is clear ambiguity and what is uncertain.

Post-crisis. The post crisis stage begins when, “the harm, drama, confusion, and uncertainty of the crisis dissipates and some sense of order is re-established” (Sellnow & Seeger, 2013, p. 32). Chronologically, post-crisis occurs after the crisis is resolved. This stage of crisis development is preoccupied with making sense of what happened to prepare for future events. Investigations often take place during the post-crisis stage to seek explanations, assign blame or responsibility, determine specific lessons learned to improve risk communication, and create linkages to pre-crisis activities.

Ontological uncertainty typically occurs in the post crisis-stage and refers to a type of uncertainty where, “the future has little or no relationship to the past” (Taleb, 2010, p.133). Since crisis events disrupt existing realities, “new normals” are developed through retrospective sensemaking (Weick, 1979, p. 15). The new normal following crises are highly uncertain because people’s beliefs about how the world operates change dramatically (Seeger & Sellnow, 2016; Taleb, 2010; Ulmer et al, 2019). As such, the process of post-crisis sense making is communicatively enacted through individual and collective narratives (Seeger & Sellnow, 2016).

Lessons learned through reflection on success and failure of a crisis can lead to renewal (Ulmer et al., 2019). For example, Sellnow and colleagues (2017) examine how six earthquake scientist and one public official failed to communicate the threat of earthquake to a population in L' Aquila, Italy that resulted in 309 deaths, 1500 injuries, and 65,000 people displaced from their homes. The failed risk communication by experts was an organizational crisis for the professional network of operational earthquake forecasting (OEF). This study revealed how OEF engaged in organizational renewal following a crisis through the lens of CoP theory (Sellnow et al., 2017). As such, the researchers found that organizational renewal was accomplished through changing the practice of OEF through mutual engagement, negotiation of a joint enterprise, and shared repertoires. This is an interesting contribution to the field of crisis communication because it connects how engaging in communicative practices post-crisis lead to developing different measures for both pre-crisis and crisis stages. Moreover, this example illustrates the advantage of using CoP theory to understand the engaging acts of sense making in all stages of crises by affected stakeholders.

In sum, crises develop over time and require specific strategic communicative approaches to prevent, respond, and recover (Sandman, 2006; Sellnow et al., 2017; Seeger & Sellnow, 2016; Seeger, 2006; Sellnow & Seeger, 2013; Venette, 2006; Ulmer et al., 2019). What EDEN accomplishes in crisis communication is engaging and interactive. One way to understand their interactions and success in crisis communication is through the lens of CoP theory. EDEN members are active in all three stages of crisis development, how they engage through those stages is of direct interest for this research. I contend that CoP theory will illuminate the strengths of EDEN as crisis communicators and will reveal how engaging in an ongoing practice

is essential to prevention, response, and recovery from crises. Moving forward, I will review literature regarding the origins and conceptual development of CoP theory.

Social Learning Theory

CoP originates from learning theory concepts. Historically, learning has been viewed as an individual process (Bandura & Albert, 1977). Using foundations of social learning theory, Wenger (1998), challenged the framework of individual learning by introducing a conceptual framework that describes the ways people learn and grow together as a CoP. To fully understand CoP, it is important to explore the evolution of the concept. I will begin with a brief explanation of social learning theory and early interpretations of CoP.

The root of social learning theory suggests humans are fundamentally social beings and that knowledge is acquired through social observation and participation, which constitutes meaning making as a social process (Bandura & Albert, 1977). In other words, social learning theorists argue that individuals can learn more effectively through social observation and community engagement compared to individual trial and error. For example, Graves (1992) highlights the importance of social relationships between experts/ teachers and learners/ students in her research. Graves (1992), found that when teachers took on an equalized role as facilitator and co-participant with students, participation for the entire group was maximized. Furthermore, social learning theorists suggest that the foundation of knowledge sharing occurs at a community level as members engage in practice (Bandura & Albert, 1977; Graves, 1992).

The term “learning community” emerged from social learning theory research and is depicted as a social structure for individuals to share ideas that support community activities and help individuals make sense of new knowledge (Graves, 1992; Lave & Wenger, 1991). Learning communities require mutual respect and trust to foster interaction and social relationships

(Wenger, 1996). In other words, one cannot simply label a group of people as a learning community without having such identifiable functions. In addition, Lave & Wenger (1991) expanded concepts of learning communities with the concept of “situated learning” (p.40). Through observation of knowledge exchange between newcomers and experts in an organizational setting, Lave & Wenger (1991) claim that learning is situated with authentic activity, culture, and context. Furthermore, they argue that social interaction and collaboration are essential to situated learning. Assumptions from learning communities and situated learning construct the foundation for the conceptual framework for CoP. This early work broadly defined CoPs as people from the same discipline who share information with others that exist on a continuum of expertise (Lave & Wenger, 1991).

Communities of Practice (CoP).

In 1998, Wenger introduced a refined concept of CoP that focused on the intersection of socialization and learning, from a case study on how medical claims clerks interact to accomplish routine office work through participation. This analysis found that the medical claims clerks developed a sense of community from interactive learning in the practice of processing claims. Wenger describes CoPs as pervasive social groupings that engage in knowledge sharing practices and are formed and sustained through a common interest (Wenger, 1998). As Iverson (2011) describes, CoP’s “can be seen as a group that shares similar skills or vocation and can refer to groups of people with divergent skills and possible different departments within an organization that are formed to deal with a complex problem or to generate new knowledge” (p.35).

The conceptual framework of CoP, as introduced by Wenger (1998), focused on the tangible existence of a CoP through identifiable characteristics with practice as a center piece

and mutual engagement, negotiation of a joint enterprise, and shared repertoires as supporting decor. The tangible existence perception of CoP facilitated the progression of the concept as a palpable mechanism that can be constructed as an organizational tool for knowledge management. (Wenger, McDermott, & Snyder, 2002). Wenger and colleagues (2002) argued that organizations can cultivate prosperous CoPs by, “valuing the learning they do, making time and other resources available for their work, encouraging participation, and removing barriers. Creating such a context involves integrating communities in the organization” (p.13). In other words, organizations cannot simply create a CoP without actively adjusting the existing environment to foster a knowledge sharing organizational ecology.

The idea of building a CoP triggered an array of disciplines and practitioners to adopt the CoP concept as a model for creating, managing, and facilitating knowledge sharing practices within and outside organization boundaries (Kuhn, 2002). For example, Li et al., (2009) used CoP concepts as an approach to understand the inter-disciplinary obstacles in collaborations for leadership in applied health research and care in healthcare organizations. In essence, they suggested using CoP as a framework to facilitate the forced formation of an interdisciplinary group of health care professionals. Scholars of translational ecology used the CoP concept as a model for to proposing long-term relationships between researchers and practitioners in “prioritizing the understanding of social systems and decision contexts to address complex natural resource management issues” (Lawson, et al., 2017, p.569). The Food and Agriculture Organization of the United Nations launched a 4-year online CoP to facilitate discussion regarding post-harvest food loss and waste among experts and stakeholders (FAO, 2019). Each of these examples illustrate how the CoP concept is used by a variety of disciplines and practitioners to build knowledge sharing spaces. While CoP is widely used and studied by an

array of disciplines, it does not explain how knowledge is co-created through social practice. Next, I will examine the contributions of CoP theory as it related to this research.

CoP Theory

Early work evaluating and analyzing CoP's focused on the "thingness" that makes a group or collective a CoP yet lacked understanding in how knowledge is accomplished. Iverson and McPhee (2002) move beyond definitional labels of what is and is not a CoP by illuminating, "connections and processes of knowledge based on a model that centers communication in knowledge management" (p. 264). Their research marks the development of CoP theory, which approaches the question of how knowledge is accomplished through communicative processes. As such CoP theory, "identifies important communicative processes of enacting knowledge, provides a mechanism for articulating differences between different CoP's, and is useful for understanding how ways in which knowledge is communicatively enacted change organizational knowledge contexts" (Iverson, 2011, p. 41).

This is an important contribution to the field of knowledge management. As mentioned above, many disciplines and practitioners attempt to construct CoPs, yet the existing literature does not provide enough information on how exactly that is accomplished. According to Iverson (2011), "by viewing the enactment of knowledge as occurring through communicative engagement in the knowledge practices every day, the CoP is constituted at the same time knowledge is accomplished" (p. 49). Understanding the communicative enactment of knowledge offers insight as to how the engaging nature of practice constitutes community (Iverson, 2011; Kuhn & Jackson, 2008).

Furthermore, Wenger (1998) contends that CoPs are distinguished by three identifiable interactions including: mutual engagement, negotiation of a joint enterprise, and shared

repertoire. Wenger (1998) used these elements as identifiers of a CoP. Iverson & McPhee (2008) expanded the conceptual function of mutual engagement, negotiation of a joint enterprise, and shared repertoire to identify how knowledge is communicatively derived from practice. As such, mutual engagement, negotiation of a joint enterprise, and shared repertoires are at the center of CoP theory. Each element is understood as communicative practices that are entrenched to activity, which co-creates knowledge among CoP members (Iverson, 2011; Iverson & McPhee, 2002, 2008). In other words, communicative processes constitute the presence of a CoP and contribute to understanding organizational knowledge creation (Iverson, 2011). Another contribution of CoP theory is that it reveals the diverse nature of a given CoPs preferred knowledge enactment style (Iverson, 2011; Iverson & McPhee, 2008). Not all CoPs will engage the same way or share practices the same way; it is important to understand the variance of such interactions of individual CoP's to understand how best to cultivate a sustainable CoP environment.

This research situates a perspective in line with Iverson & McPhee (2008) that, “mutual engagement, shared repertoire, and negotiation of a joint enterprise deserve primary attention as communication processes that are the main contributors to community creation of knowledge dynamics” (p. 179). The following sections will review the core assumptions of CoP and CoP theory derived from both Wenger's (1998) perspective and Iverson and McPhee's (2002, 2008) perspective. First, I will examine the nature of practice as knowledge in community. Next, I will follow with a review of mutual engagement, negotiation of a joint enterprise, and shared repertoires.

Practice. The social process of meaning making and co-creation of knowledge are the core assumptions of CoP theory (Wenger, 1998). Specifically, that meaning is created through

the social process of practice in the form of participation and reification. Simply stated, practice involves the engagement in a given activity. Meaning created through participation can be described in two ways. First, individual members of a community of practice participate in learning and abstract meaning from their own experience. Second, when individual members participate, they bring meaning to the community of practice from their previous learning experiences. In other words, participation creates meaning for community of practice members through an ebb and flow exchange; sometimes abstracting meaning from interaction and sometimes giving meaning through interaction.

On the other hand, reification is the meaning making process where members of a communities of practice create tangible artifacts and repertoires that are developed from engagement. For example, lesson plans, common laws, mission statements, and sustainability reports are all items that are developed through organizational engagement. Wenger describes reification as, “giving form to our experience by producing objects that congeal this experience into ‘thingness’.” (p. 58). Participation and reification are not mutually exclusive. Rather, they are in continuous connection, each influencing the other in a complimentary fashion. In other words, “together, participation and reification form a duality that interacts in the process of knowing” (Iverson & McPhee, 2002, p.260). Practice through participation and reification provide a way to explain the activity EDEN members engage in meaning making when they collaborate and share information on how to effectively prepare, respond, and recover from crises. To understand the unique phenomena of how knowledge is communicatively co-created within a CoP, I present defining characteristics of mutual engagement, negotiation of a joint enterprise, and shared repertoires.

Mutual Engagement. First, mutual engagement is the collaborative practice that allows members to offer insights, adopt practices, and share frustrations. It represents how shared meaning is created through interaction, establishing relationships, and negotiating meaning of their actions. Such interactions can take place in person or electronically (Vast, 2004). As a result, mutual engagement creates a sense of who is and is not a member of a given CoP. Boundaries are established to reinforce what knowledge is exchanged and who can participate. For example, an interdisciplinary team of health care providers were identified as a CoP by having elements of mutual engagement, negotiation of a joint enterprise, and shared repertoires (Iedema et al., 2005; Le May, 2009). These health care providers communicatively engaged with each other about patient care to achieve the goal of improving the health of their patients. The patient and patient's family were not included as a CoP member, rather they were the context of why the CoP existed. As such, this an example of how mutual engagement in the form of knowledge exchange about patient care created membership boundaries through interaction.

Mutual engagement looks beyond how often people engage, rather mutual engagement focuses on the meaningfulness of such engagements and common actions of members (Iverson & McPhee 2002, 2008; Wenger, 1998). Furthermore, Vaast (2004) contended the appropriation of new technologies allow for remote members of a community to mutually engage with others outside their given locale as a network of practice (NoP). In other words, virtual CoP's all for remote mutual engagement of members that utilizes intranets as a vehicle for working towards a mutual goal (Ardichvili, 2008; Vaast, 2004; Watburg et al., 2006) To summarize, the communicative interaction of mutual engagement in CoP's "must be about or through the practices they share in common" (Iverson, 2011, p.39).

EDEN is a voluntary network of Extension professionals that have continued meaningful engagements since the 1993 flood in the Mississippi River Basin. Understanding the significance and communicative enactment of their mutual engagement will provide insight as to what forms of mutual engagement are important for members in achieving their mission of “reduce the impact of disasters through research-based education” (EDEN, 2019). As such, I offer my first research question:

RQ1: How does mutual engagement allow EDEN members to meet their organizational mission?

Negotiation of a Joint Enterprise. The decision-making process in a CoP occurs through negotiation of joint enterprise (Wenger, 1998). Furthermore, the joint enterprise is represented in a CoP through a negotiated response to a shared situation and the capacity for members to influence a collective set of practices (Iverson & McPhee, 2002, 2008; Wenger, 1998). Simply stated, a joint enterprise is a common goal or set of tasks that CoP members negotiate and assign meaning to. This is a communicative process that occurs through practice (Iverson, 2011). The joint enterprise of a CoP is never static, instead it is in constant development. As Wenger (1998) explains, “The enterprise is never fully determined by an outside mandate, by a prescription, or by an individual participant... Because members produce a practice to deal with what they understand to be their enterprise, their practice as it unfolds belongs to the community in a fundamental sense” (p.80). Consider the health care CoP mentioned above. If this CoP decided to adjust their scope of practice to include a palliative care approach, they would need to adjust the tasks and knowledge shared to include the care of both the patient and their family. Such a change would require CoP members to negotiate meaning of

a new joint enterprise that moves from a strictly patient centered care approach to an approach that includes the family as a unit.

Additionally, Iverson (2011) explains that, “negotiation of the enterprise includes negotiation of what counts as knowledge, such as what is defined as mainstream or fringe, or not knowledge” (p.41). Similarly, Iverson and McPhee (2008) further explain that negotiation of a joint enterprise is an “opportunity to negotiate the practice in which members can engage” (p. 196). EDEN members come together around the general goal to, “reduce the impact of disasters through research-based education” (EDEN, 2019). However, all members have a different expertise and work in regional areas that have far different threats and perceived risk of disaster or crisis. For example, some EDEN members come from Sea Grant institutions that are primarily focused with coastal concerns, yet they form strong relationships and collaborations with EDEN members from land-locked states. This triggers curiosity as to how EDEN members negotiate who gets to engage in what practices, what counts as knowledge, and how a common goal is formed? The diversified expertise of EDEN membership prompts my second research question:

RQ2: How do EDEN members negotiate a joint enterprise?

Shared Repertoire. The last distinguishing feature of CoP’s are the shared repertoires that they create. Shared repertoires are described as how CoP members understand and express meaning through common language, resources, and mutual understanding of best practices (Wenger, 1998). In other words, specialized knowledge such as terminology, stories, documents skills, and activities are created and communicatively understood. Specifically, shared repertoires are created through participation and reification, which support learning in a community (Iverson & McPhee, 2002; Wenger, 1998). CoP members use specific language or jargon that is adopted through participation and is reified when the spoken takes tangible form.

Shared repertoires emerge from mutual engagement (Iverson & McPhee, 2008). Like mutual engagement, shared repertoires can define boundaries and act as symbol of membership within a CoP (Iverson & McPhee, 2002, 2008; Iverson, 2011; Wenger, 1998). Yet, it is not just knowing the language that signifies membership and the presence of a CoP. As Iverson & McPhee (2008) explain, “The communicative perspective developed here reminds us that knowledge of a repertoire is not a static entity, so simply having the same repertoire as other members is not sufficient to constitute a CoP. Rather, the sharing process and engagement in practice enacts the repertoire while also enacting the CoP” (p. 195). Often EDEN members presented themselves and their experiences through storytelling. At the annual EDEN meeting the story of the 1993 Mississippi River Basin floods was re-told as a way of making sense of the collaborative origins of EDEN. That same story is highlighted on their website. Through interviews and observation, I witnessed the use of similar phrasing when talking about the success of EDEN. These preliminary examples guide my final research question:

RQ3: How do EDEN members develop a shared repertoire?

Crises are a constant in our reality. With devastating natural disasters and novel disease outbreaks, response practitioners must have strong communication procedures in place to prevent, respond, and recover from a given situation. EDEN is an exemplar of an organization that embraces collective knowledge and practice in their work. While EDEN members participate in all stages of crisis development at varied levels, they are in constant participation with their communicative enactment of knowledge. How such knowledge is co-created is of direct interest to this research. Simply stated, crisis is the context and CoP theory is the focal for understanding the success of EDEN as crisis communicators throughout the three stages of crisis development.

Chapter 2: Methods

I use qualitative methods to garner data in a case study approach for understanding how EDEN communicatively enacts knowledge as crisis communicators. Specifically, this research will focus on the three elements of CoP theory (mutual engagement, negotiation of a joint enterprise, and shared repositories) as it relates to how EDEN members enact knowledge in the context of crisis preparedness, response, and recovery. Furthermore, I strive to meet the eight criteria of quality for qualitative research by using Tracy's (2010) pedagogical model. As Tracy (2010) states, "high quality qualitative methodological research is marked by (a) worthy topic, (b) rich rigor, (c) sincerity, (d) credibility, (e) resonance, (f) significant contribution, (g) ethics, and (h) meaningful coherence." (p. 839). In the following chapter, I review the qualitative methodology for this research including interviews and participant observation (Lindlof & Taylor, 2019; Fine et al., 2009). An open and axial coding approach is used to analyze the data for the three elements of CoP theory (DeCuir-Gunby et al., 2011). Additionally, I review the processes used for transcription of interviews and developing fieldnotes (Lindlof & Taylor, 2019; Jackson, 2016). Lastly, I will outline my approach to ensure reliability and validity of the analysis (Creswell & Miller, 2000).

Procedures

To recruit participants, I received approval from the EDEN executive planning committee to attend EDEN's annual meeting in Spokane, WA as a researcher of the organization. In addition, I received approval to announce my research in person throughout the three-day meeting. Participant observation and semi-structured interviews are the primary methodologies I use for this research (Lindlof and Taylor, 2019). Additionally, a short demographic survey was completed by participants in conjunction with the informed consent form. The short

demographic survey provides basic information about participants that included education, location, years involved with EDEN, and racial ethnicity. Upon approval from the University of Montana Institutional Review Board (IRB), I conducted technologically mediated interviews and in person interviews. In person interviews took place at the 2019 Annual EDEN Meeting at the Historic Davenport Hotel in Spokane, WA over a three-day period. I continued to conduct technologically mediated interviews using Zoom, a teleconference platform, five months after the conference.

To take part in this study, participants self-identified the requirements of being over the age of 18 years old and having active involvement with EDEN. Participants self-identified these requirements on the informed consent form before the interview took place. As such, the sample of this study qualifies as a theoretical-construct sample, meaning participants met the characteristics for being members of EDEN as a CoP (Tracy, 2013).

Interviews. Interviews are a method of inquiry particularly well suited for this study; they allow for the “understanding of people’s experience, knowledge, and worldviews” (Lindloff & Taylor, 2019, p. 222). For this research, interviews provided a means of extracting data from participants that revealed stories, accounts, and explanations of how EDEN members participate in a shared practice that supports both individual and collective efforts to effectively communicate throughout the three stages of crisis development. The interview process followed a semi-structured sequence, meaning participants were posed broad questions and specific follow up questions were asked regarding their unique experience with EDEN. Furthermore, I developed the semi- structured interview guide to prompt participants to express how they achieve the goals

of EDEN through mutual engagement, negotiation of a joint enterprise, and shared repertoires.

Examples of questions from the semi-structured interview guide include:

- What do you do to accomplish the goals of EDEN?
- What makes EDEN successful?
- Who do you interact with at EDEN?
- What have you learned from being an EDEN member?
- What do you wish you could accomplish?
- How do you share information with others involved with EDEN?

These interviews were not static between participants, instead questions were tailored to capture data from their individual experience in effort to answer each research questions (Tracy, 2013; Lindlof & Taylor, 2019). For example, one participant spoke freely and told stories for 2 hours without prompted questions. In contrast, some participants needed prompts to expand and elaborate on short, but significant, responses.

I conducted a total of 13 interviews, seven interviews occurred in-person at the Annual EDEN Meeting while six interviews occurred within five months of the meeting using Zoom. For the purpose of confidentiality and anonymity, all names of participants were changed, including the names of people participants referred to. Length of interviews range between 26 minutes and 2.5 hours for a total of 12 hours of interview time. To capture data from the in-person interviews, a mobile recording device was used as well as brief handwritten notes. Technologically mediated interviews were recorded using Zoom. Recordings started after the consent form and demographic survey were complete.

In person and technologically mediated interviews were transcribed using Temi, a web-based transcription service that uses a voice recognition system. Specifically, I uploaded audio recordings to Temi and within minutes I had access to an error filled transcript. Temi allows for manual audio playback and editing within the platform, which I used for every transcript.

Although a transcription service was used, 6 hours were dedicated to adjusting errors in the transcriptions. A total of 150 single spaced pages were transcribed from the recorded interviews.

Participant observation. Field research is a method of qualitative inquiry well suited for this study because it allows for researchers to “become increasingly skilled at performing routine practices in ways that are honored by other group members and creates increasingly precise and relevant accounts of this experience”. (Lindlof & Taylor, 2019, p. 176). I specifically used the participate-observer method of field research which provides the researcher the opportunity to observe, participate, and reflect on an experience (Tracy, 2013). This method was used to understand the communicative enactment of mutual engagement, negotiation of a joint enterprise, and shared repertoires through participant observation at the 2019 annual EDEN meeting in Spokane, WA.

A total of 25 hours of observation occurred during the Annual EDEN Meeting. I took on the role of participant observer, meaning I participated in the events of the annual meeting (Gold, 1958; Lindlof & Taylor, 2019; Tracy, 2013). This included the welcome reception, breakfast and lunch during the annual meeting, table-top exercises, development workshops, a happy hour/ game night, networking sessions, an EDEN newcomers session, and business meetings. These activities swayed between having a social purpose and a professional purpose.

Furthermore, I acted as both a passive and active participant observer depending on the context of the engagement. For example, I actively engaged as a participant observer during purely social situations such as the welcome reception and happy hour/ game night. Conversely, I acted as a passive participant observer during business meetings and tabletop exercises. In other words, I was active when I interacted with participants “as much-and as openly- as possible” (Lindlof & Taylor, 2019, p.188) and was passive when trying to “operate as anonymously and unobtrusively as possible” (Lindlof & Taylor, 2019 p. 187).

Fieldnotes were used to document my observations at the Annual EDEN Meeting. While at the meeting I used the scratch note method during both active and passive observation (Lindlof & Taylor, 2019; Fine et al., 2009). This process involved taking preliminary notes at the first available moment. For example, while acting as a passive participant observer I was able to take notes openly and freely during business meetings, the annual review, and accolade acknowledgements. In contrast, while acting as an active participant observer I was required to wait for an appropriate moment to covertly document my observations. For example, the happy hour/ game night was a social event where I witnessed many interesting enactments of CoP theory. However, it was not socially appropriate for me to pull out my notebook while engaging with others. In this case, I waited until the end of the evening to record my observations in the refuge of my hotel room. All scratch notes were elaborated at the end of each night at the Annual EDEN Meeting. Furthermore, within a week of the meeting I compared notes with my direct

supervisor of this project who was also present at the meeting. As a result, 25 single spaced, 12 pt. font, Times New Roman, pages of fieldnotes were derived from the 25 hours of observation.

For this research, field work provided a means for direct witnessing of communicative acts that were also discussed in the individual interviews. By using two qualitative methods, I engaged in the procedure of triangulation as defined by Creswell and Miller (2010) “where researchers search for convergence among multiple and different sources of information to form themes and categories of study” (p. 126). As such, the two qualitative methods used in this research function as a form of validity and reliability by revealing consistencies in the data from both observation and interviews.

Data Analysis

To guide my coding, I followed the process described by DeCuir-Gunby et al., (2011) by using both open and axial coding strategies for both transcribed interviews and fieldnotes. First, I used open coding, or categorical coding (Tracy, 2013; Lindloff and Taylor, 2019). More specifically, I used Wenger’s (1998) elements of CoP (mutual engagement, negotiation of a joint enterprise, and shared repertoire) as a deceptive framework to answer RQ1, RQ2, and RQ3. Additionally, I used the three-stage model of crisis development (pre- crisis, crisis, and post-crisis) to understand the context in which the enactment of CoP theory occurred. Next, I followed an axial coding process by reviewing the transcripts and fieldnotes for specific acts that were linked to the phenomenon described in CoP theory (Lindloff & Taylor, 2019). These labeled descriptions revealed reoccurring themes that illuminate relationships between the larger open coded categories, as well as unique findings that did not fit into the open code categories. I

engaged in the coding process using both Temi and hard copy, print versions of the transcripts and fieldnotes. I used the tools of color coding and note taking on the Temi platform for specific statements in both the open and axial coding process.

Chapter 3: Results

This chapter outlines the findings from data collected through participant observation and semi-structured interviews. To understand the success of EDEN, I examined how members communicatively enact CoP theory in the context of crisis communication. What follows is a case study analysis of EDEN as a successful, longstanding, and geographical dispersed CoP that works in the realm of crisis communication. This research focused on three guiding questions regarding the core concepts of CoP theory (mutual engagement, negotiation of a joint enterprise, and shared repertoire). The findings of the research questions go beyond determining EDEN as a CoP; rather they attempt to illustrate what makes EDEN a successful CoP and how that relates to crisis communication. Furthermore, there are interesting findings that did not fit into the core concepts of CoP theory. The findings will be discussed in detail throughout this chapter and in the discussion.

Participants from the semi-structured interviews included seven men and six women. Membership affiliated with EDEN ranged between six months and 22 years. All participants claimed higher education with six having a master's degree, six having a Ph.D., and one participant in the process of her Ph.D. Furthermore, participants reflected the diverse regional participation with EDEN including participation from the southeast, northeast, southwest, mountain west, Midwest, and west coast. Three of the thirteen participants represented 1890

institutions (historically black Land Grant), nine participants represented 1862 institutions (original Land Grant), and one participant represented a 1996 institution (Sea Grant).

Participants reported a diverse response to a preliminary question asking participants for examples of crises they have experienced in their work as EDEN members. Some of the responses include hurricanes, tornadoes, animal disease outbreaks, biohazards, water contamination, wildfire, draught, climate change mitigation, flood, severe snowstorms. Many of the crises that EDEN members work through are categorized largely as natural disasters. However, the damaging result of such natural disasters are described as leading to secondary crises. For example, one participant reflects on a snowstorm that dropped 39 inches of snow in a mountain west state in 24-hours. The snow landed in a high desert, range land area and was followed by high winds that caused 10-foot drifts. The storm forced cattle to attempt to find shelter and many escaped the storm by moving toward lowlands near rivers and municipal water sources. Unfortunately, the storm killed 30,700 cattle. The large-scale death of the cows lead to two secondary crisis concerns; first, regarding contaminated water sources as the carcasses started to decay, and second the problem of disposing of the 30,700 cattle carcasses using a method safe for the public. This example forced new relationships and collaborations to mitigate and respond to the dynamics this snowstorm caused.

Mutual Engagement

Mutual engagement is the collaborative practice that represents how shared meaning is created through interaction, establishing relationships, and negotiating meaning of actions (Wenger, 1998). Mutual engagement looks beyond how often people engage, rather mutual engagement focuses on the meaningfulness of such engagements and common actions of

members (Iverson & McPhee, 2002; Wenger, 1998). Meaning created through engagement is described in two ways. First, individual members of a community of practice participate in learning and abstract meaning making from their own experience. Second, when individual members participate they bring meaning to the community of practice from their previous learning experiences (Iverson McPhee, 2011; Wenger, 1998).

It is important to note that mutual engagement is influenced by the joint enterprise of a CoP which is in constant negotiation (Iverson and McPhee, 2011; Sellnow et al.,2017; Wenger, 1998). EDEN members engage to meet their organizational mission “to reduce the impact of disasters through research-based education by enhancing each community’s ability to prepare for, prevent, mitigate, and recover from crises” (EDEN, 2019). To understand how EDEN members achieve their organizational mission, I pose the following research question:

RQ1: How does mutual engagement allow EDEN members to meet their organizational mission?

The mission of EDEN is focused on enhancing a community’s ability to handle a crisis. It is interesting to observe that the mission does not directly state that collaboration between states helps achieve localized efforts to “prepare for, prevent, mitigate, and recover from crises” (EDEN, 2019). As such, it is important to understand how the engagements of EDEN members help localized communities. Analysis of the data reveal three themes for mutual engagement and how they meet the goals of EDEN including information seeking/ resource sharing, collaboration, and informal relationship building.

In this section I will start with broad findings and move to the three specific themes regarding mutual engagement from the data. EDEN members engage through an array of

mediums throughout the stages of crisis development. Some of these mediums include in person meetings with the entire membership, in person small group meetings, phone conferences, texting, emailing, and web portal interaction. Since EDEN members represent Land Grant institutions, some states have more than one EDEN representative. Overall, EDEN members are dispersed throughout the country with large geographic distance between them. This is a unique distancing for a CoP, particularly related to EDEN's long-term interaction.

Information seeking/ resource sharing. EDEN members are responsible for preparing their state and local communities for crises. One way they meet their organizational mission is through information seeking communicative engagement and resource sharing with fellow EDEN members. Consider the following example of how specific insider information helped an EDEN member with a situation she had no experience or guidance with. Riley was new to her position in a Western State. One winter, large snow accumulation in the mountains caused spring floods in rivers lined with rocky cliffs forcing rattlesnakes out of their natural habitat and onto ranchlands. As she describes,

“Rattlesnakes were flooded out and were taking shelter in barns, killing cows and were a real threat to people working on ranches. So, I called my friend I met through EDEN who works in Wyoming and is cattle guy to ask what I should do about the snakes. And he said, haven't you ever heard of snake boards? I said no, and he explained to me that you just put boards around the barns and cover them in glue. The snakes will be caught before reaching the barns. I tried it, and it was wildly successful. Not only did that information help with the rattlesnake problem but it gave me “street cred” with the ranching community who doesn't take kindly to outsiders. The power [of EDEN] was supporting each other with materials and expertise.”

This unique situation illustrates how the strategy of “snake boards” would not have been imaginable if she did not have the connection to the EDEN member with this specific insight. Furthermore, this narrative offers insight as to how EDEN members mutually engage when a crisis is active. Crises are distinguished from other unpleasant occurrences by having elements of surprise, threat, and short response time (Herman, 1963). EDEN members meet their organizational mission by drawing upon contacts from the network to respond to localized crises. Another example of how EDEN members mutually engage through information seeking and resource sharing in an active crisis is as follows,

“During the time of the Red River Valley floods EDEN didn't have a website or even a really good way to share resources yet. So, I was madly emailing Dan in Missouri for help, asking what do we do? Do you have anything [resources / information/ handouts] on this? And during this time EDEN proved itself so quickly to me. I wouldn't have even known who to contact in another state for some of those issues if it hadn't been for what had just recently become EDEN and it was so helpful. We didn't have time to create everything. We just used Missouri's information and took the ball and ran with it.”

It is well documented from the data that many EDEN members contribute their knowledge sharing practices as success in achieving their organizational mission. The existence of EDEN is justified as a worthy group who readily shares information and acts as a central crisis and disaster information sharing organization with online platforms and in-person support. Sean shared a story about how he helped a neighboring state,

“Well back to the flooding, and this is good example of how materials can be useful from

other members. So, I have a young educator, not much older than you, that calls and he says, Sean, you're the disaster guy. I hate that phrase, but they call because they have a need. So, I said, what's going on? And he goes, the river is flooding real bad. I said, I saw that you had high water. He said, we've got four or five feet coming over homes. And he said, people are asking me if we have information on sandbagging. I said give me 20 minutes, I go online to the EDEN website and pull fact sheets [on sandbagging] that were created by Betsy and Paul from Midwest flooding.” (Sean, Interviewee)

He goes on to explain that he not only digitized the fact sheets and emailed them to his northern neighbor state, but he also printed off 200 hard copies and had an employee drive hard copies to hand deliver them 150 miles away. Sean further explains, “That was the whole goal [of EDEN] to provide resources, expertise and materials usable by local educators when they needed them.” This story reflects the sense of urgency and need for information and resources in times of crises.

The examples above show how neighboring or regional EDEN members mutually engage to share information and resources. Moreover, it is interesting to note that EDEN members form collaborations and connections with members who experience very different types of crises in their region. For example, an EDEN member from a Southeast coastal State reached out to an EDEN member in a land-locked Midwestern state for guidance in developing crisis preparedness plans. She describes this collaboration in the following statement,

“So, when Irma came in 2017, we were caught unprepared. I'll just be totally honest with you. We were caught unprepared. I had just gotten on as the EDEN contact and a lot of our materials were out of date. I mean the information was good, but you know, we still

had clip art figures on there. They were just out of date. One of the big things that we learned from Irma was the preparedness. There were times when we didn't know where some of our extension folks were and we are one of the States that still has extension offices and all of our counties. So learning from Irma, we decided to, to institute coop plans [continuation of operation plans] for each one of our 67 counties. Since we didn't have coop plans in place, I put a call out to EDEN and said, "Hey, we is interested in instituting coop plans for every one of our counties, have other people done this before? And Kelsey Strummer from [Midwestern state] sent me her template and we changed it up a little bit, but we use the template she sent us and it fit our needs the best. It was a great template. It worked really well. So absolutely there has been times that I reached out to [Midwestern states] for advice or guidance." (EDEN interviewee from a Southeastern coastal state)

EDEN's origin story centers the power of mutual engagement from Extension agents from neighboring states in 1993 floods of the Mississippi River. The story above indicates EDEN's ability to evolve over time and connect Extension agents across the country who have varied expertise and knowledge regarding crises preparedness, response, and recovery. Furthermore, this narrative illustrates how information seeking/ resource sharing occur along the crises development stage. This particular State experienced a crisis, and during the post-crisis stage they were able to reflect on what needed to be improved for the future. With that reflection of post-crisis recovery, they reached out to the EDEN network for guidance and material in developing pre-crisis mitigation plans. This concept will be elaborated with the presentation of results for negotiation of a joint enterprise.

The examples of mutual engagement as information seeking and resource sharing offer insights as to how a CoP engages in participation and reification as part of their core practice (Iverson & McPhee, 2011; Wenger, 1998). The documents shared in the Red River Valley floods and the continuation of operation plans shared after hurricane Irma are examples of how reification is communicatively enacted by creating tangible artifacts through mutual engagement.

Collaboration. There are indicators of collaboration as a means of mutual engagement in the previous section however, collaboration engagements are coded for distinct functionality of working together as a means of accomplishing the organizational mission of EDEN compared to information seek/ resource sharing engagement. This shift in engagement emphasizes working within EDEN and with outside sources that separate EDEN from traditional Extension operations.

Two types of collaborations were identified as specific forms of engagement. The first is when EDEN members offer support when one specific member is in crisis. I refer to this as a *singular* collaboration. For example, Tim recalls:

“If you need a resource, they’ll find it. Steve [EDEN chair for a midwestern University] called one night when power outages and tornadoes hit Southern Mississippi and said, we gotta help Rob. He's got five towns with no communication. We knew people that were with the communications industry. So, we called them. The next day, about two in the afternoon, this guy comes up to Robs office [in Mississippi] and says he has two semis with 16 cellular stand alone systems [delivered from Colorado]. So, Rob took them over to the five communities and put them at fire stations and courthouses. And instantly those towns had emergency communication. That's EDEN.”

This example of singular collaboration illustrates the length and willingness EDEN members will take when a fellow member is in need. Here, collaboration reflects the action of working within EDEN and with outside connections to create support. This is an example of how EDEN members support others that are facing an active crisis while not having a crisis themselves. One advantage EDEN members have as crisis communicators is the ability to share information and engage in practice, lessons learned, and stories of the success and failure from their individual practice or resource connections.

The second type of collaborative engagement is when EDEN members work together to meet a mutual goal. I refer to this type of collaborative engagement as *dual purpose* collaboration. For example, two States that are geographically close in proximity are working together to develop pre-crisis relationships and mitigation strategies to prevent an outbreak of African swine fever (ASF). ASF is one of the most devastating infectious diseases for pigs (Abworo et al., 2017; Penrith et al., 2007; Sanches-Cordon et al., 2018). It has the potential to spread rapidly, and since there is no vaccine to treat the virus eradicating all animals in contact with infected animals is the only way to minimize spreading of this disease. This means mass slaughtering or culling of pig populations and wild boars (Costard et al., 2009). As such coordination and collaboration is central to mitigate spread and prepare for response.

ASF has yet to reach the shores of North and South American. EDEN members from Texas and Colorado report coordinating for the preparation of ASF in the United States with the following,

“The threat of the African swine fever, hitting Texas, is a unique thing that other States may not have. We have a large feral hog population, so they're going to impact the whole state. We have major swine producing areas are up in the panhandle of Texas. And so

from a commercial standpoint, we work with them [commercial producers]. In fact, next week we've got a exercise with AFS that we're doing across that part of the state working with the local pork producers there. So, you know, we'll help distribute information. And one of the things that we've been thinking about is how do we communicate to anybody that might be messing with feral hogs. Like hunters or trappers. So if they see a hog that might have symptoms or those kinds of things, how and who they would contact. Riley [EDEN member from neighboring state] and I have gotten to know each other very closely because of African swine fever. Both of us had been representing our extension services in this, coalition for epidemiology. We share ideas, kind of think about how could we prepare our extension agents to deliver information , to communicate. How do we practice, do some exercises, those kinds of things.”

Highly contagious disease require local, regional, and national coordination to prevent and mitigate the spread. As such, disease outbreak reflects a dual purpose motivation of collaborative mutual engagement. Another example dual purpose collaborative engagement for EDEN members was expressed when Morgan discussed budget cuts for Land Grant institutions. She reflects,

“You know, resources are becoming more limited, and if faculty are expected to do more with less, it becomes a capacity issue. And so I always viewed EDEN as a way to extend extension. I am working with many other regional Midwestern states to collectively come together and write a best practices document for communities and thinking about how we might build and activate community organizations in a disaster. So I think it's really helped, I think from a resource management standpoint. Being able to work with other

people, to get that expertise as needed and to be able to work on some of these bigger projects.”

Here we see how the dual purpose collaborative engagements act as a tool for EDEN members to respond to budget cuts through collaboration. Furthermore this example also illustrates how EDEN members engage through collaboration to meet the mission of “to reduce the impact of disasters through research-based education by enhancing each community’s ability to prepare for, prevent, mitigate, and recover from crises” (EDEN, 2019).

Informal relationship building. The last theme I identify for mutual engagement allows EDEN members to reach their organizational mission through informal relationship building. This particular theme is identified from field notes through participant observation at the annual EDEN meeting and supported with responses from interviewees. The purpose of this type of engagement does not directly support the organizational mission of EDEN, however I argue that building informal relationships strengthens EDENs ability to collaborate and share information or resources.

The annual EDEN meeting reserved distinct time and space for networking and social gathering. Specifically, the types of informal relationship building engagements included, pre-conference tour, welcome reception, breakfast, lunch, and game night/ happy hour/ movie night. When I asked an interviewee about having these designated social times in the annual meeting schedule he said, “It's not a conference. It's a meeting. It's a sharing time.” (Doug, participant interviewee). In other words, it is of value to EDEN members to engage with each other in an informal setting, such as the designated welcome reception and “game night/ happy hour”.

The “game night/ happy hour” was located in a suite at the hotel where the annual meeting was held. EDEN members shared beer, wine, and food while socializing. One EDEN

member brought apples, cheese, and ice cream produced by students from his Land Grant institution. Another group of six tested a game developed for crisis response and educating youth. A movie played in the background, some invested in the screening, others not as much. Towards the end of the evening 5 pizzas were ordered and everyone pitched in to pay for the dinner. In total there were roughly 20 people at the “game night/ happy hour”. The participant observation reveals the value that EDEN members place on knowing who is in the network and the importance of connecting in person.

After recording field notes on informal relationship building, I asked participants about who they connect with and how they connect with others. Josh, an EDEN member of 15 years, reflects, “I try to connect with someone I have never met before, some of the newbies”. He further explained that he feels it is important to make new people feel welcome and that gathering in an informal environment helps break some barriers in getting to know new EDEN members.

Furthermore, participants voiced value on creating space for informal gatherings during the interview process. Stacey, an EDEN member of 20 years, states, “There needs to be more chit chat or time to talk. Building those personal relationships are key.” In other words, there needs to be time during the in-person yearly meeting where people can get to know each other outside the formalities of conferencing. Another participant reflected that,

“Having that network of people, It is super important. I know it's expensive and it's hard to get people to pay for everyone to come together and meet, but I think at the end of the day you actually end up saving money. Because you're actually making that connection. I think when we [come together face to face], it leads to bigger and better things and at the end of the day. I think we spend less money and less time because we know who to talk to. You

know who to connect with. You know them personally. You've seen their face.” (participant interviewee).

The general consensus among veteran EDEN members is that the network works best when people know who to connect with.

Negotiation of a joint enterprise

A joint enterprise is a common goal or set of tasks that CoP members negotiate and assign meaning to (Wenger, 1998). This is a communicative process that occurs through a joint effort in practice (Iverson, 2011). The joint enterprise of a CoP is never static, instead it is in constant development. As Wenger (1998) explains,

“The enterprise is never fully determined by an outside mandate, by a prescription, or by an individual participant... Because members produce a practice to deal with what they understand to be their enterprise, their practice as it unfolds belongs to the community in a fundamental sense” (p.80).

This is an important feature of a CoP that EDEN enacts. This section will answer my second research question:

RQ2: How do EDEN members negotiate a joint enterprise?

Negotiation of a joint enterprise is the constant and continuous shaping of what it means to accomplish EDEN’s organizational mission. EDEN’s 25 years of existence show their ability to adapt and change to emerging crises caused by climate change, disease outbreak, and erratic weather. This is illustrative of their work in crisis communication and response. EDEN was formally established after the success of Extension collaboration from neighboring Midwestern states during the 1993 flood of the Mississippi River Basin. The organizational mission of EDEN

represents their joint enterprise. The main finding of this research questions reveals that EDEN's joint enterprise is unwavering. They place their mission as the central purpose for their existence. However, they communicatively enact and negotiate that enterprise through mutual engagement. This section will reveal how EDEN members use their joint enterprise to place value on the existence of EDEN as a CoP.

The theme of how EDEN members negotiate their joint enterprise is by valuing the diverse expertise and experience from the EDEN members. In other words, the organization itself is not separate from the joint enterprise. The mission of EDEN is the pillar of their joint enterprise. The reason EDEN continues to exist is based on the need for inter-state collaboration in times of crises. Much of the data that supports how EDEN members negotiate a joint enterprise is drawn from specific examples discussed in both the mutual engagement and shared repertoire sections of results. It is important to note that the data did not reveal distinct negotiation of what the goal of EDEN is, rather the data suggests that the goals of EDEN are reinforced through shared repertoires and the type of engagement they practice.

For example, EDEN members support their joint enterprise of collaboration through diversified expertise and knowledge in the common phrases express and stories shared between EDEN members. Nine out of the 13 participants directly refer to the phrase, "no need to recreate the wheel" when referring to drawing on resources and expertise developed in states outside their operation (see table 1. for specific examples). In other words, EDEN members value the resources they can draw upon through connections at EDEN. They prefer to use tools already created than creating something new and mobilizing the diverse expertise within the network. As Steve simply states, "the big thing is if I ever get a tsunami in middle of Wyoming, I know five people, I can call them say, how do I deal with this?". As Stacy describes, "if we don't have

extension information on a specific topic, the first place that I'm going to are other extension organizations. It's that kind of common understanding and knowledge that we're all under the same mission of helping people make informed decisions [during crises]." These direct quotes illustrate how EDEN members place value on collaboration through consistent communication about why EDEN functions as a successful network and knowledge center for crises. This is how EDEN members negotiate their joint enterprise.

The crisis literature suggests that there are best practices that can be followed throughout the crisis development stage (Seeger, 2006). EDEN members center this concept when negotiating their joint enterprise. As Melissa states, "Even though all disasters are very different, some of those foundations, especially some of those proactive steps that you can take are the same. I've definitely looked to folks in other areas that deal with major tornadoes and major flooding to help us develop the tools that we need to deal with major hurricanes." In other words, the joint enterprise is directly tied to EDEN's mission, and is carried out communicatively through mutual engagement and shared repertoires.

To summarize, EDEN has not swayed from their original mission developed 25 years ago. Their joint enterprise is to collaborate and draw upon diverse expertise throughout the country to prevent, respond, and recovery from crises. Their joint enterprise is supported through the practice of mutual engagement and reified through their shared repertoires. EDEN is unique in that it is an organization that is not separate from their mission. Their mission to, "reduce the impact of disaster through research based education" is accomplished by valuing inter-state collaboration.

Shared Repertoire

The last distinguishing feature of CoP's are the shared repertoires that they curate. Shared repertoires are described as how CoP members understand and express meaning through common language, resources, and mutual understanding of best practices (Iverson & McPhee, 2002; Wenger, 1998). In other words, specialized knowledge such as terminology, stories, documents, skills, and activities are created and communicatively understood. To understanding how knowledge is enacted through repertoire I pose my last research question:

RQ3: How do EDEN members develop a shared repertoire?

Two main categories are abstracted from the data for shared repertoires. First, the category of common language and phrases used by EDEN members. Second, the mode of communication such as narratives is identified as how EDEN members express their repertoires. This section will elaborate on the two categories.

Common language. Shared repertoires can define boundaries and act as symbol of membership within a CoP (Wenger, 1998; Iverson & McPhee, 2002, 2008; Iverson, 2011). EDEN members use specific language or jargon that is adopted through participation and is reified when the spoken takes tangible form (Wenger, 1998). The phrase, "no need to recreate the wheel" is well documented in the data. Similarly, the frequently occurring phrase "there is a lot that I don't know" is used by EDEN members when describing what they have learned being a member of the network. Examples of both commonly expressed phrases can be found in Table 1.

Table 1

Examples of Common Phrases

<p>“No need to recreate the wheel”</p>	<p>“There is a lot that I don’t know”</p>
<p>Q: What do you value about EDEN?</p> <p>A: Well, EDEN is where this information is already available, you don't really have to reinvent the wheel. So when a disaster strikes you just get on the website or get on the list, serve, send some information out and you have instant, instant information and replies on whatever your needs are. (Jabril, participant interviewee)</p>	<p>Q: What have you learned from being an EDEN member?</p> <p>A: That there is a lot of information that I don't know, but just, just really just some unique and new neat things for us programming and really how to integrate disaster preparedness into my program. You know, just coming to EDEN and just hearing some innovative things that other, EDEN professionals are doing in other States, you know, and taking those things back to my state and incorporating them in my programs. And of course, you know, the network, I mean, you have from one spectrum to the other and it's this very unique. (Jason, participant interviewee).</p>
<p>Q: What do you try to accomplish with EDEN?</p> <p>A: So when there's gaps in the information that we have, I try to build a relationship here [at the annual meeting] so I can build a network to individuals that already have that information that we might be needing, and not have to reinvent the wheel. (Jeff, participant interviewee)</p>	<p>Q: What have you learned from being involved with EDE?</p> <p>A: Oh man. I've learned there is a lot I did not know. I learned not just the technical stuff. I mean I wouldn't know how to clean mold. I wouldn't know any of the technical stuff. But also I've learned how a very diverse group who is passionate about a subject can really do amazing things. I mean we've won national awards is EDEN from USDA and, and really been recognized and it's all because of that diversity of people and the passion of people. (Debra, participant interviewee)</p>
<p>Q: How do you share information with EDEN members?</p> <p>A: I mean, yeah, everybody could do a family preparedness, but why should they have to take the time to create this from scratch? We've got it. You tweak it to suit your situation and go for it. No need to recreate the wheel. (Sandra, participant interviewee)</p>	<p>Q: What have you learned from being involved with EDEN?</p> <p>A: Okay. So, I've seen and learned more about the types of disasters people face, the types of challenges it takes to overcome them. And I've learned, I really just don't know a lot. Heck, I learned mostly how much, I don't know. (Frank, participant interviewee)</p>

Overall, the use of these common phrases by EDEN members provides support for the joint enterprise of the network as providing crisis , prevention, response, and recovery through collaboration. I argue that the frequent occurrence of both common phrases reinforces the joint enterprise and places value on collaborations to prevent, respond, and recover from crises. One of the main reasons EDEN is a longstanding CoP is their ability to foster collaborations and information sharing practices between Land Grant institutions by connecting Extension agents across the country to diverse expertise. Furthermore, these phrases are used to reinforce the purpose of EDEN as a diverse set of experts that help one another throughout the stages of crisis development. A unique characteristic of EDEN is that members have different backgrounds and expertise, all of which contribute to crisis prevention, response, and recovery in their own way. Particularly, the reoccurring phrase “there is a lot that I don’t know” emphasizes the importance of support and collaboration with EDEN members throughout the country in crisis response.

Stories. EDEN members frequently use narratives as a form of communication to share repertoire, they are a storytelling organization. Narratives are a mode of communication that allow individuals and collectives to make sense of the world around them (Fisher, 1984; Boje, 1995). It is well established that narratives are a communicative form used by organizations to make sense of both their internal and external reality (Weick, 1995) In other words, narratives are a sensemaking tool for organizations. Many of the direct quotes in previous sections are examples of stories that are told and re-told about the success of EDEN. These stories recount for how EDEN members respond to crises together. I argue that these stories reflect the informal relationship building aspects of mutual engagement.

Furthermore, it is interesting to note that many of the interviewees were suggested from others telling the stories of another EDEN member. Consider the following example from the field notes:

At the welcome reception I met many people who were interested in my research. As I engaged with an individual EDEN member, they would tell me a story about how another EDEN member handled an interesting situation. They would then take me over to that particular EDEN member and introduce me. From there, I listened to more stories and secured commitment for an interview. The stories that were shared between members connected each other, and myself, to the network at large. In a way, these shared stories were a vehicle that resembled an informal snowball sampling for this research. In addition, the shared stories reinforce EDEN's mission and placed value in the success of working between states to share resources in times of crisis (Fieldnotes, welcome reception).

I observed stories being used as a way of connecting EDEN members with each other and to the mission of the network. This narrative sensemaking illustrates the constitutive function of retelling others stories. In other words, the narratives shared between EDEN members is an example of how they share repertoires while providing support for the organized existence of their joint enterprise. As such, the narratives are a mode of communication that acts as a knowledge vehicle, providing verbal evidence of success through collaboration.

The act of sharing stories as a form of shared repertoires that reinforce the joint enterprise of EDEN is reflected upon in the following statement from Steve, "While you'll hear people say, Steve has stories, but here's the thing, the stories are 9 times out of 10 not just mine, it's recounting actual things that this group has done together." Overall stories reify the joint

enterprise through the practice sharing stories from one's own experience and retelling stories from others experience. In sum, the stories shared by EDEN members provides evidence for how they achieve their mission through collaboration.

Social Support

During the data analysis process, I found a frequently occurring communication patterned that did not fit in the core concepts of CoP theory. When interviewees were asked who they engage with they described the act of reaching out when others are in crisis. This involved calling, texting, or emailing the EDEN member in an active crisis. In the first round of open coding I grouped this act of reaching into mutual engagement. However, after examining these communication patterns through axial coding, I found that the act of reaching out functioned as a form of social support that is different than current literature regarding mutual engagement in CoP theory.

Social support is described by communication researchers Albrecht, Burleson and Sarason (1992), as the "corner stone for quality human life" (p.149). Although the definition of social support differs across disciplines, it is usually constructed to include both social structure, such as social networks, and function, such as the effect experienced from support given (Burleson & Mortenson, 2003; Burleson & Planalp, 2000; Burleson, 1985; Uchino, 2004). Social support is "fundamentally communicative in character and consists of both verbal and nonverbal behaviors intended to provide or seek help" (MacGeorge et al., 2011, p. 323). Additionally, social support involves an individual's perceptions of availability of support, actual support messages received, frequency of social contact, quantity of social relationships, and who is included within the social network (Knapp & Daly, 2011). Furthermore, social support includes the exchange of emotional and instrumental behaviors between support provider and support

recipient (Burleson, 2003). This means that social support is often experienced as a dyadic exchange involving a person giving support and a person receiving support.

Social support is commonly regarded by scholars to have four functions identified as: emotional, informational, tangible, and belonging (Albrecht & Adelman, 1987; Burleson & Planalp, 2000; MacGeorge et al., 2011; Uchino, 2004) *Emotional support* is helping someone feel better about an upsetting or stressful situation. It is described as having the goal to alleviate or lessen emotional distress to others. Emotional support often functions in the form of comforting messages that recognize and legitimize what the other is feeling (MacGeorge et al., 2011). *Informational support* is described as the process of giving advice or guidance to an individual experiencing a life stressor. The function of informational support can help and individual reduce distress by helping manage uncertainty about a given situation (Burleson & Planalp, 2000; Uchino, 2004). *Tangible support* is the material exchange of time, resources, or assistance. This material exchange is identified as resources such as food, money, or shelter. Tangible support functions as a physical form of social support compared to a verbal exchange with emotional or informational support (Albrecht & Adelman, 1987; Uchino, 2004). *Belonging support* offers a sense of affiliation and connection to others through shared activity. It is the act of doing something with another person (Uchino, 2004).

Three of the four functions of social support were identified in the data (emotional, informational, and tangible). Consider the following story,

So I'll, I'll tell you for us, when we were looking at both [hurricane] Irma and Michael. My extension Dean and I both were getting contact; we were getting emails from so many EDEN folks around the country. Saying, "Hey, we're watching out for y'all". I mean, because of course it's all over the media that we are about to be hit by a huge

hurricane. You know, [they would say] “we're here”, “we're watching this for y'all”, “stay safe”, you know, “is there anything they can do”? A lot of them would go ahead and send us links to their information. Louisiana was always very good about sharing information and saying things like “we've updated these particular information sources if y'all need them”. So during [hurricane] Michael, George, who's with Mississippi, emailed me and said, “ Hey, do y'all need people?” So he was offering to come across the State line and help with recovery after [Hurricane] Michael. They were offering to literally come and help with recovery and then lots of people reached out to say, “I'm thinking of you, is there anything I can do?” “Is there anything I can help you with?” (Sara, interviewee).

This example clearly highlights the functions of social support as it differs from mutual engagement described in the previous sections. Emotional support was expressed with statements like, “Hey, we're watching out for y'all”, “we're here”, “we're watching this for y'all”, “stay safe”, “is there anything they can do” (Sara interviewee). These messages attempt to help Sara feel better about stressful situation of the large hurricanes that were about to hit her state. Furthermore, EDEN members sent Sara informational resources that were offered as advice or guidance to prepare for the hurricanes and to recovery after the storm had passed. Tangible support was offered when a neighboring EDEN member offered to send extension employees to help respond when the crisis was active.

Furthermore, there was an interesting communicative act of reaching out to EDEN members when they are in a crisis. The act of contacting an EDEN member before they ask for help is an offering of social support. Nine out of the thirteen participants reported making first

contact when they see that another state is experiencing a crisis. As Morgan reflects on the communicative act of social support through reaching out she reflects,

“I think it’s more of a way to let people know, hey we’re here for you. You know, what can we do? I reached out to Kyra in [Midwestern state] when they had their terrible flooding. I just sent her a text and said, “Hey I’m thinking of you, do you need anything? Can I send anything to you via text?” because I knew they weren’t getting a solid internet connection. And she texts me back and says, “ well, I’m surrounded by water right now. I can’t go anywhere or do anything”. So, I think it’s also being able to talk to somebody who knows what being boots on the ground is like in these types of disasters is also helpful. So in addition to sharing resources and possibly sharing people, I think its also a little bit of a mental health help as well.”

One detail of social support involves an individual’s perceptions of availability of support. In this case, EDEN fulfills more than knowledge sharing through the lens of CoP theory. EDEN is a network of professionals that experience work that can be grim, stressful, and complicated. As such, they also form bonds strong enough to offer more than material or informational assistance. The quote above illustrates that the emotional support of knowing you are receiving comforting messages from a person that truly understand what it means to be “boots on the ground” in responding and recovering from a crisis. I argue that for social support to develop amongst EDEN members in this way, informal and personal relationships were developed first. The importance and connection of building informal personal relationships will be elaborated in the discussion section.

Chapter 4 – Discussion

The analysis of this research is based on the preconception that EDEN is an active and longstanding CoP with 25 years of organizational history in the context of crisis prevention, response, and recovery. This final chapter is organized to present three key findings and implications regarding both theory and practice as it relates to CoP theory, social support, and crisis communication. I address how this research yields support for the use of CoP theory as a framework for organizational communication research that strives to understand how knowledge is communicatively co-created through practice. Additionally, I discuss research limitations and future research directions.

CoP

Communicative processes constitute the presence of a CoP and contribute to understanding how organizational knowledge is achieved socially through mutual engagement, negotiation of a joint enterprise, and shared repertoires (Iverson, 2011; Wenger, 1998). CoP theory is useful for understanding and analyzing EDEN as an organization because it offers a framework for identifying specific patterns of engagement. EDEN is an exemplar of a CoP because members participate in achieving their organizational mission through knowledge sharing practices. Specifically, EDEN members prepare for, respond to, and recovery from crises through the practice of collaboration, sharing resources, and telling stories. The variety of CoPs described in literature are vast. For example, Wenger's (1998) original CoP research examined how claims process employees organically developed knowledge sharing practices within a corporate setting. Iverson and McPhee (2008) contributed to the understanding of how CoPs can function differently by comparing how knowledge is communicative enacted by volunteers from a disaster aid and volunteers from the Sonoran Garden Docents. EDEN offers a different insight to the nature of CoPs.

EDEN involves voluntary membership while also functioning as an established and federally recognized organization. In other words, EDEN is a combination of formal organization and informal organizational structures that constitute a CoP. Furthermore, EDEN is a unique CoP because of its longstanding status. Their evolution as a CoP from four Extension agents working together in response to a severe flood to a national network of 42 Land Grant institutions that is formally recognized by the USDA is significant. EDEN maintains longevity by placing a common goal central to their existence. Although EDEN members are dispersed across the United States, they gather yearly while maintaining active engagement at a distance through phone calls, text messages, emails, and conference calls. This illuminates how a CoP balances knowledge in practice through in-person meetings and virtual outreach. As such, EDEN bridges the concept of networks in practice and CoP to be one in the same (Vaast, 2004; Wenger, 1998). Simply stated, CoPs can exist fully online, fully in-person, or a combination of the two. This research reveals that EDEN is an exemplar of a geographically dispersed but longstanding CoP as a result, insights from studying EDEN lead to both theoretical and practical outcomes. Each element of CoP has specific insights to theory and practice that is discussed below.

Mutual Engagement. The data reveals that mutual engagement is central to how EDEN members achieve organizational knowledge. It is through mutual engagement that EDEN members develop repertoires in the form of stories and common language, and how their joint enterprise is continually reinforced. Mutual engagement looks beyond how often people engage (Iverson & McPhee, 2002). The focus on meaningfulness of such engagements and common actions of CoP members is the root of how knowledge is cultivated (Wenger, 1998; Iverson & McPhee 2002; Iverson et al, 2008). By assessing the communicative processes of EDEN, I

identified three significant findings for mutual engagement including information seeking/ resource sharing, collaboration, and informal relationship building.

The findings of information seeking/ resource sharing and collaboration support CoP theory literature because they reveal acts of knowledge creation and exchange while having distinct interaction through collaboration. These specific types of mutual engagement are communicatively enacted around the common practice of crisis communication that EDEN members have in common (Iverson, 2011). The third finding, informal relationship building, offers an interesting insight as to how collaborations are cultivated and information seeking/ resource sharing behaviors are encouraged. The act of creating spaces for EDEN members to meet and develop professional relationships in an informal setting allows them to know who to collaborate with across the country while providing members a platform for future engagement. This finding returns to origins of CoP theory; that humans are fundamentally social beings and that knowledge is acquired through social observation and participation (Bandura and Albert, 1977). My findings support the connection between mutual engagement and the community side of CoP. Specifically, this points to a direct benefit of having events that are generally considered extra or superfluous. These types of informal interactions foster the relational side of CoP theory. Furthermore, this research highlights how these types of interactions are valuable to a CoP. Moreover, this supports the argument that individuals learn more effectively through social observation and community engagement than through individual trial and error (Wenger, 1998).

Furthermore, these findings reveal how knowledge is accomplished through specific practices. As illustrated in chapter three, EDEN members place value on knowing who to connect with and view that as a strength of EDEN. In the words of an EDEN member, “I think we spend less money and less time [by having an annual meeting] because we know who to talk

to. You know who to connect with. You know them personally. You've seen their face.”

(participant interviewee). It is through social connections that EDEN members reach success.

This finding supports organizational communication research on the difference in effectiveness of “know-who” vs. “know- what” networks (Nardi, Whittaker, & Schwarz, 2002). Nardi et al., (2002) found that the individual social networks employees develop within and across their organizational departments proved to be more effective for knowledge sharing than pre-established teams. As such, the researchers observed the significance in fostering social relationships within the workplace to achieve knowledge (Nardi et al., 2002). EDEN is a CoP that shares this same perspective. They intentionally create informal spaces at their annual meeting for members to get to know one another. As a result, they “know-who” to contact for information or resources to prevent a crisis, respond to a crisis, and recovery from a crisis. I argue that informal relationship building activities foster the success EDEN members have in developing collaborations and sharing resources/ and seeking information.

Additionally, the informal relationship building spaces EDEN members create is an example of how the social process of practice is constituted through participation and reification (Iverson & Mcphee, 2008; Wenger, 1998). Members learn the meaning of active participation in EDEN, specifically that EDEN members are enthusiastically encouraged to ask for assistance and offer assistance without hesitation. As a result, EDEN members reify their practice by developing and sharing objects like factsheets and contingency plans. CoP theory is useful in understanding the social learning process of EDEN members and how they make their practices concrete through participation and reification.

As such, this finding offers practical insight for creating a CoP through specific types of mutual engagement. All CoPs will have their own unique characteristics and all CoPs will

operate differently based on their joint enterprise (Iverson & McPhee, 2008). However, I argue that fostering the social is a necessary process to maintain the practice of knowledge co-creation. This involves taking a “know-who” perspective in the creation process of a CoP (Nardi et al., 2002). Once the social is established, knowledge will flow more freely between CoP members because they will know who to connect with.

Negotiation of a Joint Enterprise. The joint enterprise of EDEN is steadfast. They developed their CoP in crisis and with recognition that an inter-state collaboration will result in a comprehensive approach to crisis prevention, response, and recovery across the United States. For 25 years, EDENs mission has remained the same. Their mutual engagement and repertoires have evolved over time, yet their common goal remains central to their knowledge sharing efforts as a CoP. From the data, I qualify that EDEN negotiates their joint enterprise formally. This finding is different than what Wenger (1998) presents in his original CoP research.

EDEN developed a formal organization to accomplish their mutual goal. As such, they formally negotiated their joint enterprise as an organization. Wenger (1998) claims, “the enterprise is never fully determined by an outside mandate, by a prescription, or by an individual participant” (p.80). Wenger (1998) contends that a CoP’s joint enterprise is never static, instead it is in constant development. By formalizing, EDEN appears to defy this perspective by placing permanence to their joint enterprise as the purpose of their engagement. Specifically, EDEN gave structure to their joint enterprise through formal organization (McPhee, 1985). Formalizing as an organization allows EDEN to connect with, draw funding, and be recognized by USDA and embeds itself with the Land Grant system. Doing so allows people to enter the CoP formally and accounts for member turnover as people leave EDEN or retire from their Land Grant positions. For example, at the annual EDEN meeting there is a breakout session for new EDEN members.

This session prompts group discussion on why they joined and offers narratives of how EDEN evolved into a formal CoP.

I contend that EDEN's longstanding existence as a CoP is, in part, is a result of having a clear and specific goal that is mutually accomplished by all members. This finding expands literature regarding how CoPs negotiate their joint enterprise and accounts for the variant capacity of CoPs. Furthermore, this finding offers insight for creating a CoP. As stated, literature suggests that a joint enterprise is, and should be, in constant negotiation. This research suggests that CoPs can have a clear and consistent enterprise and that such consistency strengthens a CoPs capacity to endure the test of time. In practice, CoPs that are crafted or in the early stages of organizing should have a clear and common goal that is negotiated by those involved. EDEN began as an informal collaboration, but emerged as a formal organization, providing it with the advantages of enduring existence, mission, and means to remain into the future.

Shared Repertoires. As CoP members mutually engage, they develop shared repertoires that are both tangible and verbally expressed (Iverson & McPhee, 2008; Wenger, 1998). Through the sharing process, repertoires are communicatively enacted. EDEN has a clear set of terminology, common phrases, documents, and stories that they share in a manner consistent of other CoPS. However, it is the meaning assigned and knowledge derived from the shared repertoires of EDEN members that signify cohesiveness of their joint enterprise, which is communicatively enacted through mutual engagement. By using CoP theory, I identify specific repertoires that make EDEN unique including the common phrases used and their storytelling behavior. These findings support both CoP theory and narratives as a form of organizational sensemaking (Wenger, 1998; Weick,1995).

Shared repertoires establish boundaries within a CoP (Iverson & McPhee, 2002; Wenger, 1998). Common phrases such as “no need to recreate the wheel” and “there is a lot I do not know” are representative of the socialization of EDEN members. The reoccurrence of these common phrases demonstrate knowledge of repertoires and are learned and communicatively enacted through the practice of mutual engagement. Additionally, these phrases point to the need to rely on other EDEN members as a CoP. As detailed in chapter three, the meaning of these common phrases support how EDEN members accomplish their joint enterprise through collaboration and resource sharing. In other words, these common phrases reify their practice by placing value on the diverse set of skills each EDEN member offers the network. This finding supports CoP theory research of Iverson and McPhee (2008) because it is an example that goes beyond identifying if shared repertoires exist. Rather, this finding is an example of how shared repertoires are knowledge in practice that support the common goal of EDEN members.

It is well established that narratives are a communicative form that allow individuals and collectives to make sense of the world around them (Boje, 1995; Weik, 1995; Fisher, 1984). The stories shared in this research illustrate central components of EDEN. A crisis happens, extension agents contact someone within their EDEN network, action is taken in response, reflection on the importance of EDEN is retold. The stories exemplify how practice is accomplished through participation within a CoP. Specifically, these stories emphasized a need to quickly coordinate resources in order to accomplish an effective crisis response. Consider the examples of locating and disposing of cattle in a severe snowstorm, explaining snake boards, and arranging for cell towers after destructive tornadoes. These stories serve a purpose. They are all evidence that participation in telling stories is a learned communicative enactment of EDEN as a CoP. Each story offers a clear narrative of collaboration and resource sharing that explains how

meaning is created through individual and group reflection on EDENs ability to respond to crises. They build the organizational identity of EDEN, provide evidence in how they accomplish their joint enterprise, and support how they mutually engage.

This finding supports how the meaning assigned to shared repertoires is in direct support of a CoPs joint enterprise and how they accomplish their goals through mutual engagement (Iverson, 2011; Iverson & Mcphee, 2008; Iverson Mcphee, 2002; Wenger, 1998). Furthermore, these narratives illuminate central elements that are perceived as important to EDEN as an organization and offer distinctive features that set EDEN apart from other organizations.

Consider the following statement from EDEN member John, “being a part of the network gives you encouragement that makes a difference, because you *hear other good stories you don't typically hear*, when you start hearing it from across the nation and how these problems are solved by people that are doing the same boots on the ground works as you. It's encouragement to keep doing it, to keep being involved”. Lastly, this research supports the wealth of literature on narration as organizational sensemaking and narration as organization identity (Kerby 1997; Boje, 1995; Giddens 1991; Weick, 1995; Fisher, 1984).

Furthermore, the use of common phrases and stories by EDEN members offers practical insight to the process of creating and maintaining an active CoP. At a basic level, it is important to have common language, skills, and documents that CoP members have a mutually understanding around. However, to reinforce the meaning of practice within a CoP it is important that repertoires are established that directly support the joint enterprise. I see this as an abstract process that can be facilitated by reflecting on what works well within a CoP or what the projected outcomes of a CoP are. Doing so will reveal a vision of how a joint enterprise can be

achieved and will result in shared repertoires that are meaningful to the organization's knowledge outcomes.

By applying CoP theory to this research, I identify how knowledge is communicatively enacted within EDEN through mutual engagement, negotiation of a joint enterprise, and shared repertoires. As such, this research offers further support for the use of CoP theory as a framework for organizational communication research. This research also supports CoP theory as method for fostering the social practice of knowledge in an organizational setting. It offers practical insight as to creating and maintaining a CoP through specific engagement strategies as discussed in this section.

Social Support in CoP

Through analysis and observation, I identified an additional finding of social support that builds upon mutual engagement in CoP theory. This finding is beyond the initial goals of this research; however, it reveals how meaningful engagement is co-created through the practice of offering social support. Social support is a communicative process that involves exchange between support provider and support recipient (Burleson & Planalp, 2000; Uchino, 2004). Social support is communicated and enacted by EDEN members and occurs most often when a fellow EDEN member is addressing a in a specific crisis. As discussed in chapter three, the data identified three of the four functions of social support (emotional, informational, and tangible).

The functions of social support provide a framework for understanding how meaningful engagement is cultivated. The functional forms of informational, tangible, and belonging social support fit in the parameters of mutual engagement as it relates to the social process of knowledge creation in CoP theory. For example, the snake board story illustrates how

informational social support accomplished knowledge during a crisis. Tangible social support was identified as sharing resources such as best practices documents, factsheets, and human labor. This relates to how CoP theory accomplishes knowledge through the reification of abstract meaning in physical form. However, emotional support possesses an entirely different outcome and purpose outside of what is currently documented in CoP literature.

Emotional support is defined as helping someone feel better about an upsetting or stressful situation with the goal to alleviate or lessen emotional distress to others. (MacGeorge et al., 2011). Comforting messages such as “hey, we're watching out for y'all”, “we're here”, “we're watching this for y'all”, “stay safe”, “is there anything they can do” (Sara, interviewee) reveal that the purpose of this type of engagement is to make an EDEN member experiencing a crisis feel better about their situation and assuring that they have people who are ready to help if it is needed. This is about availability of support. To summarize the outcome of this specific type of social support Morgan states “I think its also a little bit of a mental health help as well.” Again, this is beyond what CoP theory literature currently describes as communicative processes that achieve knowledge and beyond the belonging component of CoP theory (Iverson, 2011).

Additionally, social support involves an individual's perceptions of availability of support, actual support messages received, frequency of social contact, quantity of social relationships, and who is included within the social network (Knapp & Daly, 2011; Walen & Lachman, 2000). In this case, EDEN fulfills more than knowledge sharing through the lens of CoP theory. EDEN is a network of professionals that experience work that can be grim, stressful, and complicated. As such, they also form bonds strong enough to offer more than material and informational assistance. The distinction is that social support is an example of how mutual engagement is accomplished and offers insight as to the importance of perceived availability of

multiple types of support. As one EDEN member states, “The big thing is, if I ever get a tsunami in the middle of Wyoming, I know five people I can call and ask how to deal with this.” (Steve, participant interviewee). This is an example of how an EDEN member not only knows who to contact in an extraordinary crisis, but assurance that members of the network are available to assist. Furthermore, the act of reaching out when a fellow EDEN member is in crisis explains how EDEN members let others know that they are available. The data reveals that both perceived availability of social support and actually offerings of social support are significant elements to the success of EDEN. As such, this finding demonstrates how EDEN mutually engages to meet their goals by building a strong social network and a strong network of information and expertise.

By adding social support as an outcome, this research expands CoP theory’s understanding of creating organizational knowledge through social practice. I demonstrate the interconnectedness of CoP theory to relational development in organizational learning. Mutual engagement involves the meaningfulness of such engagements. The communicative offering of social support is an example of how knowledge is enacted in a meaningful way. I argue that informal relationship building is an essential first step in the knowledge process of mutual engagement, which allows social support to develop as a common communicative practice between EDEN members. The unique finding of social support as mutual engagement illuminates the importance of building informal personal relationships between CoP members as a strategy for maintaining longevity and acts as a baseline for facilitating meaningful engagements.

EDEN is unique, they are a CoP that engages in crisis prevention, response, and recovery. As such, it makes sense that this longstanding CoP engages in social support as a form of mutual

engagement. Every CoP will have a different joint enterprise that is negotiated and will require different types of engagement. I argue that encouraging meaningful engagement, and thus knowledge creation, can occur through the four functions of social support. Furthermore, future CoP research should examine the presence of social support because it offers insight as to what is applied through mutual engagement. Lastly, social support can be used to better understand the role of belonging and meaningfulness of mutual engagement practices within a CoP.

While not all CoPs will find social support in the mutual engagement of participants, it offers a framework for specific types of engagements that can be created to achieve organizational knowledge. In practice, CoPs can use social support as a framework for fostering specific types of engagement that meet their mutual goals. The following is a summary of how a CoP can use the functions of social support in the practice of creating or maintaining mutual engagement. First, members of a CoP can offer informational support through a personal experience with a given situation they have experienced and overcome that may provide helpful insight to another CoP member. Second, tangible support can be achieved by sharing physical things like documents that have already been created and serve a purpose for the mutual enterprise of a CoP. Third, sharing an activity can create a sense of affiliation and connection between CoP members through belonging support. Lastly, to alleviate or lessen emotional distress, CoP members can offer emotional support in the form of comforting messages like “I’ve been there before” or “I’m here to help if you need it”. I believe these strategies offer insight for creating a sense of reassurance that guidance and expertise is available within a CoP.

CoP and Crisis Communication

This research project emerged from the context of crisis and crisis communication. EDEN is a network of professional crisis communicators and CoP theory allowed me to

understand how members accomplish knowledge throughout the stages of crisis development. Crisis communication theory and practice are heavily intertwined. I reviewed the three-stage model of crisis development as a chronological framework for explaining specific stage related details, communication approaches, and understanding of how crises evolve over time (Sellnow & Seeger, 2013; Ulmer, et al., 2019). Specifically, I used this framework to reveal how EDEN members work together throughout the evolving stages of crisis development as a CoP. An assumption of the three-stage model is that the stages of crises are not static; rather the three stages of crises are cyclical modes that allow for affected persons and organizations to make sense and characterize the evolution of events (Sellnow & Seeger, 2013). This lens offers insight specially how EDEN accomplish their goals by building capabilities for response and developing meaningful relationships. I contend that EDEN is an exemplar of an organization that maintains cohesiveness and connections throughout all stages of crisis development. This research connects CoP theory to crisis communication by demonstrating the ability of CoP's to accomplish knowledge across all stages and across crises for its members. EDEN's consistency and existence allow for that support and knowledge to flow. They are an organization with a general framework for crisis response.

First, it is important to note that Sellnow et al., (2017) use CoP theory as a lens for understanding organizational renewal in the L'Aquila communication crisis. Their findings represent how an operational earthquake forecasting CoP engaged in knowledge sharing practices that resulted in renewal and reliance during the post-crisis stage of development. However, CoP theory has not been applied to crisis communication beyond this example. I offer CoP theory as an organizational tool for accomplishing knowledge sharing practices throughout all stages of crisis development. Moving forward, I provide examples regarding how EDEN

enacts CoP theory throughout the stages of crisis development. Additionally, I offer practical insight for how CoP theory can be used to achieve best practices and establish sustainable relationships in the pre-crisis, crisis, and post-crisis stages of development.

CoP and pre-crisis communication. Established relationships before a crisis is cited as a best practice in the pre-crisis stage of development. (Ulmer et al., 2019, Seeger, 2006). The pre-crisis stage focuses on what may happen and involves risk messages, warning messages of a specific and pending threat, preparation for the public in the case of a disaster or crisis (Sellnow & Seeger, 2013). Having pre-established relationships allows for communication to flow to affected stakeholders before a crisis, during the onset of a crisis, and in response to crisis. As such, the pre-crisis stage is more than just planning for a looming crisis or disaster event. CoP theory explains how those pre-crisis relationships can develop through mutual engagement, negotiation of a joint enterprise, and developing shared repertoires. EDEN has proven success in establishing pre-crisis relationships at a local, state, and national level.

For example, one interviewee shared planning strategies for the potential outbreak of African swine fever with an EDEN member in a neighboring state. This disease is highly contagious, it has no cure, and it has yet to hit North and South America. Because of the highly contagious nature of this disease, it requires coordination at local, state, and national levels. These two EDEN members mutually engage to prepare their community for a potential outbreak through outreach and education. By mutually engaging before an outbreak, these EDEN members establish a joint enterprise of mitigating disease spread and develop specific repertoires regarding disease prevention measures. Furthermore, they are establishing relationships before an outbreak occurs within their local community, state agencies, and between the different states by mutually engaging in collaboration and information sharing.

In doing so, EDEN members are enacting CoP theory in conscious coordination for all stages of crisis development. It is also important to note that this partnership in African swine fever prevention was developed after years of forming both informal and formal relationships at annual EDEN meetings. This example illustrates how CoP theory can be used to develop common language through shared repertoires, a defined community goal of prevention through negotiation of a joint enterprise, which can be achieved through inclusive mutual engagement of primary and secondary stakeholders. As such, this research builds upon literature on how to achieve best practices for pre-crisis communication.

CoP and crisis communication. Many of the stories EDEN members share are reflections from crisis response in action. The essence of these stories highlights the importance of who you know, and who knows you in crisis response. EDEN is an exemplar of an organization that embraces the social significance of knowledge management during a crisis. As reviewed in literature, communication during the crisis stage requires a rapid response that channels critical information to reduce uncertainty and promote self-efficacy to those affected (Seeger, 2006; Ulmer e tal., 2019). This requires knowing who to communicate with, who to contact for support, and is most effective when relationships are established and maintained (Sellnow & Seeger, 2013). CoP theory offers insight as to how EDEN is successful during the crisis stage of development.

Consider the example of the young Extension educator who asked a seasoned EDEN member for information on sandbagging during a severe flood. The pre-established relationships between EDEN members is the reason that information and resources can flow quickly and effectively to an EDEN member responding to crisis. This example shows how EDEN achieves knowledge in both pre-crisis and crisis stages of development and illustrates the fluidity of crisis

communication. As discussed in previous sections, CoP theory explains EDEN members maintain knowledge sharing practices through mutual engagement, negotiation of a joint enterprise, and shared repertoires.

I argue that CoP theory is a tool that can be used achieve best practices in the crisis stage of development. First mutual engagement provides a framework for how to establish relationships and create community knowledge about how to respond during the crisis phase of development. Second, negotiation of a joint enterprise places a common goal as the central support to pre-established relations and allows for a clear and consistent approach to community crisis response within and between organizations. Lastly, shared repertoires that are developed through mutual engagement provide response practitioners with common language and processes for crisis response. Doing so could prevent the “fly-in –fly out” response to crisis where one organization “flies in” to respond and “flies out” without establishing future partnerships or contingency plans. EDEN offers insight to the success of pre-established relationships in crisis response and this research showcases how they maintain those relationships through the communicative enactment of CoP theory. In practice, organizations in crisis can evaluate their mutual engagement, the repertoire they share, and the joint enterprise that allows them to sustain a good crisis response. In summary, this research builds upon literature on how to achieve best practices for crisis communication (Seeger, 2006).

CoP as post-crisis communication. Post-crisis communication is concerned with making sense of what happened to prepare for future events (Ulmer et al., 2019; Sellnow & Seeger, 2013; Seeger, 2006). This is where lessons learned are transformed into prevention and response plans for future crises. This stage of crisis development requires maintenance of knowledge through maintenance of relationships. CoP theory explains how knowledge and relationships are

maintained after a crisis. EDEN is an excellent example of a CoP that embraces recovery sensemaking through knowledge sharing practices to prepare for future crises.

For example, recall the EDEN member who was not prepared for a hurricane and reflected on what did not work well, in effort to improve prevention, response, and recovery for future hurricanes. In doing so, she decided to implement statewide continuation of operation plans as a preventative measure for the next hurricane. She reached out the all EDEN members for suggestions and templates for continuation of operation plans. An EDEN member from a midwestern state offered her templates and her plans for implementation, which turned out to be helpful and successful when the next hurricane hit. This example illustrates how EDEN members mutually engage in post-crisis sensemaking to prepare for future events as a collective. CoP theory illuminates how knowledge is achieved and relationships are maintained post-crisis for pre-crisis prevention.

First, the pre-established relationships with EDEN provide this member a resource of expert knowledge throughout the country. The act of seeking information is an example of how knowledge is achieved through mutual engagement. Second, the successful use of materials that were offered supports the maintenance of these knowledge sharing relationships EDEN members form. In this case, CoP theory explains how knowledge is achieved in the post-crisis stage of development. Furthermore, this is an example of how knowledge is central and fluid throughout the stages of crisis development. It was through reflection and connection that a new set of practices were established. As such, CoP theory can provide response practitioner with a general guide of how to maintain mutual engagement as a community exits the crisis stage and moves toward a stage of shared knowledge and understanding of what happened, to prepare for future events. This is about building capacity for crisis responders and maintain both knowledge and

connection through the lens of CoP theory. As a result, this research builds upon literature for how to achieve best practices in the post-crisis stage of development.

I see knowledge management as the centerpiece to crisis communication. Knowledge is crisis communication about the certain and uncertain. It is about how to prepare for crises by sharing information and developing relationships. EDEN members have a wealth of organizational knowledge that provides them with the ability to prepare for crises, know who to call for assistance, and how to make sense of what happened after a crisis to prepare for future events. CoP theory explains that learning is a social process that occurs through practice. Furthermore, CoP theory offers a lens for how knowledge can be accomplished through mutual engagement, negotiation of a joint enterprise, and shared repertoires. Specifically, CoP theory offers insight as how to maintain knowledge flow and establish relationships throughout all stages of crises. The suggestions offered in previous sections apply for the practice of instituting established knowledge sharing practices for the pre-crisis, crisis, and post-crisis stages of development.

Furthermore, this research provides an explanation of how to create and maintaining such practices. As such, this research supports the use of CoP theory as a method for achieving knowledge in the practice of crisis communication and builds upon existing literature for crisis communication theory. Future research in crisis communication should examine the phenomena of social learning and development of stakeholder relationships throughout the stages of crisis. Additionally, future crisis communication research should examine organizations and CoPs, such as EDEN, that have proven capabilities to achieve organizational resilience in crisis.

Conclusion

Crisis is a constant of our reality. We are caught in the continual and inevitable cycle of crisis development. Whether it is a natural disaster, international conflict, or disease outbreak; knowledge is central to our ability to prepare for, respond, and recover from crisis. Knowledge is a social process that requires active participation (Wenger, 1998; Lave & Wenger, 1991; Graves, 1992). CoP theory explains how knowledge is accomplished through the communicative practice of mutual engagement, negotiation of a joint enterprise, and shared repertoires (Iverson, 2011; Iverson & Mcphee, 2008; Wenger, 1998).

By using CoP theory, I was able to explore how EDEN communicatively enacts knowledge through mutual engagement, negotiation of a joint enterprise, and shared repertoires. To achieve my research goals, I used qualitative methods to gather data through semi-structured interviews and participant observation fieldwork. I attended the annual EDEN meeting in Spokane, WA in September 2019. This is where I recruited participants for the research and where fieldwork occurred. Before analysis, fieldwork was documented with elaborate fieldnotes and interviews were transcribed using the software Temi. I used both open and axial coding to analyze the data (DeCuir-Gunby et al., 2011). The three defining characteristics of CoP theory (mutual engagement, negotiation of a joint enterprise, and shared repertoires) were used during the open coding process. The axial coding process allowed me to identify emergent themes and outlier examples that did not fit into the characteristics of CoP theory, such as social support.

In this research I provide insight as to how knowledge is accomplished in a CoP and how CoP theory explains how to accomplish knowledge in crisis communication. Three distinct findings were revealed in the results and elaborated upon in the discussion. First, this research provides support for the use of CoP theory to analyze and understand the knowledge processes in

an organization. Second, social support was identified as a specific and pervasive communication strategy that EDEN members use to accomplish knowledge through mutual engagement. This finding expands literature on CoP theory and illuminates how to facilitate meaningful engagement through the four functions of social support including informational, emotional, tangible, and belonging support. Lastly, this research contributes to crisis communication theory and reveals how to maintain the flow of knowledge and relational connection between stakeholders throughout the stages of crisis development through the lens of CoP theory.

One limitation of this research is that it does not examine EDEN's efforts outside of the organization from a community perspective. In other words, this research does not account for how EDEN builds the adaptive capacity of a community to prepare for, respond, and recover from crises. Adaptive capacity explains the ability and constraints of individuals and institutions to adapt behaviors as a response to risk within a social ecological system (Murphy et al., 2017). Future research would benefit from understanding the community perspective on EDEN's ability to build adaptive capacity. Another limitation of this research is that it explores a single organization and does not account how other crisis response organizations enact knowledge through CoP theory. As such, this research does not allow for universal generalizations. In contrast to the limitations, this research provides support for breaking siloed research within the discipline of communication. Typically, organization communication, crisis communication, and social support as communication are all approached from research areas that do not overlap. This research illuminates the benefit of bridging the gaps between specific fields of study to better understand how theory is used in practice.

The main goal of this research is to understand how knowledge is accomplished. In doing so, I was able to provide suggestions for the cultivation and maintenance of knowledge within a

CoP. The unique nature of EDEN as a crisis response CoP also provides insight for maintaining established relationships throughout the stages of crisis development. Overall, this research demonstrates an exercise of qualitative methods and provides research direction for CoP theory and crisis communication.

To understand EDEN is to understand crisis communication. They are a storytelling organization that communicatively enacts knowledge as a CoP throughout the stages of crisis development. EDEN's mission "to reduce the impact of disasters through research-based education" (EDEN, 2019) is carried out by enhancing each community's ability to prepare for, prevent, mitigate, and recover from crises. They achieve their mission through information seeking/ resource sharing, collaboration, informal relationship building, and offering social support. Furthermore, EDEN places their mission as a common goal for coordinated crisis response. Lastly, EDEN reinforces their purpose through storytelling and common phrases that express value for how the network achieves their joint enterprise. As eloquently stated by John, "I got flooding washing cows down river and she called me and asked, can you help me? Yeah, not a problem [he responded]. That's what we're here for." The collaborative spirit of EDEN provides depth to the understanding of knowledge flow in crises. EDEN members are socialized to say yes when asked for help, knowing that it will be returned when they are in need. In sum, to better understand how knowledge is accomplished in crises, I examined EDEN as both an exemplar of a CoP and as professional crisis communicators.

References

- 1890 land-grant institutions programs. (2019). Retrieved from <https://nifa.usda.gov/program/1890-land-grant-institutions-programs>
- Abworo, E. O., Onzere, C., Oluoch Amimo, J., Riitho, V., Mwangi, W., Davies, J., Peter Bishop, R. (2017). Detection of african swine fever virus in the tissues of asymptomatic pigs in smallholder farming systems along the Kenya–Uganda border: Implications for transmission in endemic areas and ASF surveillance in east Africa. *The Journal of General Virology*, 98(7), 1806-1814. doi:10.1099/jgv.0.000848
- Albrecht, T. L., & Adelman, M. B. (1987). *Communicating social support*. Newbury Park, Calif. Sage.
- Ardichvili, A. (2008). Learning and knowledge sharing in virtual communities of practice. *Advances in Developing Human Resources*, 10(4), 541-554. doi:10.1177/1523422308319536
- Bandura, A. & Albert, C. (1977). *Social learning theory*. Englewood Cliffs, NJ: Prentice-Hall.
- Berger, C. & Calabrese, R., (1975). Some explorations in initial interaction and beyond: Toward a developmental theory of interpersonal communication. *Human Communication Research*, 1(2), 99-112. doi:10.1111/j.1468-2958.1975.tb00258.x
- Burleson, B. R. (1985). The production of comforting messages: Social-cognitive foundations. *Journal of Language and Social Psychology*, 4(3-4), 253-273. doi:10.1177/0261927X8543006

- Burleson, B. B., & Planalp, S. (2000). Producing emotion(al) messages. *Communication Theory, 10*(2), 221-250. doi:10.1111/j.1468-2885.2000.tb00191.x
- Burleson, B. R., & Mortenson, S. R. (2003). Explaining cultural differences in evaluations of emotional support behaviors. *Communication Research, 30*(2), 113-146.
doi:10.1177/0093650202250873
- Coombs, W. (2012). *On going crisis communication: Planning, managing, responding*. Thousand Oaks, Ca: Sage.
- Coombs, W. (2007). Attribution theory as a guide for post-crisis communication research. *Public Relations Review, 33*(2), 135-139. doi:10.1016/j.pubrev.2006.11.016
- Costard, S., Wieland, B., Glanville, W., Jori, F., Rowlands, R., Vosloo, W., Dixon., L. (2009). African swine fever: How can global spread be prevented? *Philosophical Transactions of the Royal Society B: Biological Sciences, 364*(1530), 2683-2696.
doi:10.1098/rstb.2009.0098
- Creswell, J. W., & Miller, D. L. (2000). Determining validity in qualitative inquiry. *Theory into Practice, 39*(3), 124-130. doi:10.1207/s15430421tip3903_2
- DeCuir-Gunby, J. T., Marshall, P. L., & McCulloch, A. W. (2011). Developing and using a codebook for the analysis of interview data: An example from a professional development research project. *Field methods, 23*(2), 136-155.
- Fine, G., Morril, C., & Suianarain, S. (2009). Ethnography in organizational settings. In Buchanan, D. & Bryman, A. (Ed.), *The SAGE handbook of organizational research methods* (pp. 602-620). Thousand Oaks, CA: SAGE Publications Inc.

- Gold., R. (1958). Roles in sociological field observations. *Social Forces*, 36(3), 217-223.
doi:10.2307/2573808
- Graves, L. N. (1992). Cooperative learning communities: Context for a new vision of education and society. *Journal of Education*, 174(2), 57. Retrieved from <https://search.proquest.com/docview/196456330>
- Hermann, C. F. (1963). Some consequences of crisis which limit the viability of organizations. *Administrative science quarterly*, 8(1), 61-82. Retrieved from <http://www.econis.eu/PPNSET?PPN=485213591>
- Iedema, R., Meyerkort, S., & White, L. (2005). Emergent modes of work and communities of practice. *Health Services Management Research*, 18(1), 13-24.
doi:10.1258/0951484053051906
- Iverson, J. & McPhee, R. (2002). Knowledge Management in Communities of Practice: Being True to the Communicative Character of Knowledge. *Management Communication Quarterly*, 16(2), 259-266
- Iverson, J. & McPhee, R. (2008). Communicating Knowing Through Communities of Practice: Exploring Internal Communicative Processes and Differences Among CoPs. *Journal of Applied Communication Research*, 36(2), 176-199.
- Iverson, J. (2011). Knowledge, belonging, and communities of practice. . In Canary & McPhee (Ed.), *Communication and organizational knowledge: Contemporary issues for theory and practice* (pp. 35-52). New York, NY: Routledge.

- Jackson, J. E. (2016). Changes in fieldnotes practice over the past thirty years in U.S. anthropology. *eFieldnotes* (pp. 42-62). Philadelphia: University of Pennsylvania Press. doi:10.9783/9780812292213-004 Retrieved from <http://www.degruyter.com/doi/10.9783/9780812292213-004>
- Knapp, & Daly. (2011). *The sage handbook of interpersonal communication, 4th edition*. Portland: Ringgold, Inc.
- Kourous, G. (2018). Disasters causing billions in agricultural losses, with drought leading the way. Retrieved from <http://www.fao.org/news/story/en/item/1106977/icode/>
- Kuhn, T. (2002). Negotiating boundaries between scholars and practitioners. *Management Communication Quarterly*, 16(1), 106-112. doi:10.1177/0893318902161008
- Kuhn, T., & Jackson, M. H. (2008). Accomplishing knowledge. *Management Communication Quarterly*, 21(4), 454-485. doi:10.1177/0893318907313710
- Lave, J., Wenger, E. (1991). Legitimate peripheral participation in communities of practice. *Situated learning* (pp. 89-118) Cambridge University Press. doi:10.1017/CBO9780511815355.006 Retrieved from <http://dx.doi.org/10.1017/CBO9780511815355.006>
- Lave, J., & Wenger, E. (1991). *Situated learning*. Cambridge: University Press. Retrieved from http://www.fachportal-paedagogik.de/fis_bildung/suche/fis_set.html?FId=741925
- Lawson, D., Hall, K., Yung, L., & Enquist, C. (2017). Building transnational ecology communities of practice: Insights from the field. *Frontiers in Ecology and the Environment*, 15(10), 569- 577.

- Le May, A. (2009). Introducing communities of practice. *Communities of practice in health and social care*, 3-16.
- Li, L. C., Grimshaw, J. M., Nielsen, C., Judd, M., Coyte, P. C., & Graham, I. D. (2009). Evolution of wenger's concept of community of practice. *Implementation Science : IS*, 4(1), 11. doi:10.1186/1748-5908-4-11
- Lindlof, T. R., & Taylor, B. C. (2019). *Qualitative communication research methods* (Fourth edition ed.). Los Angeles: SAGE.
- MacGeorge, Feng, Burlison, Knapp, & Daly. (2011). Supportive communication (chapter 10). *The sage handbook of interpersonal communication* (pp. 317-343)
- Makridakis, S. & Taleb, N. (2009) Living in a World of Low Levels of Predictability. *International Journal of Forecasting. Volume 25, Issue 4.*, 840-844
- McPhee, R. (1985). Formal structure and organizational communication. *Organizational communication: Traditional themes and new directions*, 13, 149-178.
- Murphy, D., Yung, L., Wyborn, C., Williams, D. (2017). Rethinking climate change adaptation and place through a situated pathways framework: A case study from Big Hole Valley, USA. *Landscape and Urban Planning*, 167, 441-450.
- Nardi, B., Whittaker, S., & Schwarz, H. (2002). NetWORKers and their activity in intensional networks. *Computer Supported Cooperative Work (CSCW)*, 11(1), 205-242.
doi:10.1023/A:1015241914483
- Neumann, E. J., Kliebenstein, J. B., Johnson, C. D., Mabry, J. W., Bush, E. J., Seitzinger, A. H., Zimmerman, J. J. (2005). Assessment of the economic impact of porcine reproductive and

respiratory syndrome on swine production in the united states. *Journal of the American Veterinary Medical Association*, 227(3), 385-392. doi:10.2460/javma.2005.227.385

Penrith, M. L., Lopes Pereira, C., Lopes da Silva, M M R, Quembo, C., Nhamusso, A., & Banze, J. (2007). African swine fever in mozambique: Review, risk factors and considerations for control. *The Onderstepoort Journal of Veterinary Research*, 74(2), 149. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/17883201>

Taleb, N. (2010). *The Black Swan: The Impact of the Highly Improbable* (2nd ed.). New York, NY: Random House.

Thomas-Medwid., R. (2019). Report: Climate change is making specific weather events more extreme. Retrieved from <https://www.noaa.gov/news/report-climate-change-is-making-specific-weather-events-more-extreme>

Ray, S. J., 1961. (1999). *Strategic communication in crisis management : Lessons from the airline industry*. United States: Retrieved from <http://catalog.hathitrust.org/Record/004035647>

Sánchez-Cordón, P. J., Montoya, M., Reis, A. L., & Dixon, L. K. (2018). African swine fever: A re-emerging viral disease threatening the global pig industry. *The Veterinary Journal*, 233, 41-48. doi:10.1016/j.tvjl.2017.12.025

Sandman, P. M. (2006). Crisis communication best practices: Some quibbles and additions. *Journal of Applied Communication Research*, 34(3), 257-262. doi:10.1080/00909880600771619

- Schiavo, R. (2014). Risk communication: Ebola and beyond. *Journal of Communication in Healthcare*, 7(4), 239-241. doi:10.1179/1753806814Z.00000000095
- Seeger, M. W. (2006). Best practices in crisis communication: An expert panel process. *Journal of Applied Communication Research*, 34(3), 232-244. doi:10.1080/00909880600769944
- Seeger, M., & Sellnow, T. L. (2016). *Narratives of crisis*. Palo Alto: Stanford University Press.
Retrieved
from [https://ebookcentral.proquest.com/lib/\[SITE_ID\]/detail.action?docID=4780596](https://ebookcentral.proquest.com/lib/[SITE_ID]/detail.action?docID=4780596)
- Sellnow, D., Sellnow, T., & Martin, J. (2019). Strategic message convergence in communicating biosecurity: The case of the 2013 porcine epidemic diarrhea virus. *Communication Reports*, 32(3), 125-136.
- Sellnow, D., Iverson, J., Sellnow, T. (2017) The evolution of the operational earthquake forecasting community of practice: the L'Aquila communication crisis as a triggering event for organizational renewal. *Journal of Applied Communication Research*, 45(2), 121-139
- Sellnow, T. & Seeger, M. (2013). *Theorizing crisis communication* (1. publ. ed.). Malden, Mass [u.a.]: Wiley-Blackwell.
- Sellnow, T., Sellnow, D., Helsel, E., Martin, J. M., & Parker, J. S. (2019). Risk and crisis communication narratives in response to rapidly emerging diseases. *Journal of Risk Research*, 22(7), 897-908. doi:10.1080/13669877.2017.1422787
- Tracy, S. (2010). Qualitative quality: Eight "Big-tent" criteria for excellent qualitative research. *Qualitative Inquiry*, 16(10), 837-851. doi:10.1177/1077800410383121
- Uchino, B. N. (2004). *Social support and physical health*. New Haven [a.]: Yale Univ. Press.

USDA ARS. (2019). History of research at the U.S. department of agriculture and agricultural research service. Retrieved from <https://www.ars.usda.gov/oc/timeline/comp/>

Vaast, E. (2004). O brother, where are thou? from communities to networks of practice through internet use. *Management Communication Quarterly*, 18(1), 5-44.

doi:10.1177/0893318904265125

Valerija & Barada. (2013). Sarah J. tracy, qualitative research methods: Collecting evidence, crafting analysis, communicating impact. *Revija Za Sociologiju*, 43(1), 99. Retrieved from <https://search.proquest.com/docview/1474870238>

Venette, S. (2006). Special section introduction: Best practices in risk and crisis communication. *Journal of Applied Communication Research*, 34(3), 229-231.

doi:10.1080/00909880600769464

Wartburg, I., Rost, K., & Teichert, T. (2006). The creation of social and intellectual capital in virtual communities of practice: Shaping social structure in virtual communities of practice. *International Journal of Learning and Change*, 1(3), 299.

Wenger, E. (1996). How we learn. communities of practice. the social fabric of a learning organization. *The Healthcare Forum Journal*, 39(4), 20. Retrieved

from <https://www.ncbi.nlm.nih.gov/pubmed/10158755>

Wenger, E. (1998). *Communities of practice*. Cambridge u.a: Cambridge University Press.

doi:10.1017/CBO9780511803932 Retrieved

from <http://dx.doi.org/10.1017/CBO9780511803932>

Wenger, E., & Snyder, W., (2000) Communities of practice: The organizational frontier. *Harvard Business Review*, 78, 139. Retrieved

from <https://search.proquest.com/docview/1634080527>

Wenger, E., McDermott, R., & Snyder, W. M. (2002). *Cultivating communities of practice* (1st ed.). Boston: Harvard business school press. Retrieved from <http://www.fachportal->

[paedagogik.de/fis_bildung/suche/fis_set.html?FIId=1146331](http://www.fachportal-paedagogik.de/fis_bildung/suche/fis_set.html?FIId=1146331)

Appendix

Interview Guide

Interview questions:

1. Why did you join the EDEN network?
2. So you are a member of EDEN, tell me about what you do to accomplish the goals of EDEN.
3. How is biosecurity a part of that?

Mutual engagement:

4. Who do you interact with at EDEN?

Follow up: What do you try to accomplish?

5. What do you value about shared information exchanged within EDEN?

Follow up: What information about biosecurity do you share with your colleagues at EDEN?

6. How do you share information with your colleagues at EDEN about connecting with your local community?
7. How do you share information with people outside of EDEN.

Follow up: What works well, what is frustrating, what do you wish you could communicate?

Shared repertoire:

8. What do feel you learned from being a part of EDEN?
9. How do you share what you know back in your local community?

Follow up: How do you communicate personal relevance and impact of a biosecurity concern to producers/ stakeholders in your local community? (Internalization)

Follow up: How do you motivate your local stakeholders? (Internalization)

Negotiation of Joint Enterprise:

10. What makes EDEN successful?

Follow up: How do people of EDEN, such as you, participate in that success?

Follow up: Can you think of any stories or examples that illustrate that?

11. What do you wish you could accomplish locally?

Follow up: What helps you get there?

Follow up: What does it look like when you can't do that well?

Follow up: When you are successfully working with your local community what does that look like?