2006

# Dynamic Dyads: Sharing and Creating Knowledge

Sophie T. Paul

# DYNAMIC DYADS: SHARING AND CREATING KNOWLEDGE

DISSERTATION

Presented in Partial Fulfillment of the Requirements for

the Degree of Doctor of Philosophy in

Leadership and Education in

the Adrian Dominican School of Education of

Barry University

by

Sophie T. Paul, B.S., M.Ed.

* * * * *

Barry University

2006

Area of Specialization: Human Resource Development

DYNAMIC DYADS:

SHARING AND CREATING KNOWLEDGE

DISSERTATION

by

Sophie T. Paul

2006

APPROVED BY:

______________________________________________

Jia Wang, Ph.D.
Co-Chairperson, Dissertation Committee

______________________________________________

Betty Hubschman, Ed.D.
Co-Chairperson, Dissertation Committee

______________________________________________

Madeleine Doran, Ed.D.
Member, Dissertation Committee

______________________________________________

Terry Piper, Ph.D.
Dean, Adrian Dominican School of Education

# ABSTRACT

DYNAMIC DYADS: SHARING AND CREATING KNOWLEDGE

Sophie T. Paul

Barry University, 2006

Dissertation chairpersons: Dr. Jia Wang and Dr. Betty Hubschman

The purpose of this phenomenological study was to explore the experience of sharing and creating knowledge within teams of professional dyads. The two research questions that this study addressed were:

1. How do teams of two share knowledge?
2. How do teams of two create knowledge?

The design of phenomenology was employed so as to capture the essence of the experience through semi structured in depth interviews conducted with 4 teams that work within a dyad. There are several new findings derived from this study that assist in answering the two research questions. In this study it was found that (1) many variables, and combinations of variables can impact the sharing and creating of knowledge (2) partners benefit from familiarity with one another and (3) partners think of shared space as time, physical environment and sharing organizational goals. The findings of this study will lead to a better understanding of how professionals in teams of two or dyads, share and create knowledge.

ACKNOWLEDGEMENTS

I would like to acknowledge my dissertation committee: Dr. Jia Wang, Dr. Betty Hubschman and Dr. Madeline Doran for sharing their expertise, and offering their support and guidance.

I would also like to thank Dr. Kim Guthrie for her constant support and encouragement.

## DEDICATION

The Latin phrase Ancora Imparo means "I am still learning." It is believed that Michelangelo said these words when he was 87 years old. I dedicate this to all, myself included, who are still learning.

I am most certain that at the end of the day, the people who love you, and that you love, give your endeavors meaning. I know that believing in someone, truly having faith in someone, is more important than anything else.

For, Breeze Arb-Paul, my daughter, who has observed this entire process and has been bewildered by my years of ‘homework’. I love you dearly and I thank you for your patience.

For, Janice Fauske Ph.D., who never doubted I could fulfill this academic pursuit.

For my parents, Oak and Monique Paul, who taught me the value of hard work and the vital lesson that tenacity is rewarded. You are proud of me but I am equally proud that you are my parents and I love you dearly.

And most of all, I dedicate this work to Sarah Meaker Ph.D. I thank you for standing behind me while simultaneously clearing the path ahead. You are an amazing woman. Thank you for being my partner in all things.

TABLE OF CONTENTS

TWO: LITERATURE REVIEW



THREE: METHODOLOGY

LIST OF TABLES

LIST OF FIGURES

# CHAPTER ONE

# INTRODUCTION

This chapter will introduce teams and teamwork in the context where two people can be a team. The term *team* will be used synonymously with *partners*, or *dyads.* The chapter will first address the origin of the study. The background of the study will describe teams and teamwork in the modern organization. The next section, the problem statement, explains the need for continued research on teams of two. While the research on teams is predominantly supportive of their use, some research implies that the use of teams can have detrimental effects as well. The theoretical frameworks that will guide this study include organizational and shared knowledge, and social constructionism. Chaos theory will be introduced as a method of understanding the non-linear complexity of interactions in teams. This study is significant in the area of Human Resource Development (HRD) as it explores employee efficacy in dyadic environments.

## Origin of the Study

In 2002, I began working as a Staff Developer in a school district serving 43,000 students and employing approximately 6,000 people. In my role as a Staff Developer, I was asked to fulfill various job duties, including participating in meetings. These meetings, as a whole, were generally confounding, unproductive and time consuming. However, I enjoyed these meetings because of the social interaction and at times, the opportunity to discuss new ideas. I attended many meetings every week. An experience changed me and led me to the selection of this topic. A colleague invited me to join her in writing a District

Plan for Alternative Certification. This program required approval by the State, which made it high stakes. It was not a simple endeavor and required a complex synthesis of mandates, requirements, and other practical issues. This was a task that could have easily been given to a committee. This colleague and I formed a partnership. Through a concerted effort including long discussion and research, we wrote the entire program in about 40 hours. Upon reflection, I became fascinated as to how this happened. What occurred between the two of us that allowed us to function at such an optimum rate? Was it the merging of our explicit knowledge? Could it have been the tacit knowledge that gained new relevance with this task? Some might call it synergy. How can we, as HRD professionals, replicate experiences like this one? This study is a beginning step toward answering these questions.

## Background of the Study

In the modern organization, employees are being encouraged to work smarter, not harder. Maximizing the efficiency of employees through job structure and managing and exchanging knowledge (White, 2004) is essential in today's highly competitive business market. Employees may be assigned to become a member of a team, also called work teams, or work groups. This arrangement provides an opportunity to combine efforts and knowledge. Explicit knowledge is knowledge that is "transmittable in format, systematic language and may include explicit facts, axiomatic propositions and symbols (Kogut & Zander 1992 as cited in Nielsen 2005). Tacit knowledge is "knowledge that comprises a range of conceptual and sensory information and images that can be brought to bear in an attempt to make sense of something" (Hodgkin, 1991, p. 15). Both explicit and tacit knowledge bring value to an organization (Nonaka & Takeuchi, 1995). The early Hawthorne Studies showed that teams, or work groups, were complex (Roethlisberger & Dickson, 1939). Sundstrom, McIntyre, Halfhill, and Richards (2000) conducted a comprehensive study of work groups that supports not only their early existence, but researchers' enormous interest in the topic. Due to competition, work loads and technology, many modern organizations have utilized the concept of teams to get work done (Brown & Eisenhardt, 1998). The current literature on teams and teamwork suggests that team structure is still widely used and continues in popularity. There are potential benefits to teamwork (Collis & Porras, 1994) such as enhanced creativity and the merging of social knowledge, or our cultural orientations, with tacit knowledge (Wing, 2001).

## Problem Statement

While there are different types of teams (Katzenbach, 2005), such as steering, planning, process improvement, self managed (Decker, 1997), and cross-functional (Mohamed, Stankosky & Murray, 2004), most teams are defined by the purpose they serve. According to Clutterbuck (2003), teams manage tasks such as communication and learning in their own way. The existing research on the topic of teams of varying size has had limited focus. The research on teams of two, to date, primarily reflects gender studies (Coy, 2001; Karakowsky & Miller, 2002; Sweeney, 1999) and the interaction between the sexes based on characteristics of those genders (Balderson & Broderick, 1996; Graves & Elsass, 2005). There are also accompanying studies on occupational roles based on gender that may influence team dynamics (Karakowsky, McBey & Chuang, 2004). There exists research on small groups with an emphasis on training small groups (Goodstein, 1979; Gustafson, 1981; Meadows, 1980). The current research emphasizes small groups or larger teams and has not yet focused on teams of two. There is a need for more information regarding the dynamics of professional teams of two because such teams exist and are relied upon to carry out vital functions in our economy. Current literature on larger teams suggests that there are benefits to working in teams, such as increased performance (Guzzo & Dickson, 1996). However, it also suggests that a certain "romance" may exist (Allen & Hecht, 2004; West, Brodbeck & Richter, 2004 ). Romance refers to "something that lacks basis in fact" (Webster, 1994, p. 1016). Applied to larger teams, the term "romance" refers to a discrepancy between the belief held by managers that teams are effective and the deficit in empirical evidence that teams are more productive than independent individual efforts. The concept of the romance of teams is significant because larger teams may not be the best way to do work (Larson & LaFasto, 1989; Parris & Vickers, 2005). If large teams are not the best way to work then what model can meet the requirements of the need to share information, to capitalize on the benefits of social interaction and the synergy of co-creation of knowledge?

## Purpose and Research Questions

The purpose of this study is to explore the experience of professionals in relation to knowledge sharing and knowledge creation while working in a dyad. In this study a dyad is defined as a team of two equal professionals. To be a professional, means “exhibiting a courteous, conscientious, and generally businesslike manner in the workplace” (Webster, 1994, p. 930). The following questions will guide the study:

1. How do partners in a team of two share their knowledge?
2. How do the partners in a team of two create knowledge?

## Theoretical Framework

The overriding theories that inform this inquiry are teams and teamwork, and knowledge. This section will also introduce the social constructionist perspective that will influence the methodological choice of the study. Chaos theory is introduced as a method of explaining the complexity of dyadic interaction.

### *Knowledge in the Organization*

Argyis and Schon (1996) observe organizations and the knowledge held by organizations. An organization can be a “holding environment” (p. 12). Knowledge can be held in the mind of the individuals, the files of the organization or physical objects that members use as references for knowledge. Organizations can also directly represent knowledge by performing complex tasks a certain way through theories in action. The modern organization has placed increasing emphasis on knowledge (May, 2005). Peter Drucker first coined the term “Knowledge Worker” in the 1960’s referencing the challenges of the emerging knowledge society (May, 2005). A knowledge worker is one who works primarily with information or one who develops and uses knowledge in the workplace.

While there is much written about teams and teamwork, there is a limited amount written on the acquisition of knowledge by teams (Argote, 1999) which can effect team performance (Edmondson,1999). The way that teams acquire, integrate and create knowledge has become a topic of interest for research yet remains relatively unexplored (Anand, Clark & Zellmer-Bruhn, 2003).

*Shared Knowledge*

Cook and Brown (1999) discuss the traditional view of knowledge as having an epistemology of possession. In other words what people know is something they *possess.* They contend that knowing as action requires an epistemology of practice as well. Therefore, they portray four separate types of knowledge: explicit, implicit, individual, and group. Each of these categories is considered distinct and separate from each other. For the purpose of this study, knowledge will be defined according to Polanyi's (1958) seminal theory that describes two different levels of knowledge which are mutually exclusive (Sveiby, 1997). "Knowledge that is *about* an object or phenomenon that is in focus-focal knowledge. Knowledge that is *used* as a tool to handle or improve what is in focus-tacit knowledge" (Sveiby, 1997, p. 2).

Tacit knowledge can be highly pragmatic, difficult to articulate, and is usually shared through conversation and shared experience. There is increased literature regarding the inherent value of tacit knowledge. Alvesson (2001) states that "knowledge is a slippery and elusive concept, and every discipline has its own secret realization of it. Problems of interpretation haunt every attempt to use the concept effectively, such as that even basic typologies that talk about formal

versus tacit knowledge actually can be quiet meaningless in certain contexts" (p. 864). Snowden (2002) proposes that "knowledge is seen paradoxically, as both a thing and a flow requiring diverse management approaches" (p.100). Cook (1999) argues that 'knowledge' is different from the act of 'knowing'. Richard Stacey (2001) offered "Knowledge is not a 'thing,' or a system, but an ephemeral, active process of relating. If one takes this view then no one, let alone a corporation, can own knowledge. Knowledge itself cannot be stored, nor can intellectual capital be measured, and certainly neither of them can be managed." Two people who work together on a project share a dynamic, not static, relationship that mirrors what Stacey (2001) describes as an "active process of relating" (p. 15). In other words, what do ***I*** know that you don't know and how
can we combine our knowledge to meet a need or create something new?

*Chaos Theory*

In a study of "Dynamic Dyads" the term dynamic should be explored. The essence of dynamic means "continually productive" (Webster's 1994, p. 361). When information is generated in teams there exists a non-linear pattern of information creation that can be explained with chaos theory. Levy (1994) posits that "chaos theory, which is the study of non-linear dynamic systems, promises to be a useful conceptual framework that reconciles the essential unpredictability of industries with the emergence of distinctive patterns" (p. 167). Research supports the use of Chaos Theory in the social sciences, including Human Resources Development (Bolstorff 1998; Ditto & Munakata 1995; Gregersen 1993; Murphy, 1996). Chapter Two will explicate the use of chaos theory as it generally relates to teams and specifically to dyadic interactions.

*Social Constructionism*

The philosophical orientation for this study is one of social constructionism. Social constructionism is based on the sociological and social psychological concept of social constructionism (Patton, 2002).This study reflects an understanding that people construct their meaning from their interactions with others. These subjective meanings are negotiated and formed over time through the personal interpretations and understandings of the individuals (Cresswell, 2003). The concept contends that categories of knowledge and reality are created by social relationships and social interactions. From the social constructivism perspective meaning is created socially through interactions with others. As defined by Katzenbach (1993), "a team is a small number of people with complementary skills who are committed to a common purpose, performance goals, and approach for which they hold themselves mutually accountable." (p. 14). Teamwork, then, implies cooperative and coordinated effort by individuals working together in the interests of their common cause" (p. 1). Working together in teams is an active experience. Slife and Williams (1995) contend that "this way of knowing does not occur within an individual at all. It occurs in the relations among individuals as they converse and negotiate and share their world with one another." (p. 82). It could be elaborated then, that teams of two are dynamic, not static, and that learning occurs *between* the members of the team. Meaning can be constructed in a variety of ways, but social discourse will dominate this study.

## Boundary of the Study

One boundary of this study it that the dyadic members must have been actively working together a minimum of one year. Another is that the partners perceive themselves to be professional equals. Webster (1994) defines the term professional as “exhibiting a courteous, conscientious, and generally businesslike manner” (p. 930). Young (2004) describes the professional as “a skilled practitioner, an expert as opposed to an amateur. A professional has ethics, adheres to standards – his or her own as well as the professions” (p. 22). The perception of “equality” will be addressed in the individual interviews. I have deliberately chosen partners who are not in a romantic relationship or married because of the alternate dynamics involved in romantic or marital relationships. This study is not intended to investigate the mentor/mentee model or the supervisor/subordinate relationship model. It is possible to describe teams according to their purpose (Katzenbach 2005; Sundstrom et al., 2000). There is, however, limited research on teams defined according to their size. Harris(1996) states that “the ideal number of persons engaged in such joint action is usually no more than eight although that figure can be expanded to include a natural grouping” (p. 23). Bradner, Mark, & Hertel (2005) investigated using survey research the effect that team size has on geographically distributed team behavior and technology choice. There exists research on small groups, defined as having *two or more members*. (McGrath, 1997). The unit of study will be a team of two, or dyadic team. While the important contributions of technology are recognized, virtual teams will not be addressed in this study. The boundaries of this study exclude partners in sports teams as the significance of the study relates specifically to the field of Human Resource Development.

## Significance of the Study

This study contributes to the field of Human Resource Development in the area of teaming, work design and knowledge management. Each of these three areas plays a significant role in how work is done in business. While the idea of teams and people working together is not a new one, there is a continued interest in maximizing resources, especially limited resources such as time and finances. Yet, there are also resources that are unlimited such as the human potential to generate new ideas as well as reconfigure existing ideas in new way. Bolstorff (1998) explains, “Chaos theory has the potential to contribute to HRD both theoretically (theory building and research) and practically (development and practice)” (p. 2). This study will explore the lived experience, the phenomena, of sharing and creating knowledge in dyads, or teams of two.

## Definitions

*Ba*- “*Ba*” -is a concept that was first proposed by Japanese philosopher Kitaro N-Nishida and was further developed by Shimizu (Nonaka & Konno, 1998). “Ba” can be thought of as the shared space for emerging relationships.

*Butterfly effect* – A phenomenon called “Sensitive Dependence on Initial Conditions(SDID)” or more popularly, the “butterfly effect”-the idea that a butterfly flapping its wings in a Brazilian rainforest can cause rain to fall rather than sun to shine later in London. (Eijnatten 2006, p.432).

*Chaos theory* - is used as a sensitizing framework to inform the non-linear complexity of dyadic interaction.

*Dialectical thinking*- the Socratic techniques of exposing false beliefs and eliciting truth. (Websters, 1994, p. 319) a process of examining contradictions.

*Dyad*- a team of two.

*Dynamic* - defined from Websters (1994)"marked by usual continuous productive activity or change" (p.361).

*Empathetic Neutrality*- Empathetic neutrality is the ability of the researcher to remain neutral and empathetic simultaneously ( Patton, 2002, p. 40).

*Epoche* - Moustakas (1994) describes epoche as "a Greek word meaning to refrain from judgement, to abstain from or stay away from the everyday, ordinary way of perceiving things" (p. 33).

*Explicit Knowledge* - is "understood as knowledge that is transmittable in format, systematic language and may include explicit facts, axiomatic propositions and symbols (Kogut & Zander 1992 as cited in Nielsen 2005).

*Focal Knowledge* - 'focused' meaning it is directed towards a particular object or experience (Sveiby, 1997, p. 2).

*Imaginative variation* – the second step in phenomenological analysis. This process entails the researcher using their imagination, their vision, their view to perceive variations on the possible meaning of the phenomenon ( Moustakas, 1994, p. 35).

*Knowledge* - Davenport and Prusak (1998) refer to three aspects of knowledge; data, information and knowledge.

*Knowledge Creation* - the continuous merging of tacit and explicit knowledge (Nonaka & Takeuchi 1995) to create new knowledge.

*Knowledge Management* - how organizations manage their knowledge (Argyis & Schon 1996)

*Knowledge Worker* - a term first coined by Peter Drucker referencing the challenges of the emerging knowledge society (May, 2005). A knowledge worker is one who works primarily with information or one who develops and uses knowledge in the workplace.

*Participant Observation* – a methodology aiming to generate practical and theoretical truths about human life grounded in the realities of daily existence using the insider's perspective (Jorgensen, 1989; Spradley 1980)

*Phenomenology* – is the exploration of the essence of a person's lived experience. It is the study of how a person perceives, or brings into consciousness, and describes some phenomenon (Husserl, 1931).

*Phenomenological Reduction* - the second step in data analysis. There are four steps in phenomenological reduction (Denzin, 1989): bracketing, horizontalizing, clustering and organizing.

*Professional* - Webster defines the term professional as "exhibiting a courteous, conscientious, and generally businesslike manner in the workplace" (p. 930).

*Romance of Teams* - Romance, used in this context, refers to "something that lacks basis in fact" (Webster, 1994, p. 1016). Applied to teams the term "romance" refers to a discrepancy between the belief held by managers that teams are effective and the deficit in empirical evidence that teams are more productive that independent efforts.

*SECI* - an acronym for one model of knowledge conversion developed by Nonaka, Toyama and Konno (2000). This model has four modes: (1) **s**ocialization (from tacit knowledge to tacit knowledge); (2) **e**xternalization (from tacit knowledge to explicit knowledge);(3) **c**ombination ( from explicit knowledge to explicit knowledge); and (4) **i**nternalization (from explicit knowledge to tacit knowledge) (p. 9).

*Social Constructionism* - Crotty (1998) states that constructionism " is the view that all knowledge, and therefore all meaningful reality as such, is contingent upon human practices, being constructed in and out of interactions between human beings and their world, and developed and transmitted within an essentially social context" (p. 42).

*Social Knowledge*- our cultural orientations (Wing, 2001).

*Tacit Knowledge* – "knowledge that comprises a range of conceptual and sensory information and images that can be brought to bear in an attempt to make sense of something" (Hodgkin, 1991 p. 15). First coined by Michael Polanyi (1958).

*Team*- "A team is a small number of people with complementary skills who are committed to a common purpose, performance goals, and approach for which they hold themselves mutually accountable" (Katzenbach, 1993)

## Summary

This chapter introduced the literature on teams and teamwork, knowledge management and team acquisition of knowledge.  Teams can be defined by their purpose and there is limited research on the significance of the size of teams. The concept of the romance of teams suggests that there can be a discrepancy between what managers believe about team productivity and what the actual empirical evidence suggests. A professional dyad is defined as two people with self-perceived equality of status in their work related roles. For this study, the term 'professional' implies a platonic relationship of two adults with perceived equal status within the dyad. Gender will not be addressed in this study. This chapter clarified that the mentor/mentee relationship and the supervisor/subordinate relationship will not be investigated. Chaos theory was introduced to explain the complexity of sharing knowledge in teams. The theoretical frameworks of knowledge and of social constructionism were introduced to support the qualitative tradition of phenomenology.

# CHAPTER TWO

# LITERATURE REVIEW

This chapter will be organized into five sections. The first section presents the literature on teams and teamwork. The existing research on teams is so vast, this particular study will begin with a brief overview of the use of teams in organizations. This section will be organized according to the purpose of teams. The second section focuses on knowledge. The area of knowledge is significant in this study because there is a question of how teams share and create their knowledge. New knowledge can be generated through the exchange of currently held knowledge. This exchange of knowledge helps to explain how knowledge is created in an organization. The term dynamic is of particular interest in this study because it infers a continually changing landscape within the team. Chaos theory is used as a sensitizing framework to inform the non-linear complexity of dyadic interaction. The research design is viewed through the lens of Social Constructionism.

## Teams and Teamwork

The Barry University library electronic journal search databases of ABINFORM Complete in the area of Business and Economics revealed nearly two thousand scholarly listings under the subject area of teams. In the database EPSCO Academic Search Premier in the areas of education and psychology combined nearly three thousand scholarly articles under *teams*. The key word *teamwork* revealed nearly three thousand articles. For this study nearly 200 articles related to teams were reviewed. Of particular interest were articles within the past 5 years about team efficacy, team structure and the sharing of knowledge. Comprehensive articles on seminal topics, such as the Hawthorne studies were reviewed.

Sundstrom et al. (2000) contributed a comprehensive overview of work groups that supports not only their early existence, but researchers' enormous interest in the topic. Forsyth (2000) presents an overview of topics that have dominated researchers' efforts in the past century. He posited seven basic questions about groups and group dynamics that reflected an interest in how teams function. The range of questions referencing a special issue of Group Dynamics reminds us that teams are multifaceted. The early Hawthorne Studies showed researchers that teams, or work groups, were complex (Roethlisberger & Dickson, 1939). This finding was unexpected but has led researchers to pursue many topics related directly and indirectly to team studies. Sundstrom et. al. (2000) describe the relevance of these studies in later research. There was an increased search for application concerning formal and informal work groups and an increased awareness of the effect of work groups on productivity. Sonnenfeld (1985) notes that "The prevailing notion of the time of the Hawthorne Studies were that individual human behavior was to be corrected for and controlled. The study of purely formal static social structures all but disappeared with the publication of the Hawthorne research" (p. 115). The Hawthorne studies compelled researchers to consider individuals as part of a team. Gautschi (1989) summarizes a chain of events in which employee attitudes led to subsequent research on work motivation, which led to interest in leadership, and studies of the impact of the organization's social structure on the work groups. Ultimately this resulted in research in the fields of organizational psychology and organizational behavior.

*Types of Teams*

While the definition of team may vary, the common element is people working together to accomplish a goal. While there are different types of teams (Katzenbach, 2005) such as steering, planning, process improvement, self managed (Decker, 1997) and cross- functional (Mohamed, Stankosky & Murray, 2004) most teams are defined by the purpose they serve. According to Clutterbuck (2003), there are team types that manage tasks, communication and learning in their own way. There is a body of research on small groups. However, no matter what the type of team, there is a need for the members to share knowledge.

## Knowledge

What does it mean to 'know' something? Merriam Webster (1994) defines knowledge as "the fact or condition of knowing something with familiarity gained through experience or association" (p. 647). Swanson and Holton (2001) define knowledge as "the intellectual mental components acquired and retained through study and experience" (p. 208). Davenport and Prusak (1998) describe knowledge as "a fluid mix of framed experience, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information" (p. 5). There is no doubt that knowledge has long been a topic of interest to philosophers and educators. What a person knows and how that knowledge is shared and created in teams is the central focus of this study. This study resides in the realm of human resources, and therefore, the focus of this section is on what employees know and how this knowledge is shared. Knowledge worker, was a term first derived by Peter Drucker in the 1960's. A knowledge worker is one who works primarily with information or one who develops and uses knowledge in the workplace (Drucker, 1999). This section will explore the literature on knowledge as an organizational resource, types of knowledge, creation of knowledge and shared knowledge.

*Knowledge as an Organizational Resource*

The post-industrial society has provided a platform for rethinking the role of the worker-and what the worker knows. Smith (2001) expresses that "historically, capital, raw materials and labor have been considered more valuable than creating and applying knowledge" (p. 311). The modern organization, however, knows the value of its knowledge (Amar, 2003; Corno, Reinmoeller & Nonaka 2000; von Krogh,1998; Grant 1996). Assudani (2003) notes that "knowledge is arguably the most important asset that the firm possesses" (p. 35) and "Knowledge is considered as the most important strategic factor as compared to the other traditional factors of production like land, labor, and financial capital," (p. 35). This was also stated by Drucker (1999) in his detailed description of the difference between early manual laborers and the current knowledge worker. He points out that in manual labor the task is apparent. The worker knows what to do as his job is defined for him by the task. However, in the modern organization the knowledge worker, to a large extent, defines his own job. Drucker notes this with the aim of increasing awareness on organizational productivity and his claim is relevant to this study. Sharing knowledge and choosing what knowledge to share is a truly significant task. An entire series of decisions have to be made in the dynamic interaction when knowledge is shared. It is crucial to define the task as well as determine the quality needed of the end result, and then decide how to proceed. Knowledge regarding the job to be done makes these decisions possible and differentiates the manual laborer from the knowledge worker. While a manual laborer might be easily replaced it is not so with the knowledge worker. Drucker refers to this as the manual laborer being a ‘cost’ and the knowledge worker an ‘asset’ (1999). What makes the knowledge worker an asset is what they *know* within the context of what is required to get their job done. This value to a company is unlimited (Amar, 2003). As Gardner (1998) eloquently stated, “The crown jewel of many companies resides in the minds of their employees” (p. 98). Table 2.1 summarizes a number of current studies on knowledge sharing in corporations.

Table 2.1 Recent studies of empirical research on knowledge sharing

| Authors | Description of Study | Research Methods |
|---|---|---|
| Bock & Kim (2002) | Individual's attitude | Survey |
| Sample: Large public organization in Korea | | |
| Gupta & Govindarajan (2000) | Effects of value of the knowledge | Survey |
| Sample: Heads of divisions of multinational corporations located in the United States | | |
| Hansen (1999 | Strength of social ties | Archival questionnaire survey |
| Sample: A multinational electronics company. | | |
| Swart & Kinnie(2003) | HR policies and practices | field work |
| Sample: A European knowledge-based firm. | | |
| Szulanski (2000) | transfer of best practices | questionnaire, survey |
| Sample: Eight firms participated in this survey. | | |

These studies illustrate a current interest in topics related to the sharing of knowledge across many fields and geographic locations.

*Tacit, Focal and Explicit Knowledge*

Gautschi (1999) suggests that "the nature of knowledge in a business context can be viewed as a continuum with structured, codified, or explicit knowledge at one extreme and unstructured, uncodified, or tacit knowledge at the other" (p. 170). There is much written on knowledge, yet for the purpose of this study knowledge will be defined according to Polanyi's theory (1958). In Polanyi's theory knowledge has two forms which are mutually exclusive but complementary (Sveiby, 1997, p. 2). Those are focal knowledge, which is "focused" meaning directed towards a particular object or experience and tacit knowledge, which is used as a tool to improve what is in focus. (Sveiby, 1997, p. 2). Smith (2003) argues that "Central to Michael Polanyi's thinking was the belief that creative acts (especially acts of discovery) are shot-through or charged with personal feelings and commitments. Arguing against the then dominant position that science was somehow value-free, Michael Polyani sought to bring into creative tension a concern with reasoned and critical interrogation with other, more 'tacit', forms of knowing" ( p. 2). Polanyi's work on tacit knowledge spans the disciplines of philosophy, social science, and theology ( Mullins, (undated); Polanyi, 1997; Smith, 2003). Mullins, the editor of the Polanyi journal *Tradition and Discovery* (no date p.3) declares that "Despite the limited early reception in philosophy, a variety of theologians and others interested in religion, political scientists, sociologists and psychologists have, since the fifties, hailed Polanyi's thought as seminal". What is seminal is the idea that knowledge is extremely personal. Tacit knowledge is described by Kuhn (1962) as knowledge that is acquired through practice and that cannot be articulated explicitly (p. 44). Tacit knowledge "is that which an individual has collected while he has performed different tasks and duties in different contexts and situations of his or her life. Thus, tacit knowledge represents knowledge based on the experience or individuals." (Koskinen, 2003, p. 68). Bordum (2002) notes that "Tacit

Comment [scm1]:

knowledge is therefore seen as personal, context-specific and hard to formalize and communicate" (p. 51). Polyani (1967) intimates that "people always know more than they can tell". He referred to this as preknowledge or knowledge that was held but internal. "Tacit knowledge comprises a range of conceptual and sensory information and images that can be brought to bear in an attempt to make sense of something" (Hodgkin, 1991, p. 15).

Tacit knowledge, according to Polanyi, is considered complementary to focal knowledge. Focal knowledge is "focused" meaning directed towards a particular object or experience. Tacit knowledge serves as a background (Sveiby, 1997) and focal knowledge brings a particular task, problem or experience out of that general background into a specific focus-a foreground. Sveiby (1997) indicates that "the human being is knowing all the time, we are switching between tacit knowing and focal knowing every second of our lives, it is a basic human ability to blend the old and well-known with the new and unforeseen "(p. 3).

Linde (2001) suggests a taxonomy of tacit knowledge that focuses on social knowledge (Figure 1). "Distinguishing social knowledge as a distinct subtype of tacit knowledge increases the precision of the discussion, since social knowledge is maintained and transmitted in very different ways than physical knowledge" (Linde 2001, p. 161). Linde (2001) further explains that social knowledge can be divided between group and individual knowledge. Individual knowledge relates to language, individual identity, membership and practice. She contends that group knowledge can be subdivided into work practice, identity practice and membership practice. Each of these areas relates to knowledge that is held as an organization and may or may not be conveyed to its membership. These relate to protocol, values and belonging.

Explicit knowledge is "understood as knowledge that is transmittable in format, systematic language and may include explicit facts, axiomatic propositions and symbols (Kogut & Zander 1995). Explicit knowledge can take the form of manuals, work flow charts, job descriptions and "how-to" writing. Teece (1998) refers to this as "codified" knowledge (p. 63) and explains that this type of knowledge can reside in blueprints, formulas or computer codes and need not convey much meaning. Davenport and Prusak (1998) identify three aspects of knowledge: data, information, and knowledge with significant distinctions between the three. Data when defined as "a set of discrete, objective facts about events" (Davenport & Prusak 1998, p. 2) is deemed explicit. Data becomes information when it is placed in context. Only then does it gain relevance and assume meaning. The data which becomes information when placed in context moves from explicit to tacit and the *interpretation* of the context can fall into the realm of tacit knowledge.

Comment [scm2]: Check APA

Comment [scm3]: Check APA

*Knowledge Creators: Data to Information to Knowledge*

Knowledge creation is the continuous merging of tacit and explicit knowledge (Nonaka & Takeuchi, 1995) to create new knowledge. Mohamed and Stankowsky (2004) and Davenport & Prusak (1998) both explicate the conversion of data to information to knowledge. This is done by placing the data within a context which makes it useful information. Davenport and Prusak (1998) summarize, "Think of information as data that makes a difference" (p. 3). Data can and should be approached from an informed standpoint so that its use can be maximized. This can be done in several ways (Davenport & Prusak, 1998).

> Contextualized: we know for what purpose the data was gathered.
>
> Categorized: we know the units of analysis or key components of the data
>
> Calculated: the data may have been analyzed mathematically or statistically.
>
> Corrected: errors have been removed from the data
>
> Condensed: the data may have been summarized in a more concise form (p. 4).

Knowledge creation is described as a "fragile process" by vonKrogh (1998). He explains that "innovations come about when organizational members: share tacit knowledge; convert this into explicit knowledge in the form of a concept for a product or service; use company visions, strategies, market studies or social opinions to justify this concept and finally build a new prototype product" (p. 132). In order for this to happen individuals need to be about to share their own personal beliefs with others with other team members. Von Krogh (1998) expands on this: "justification becomes public. Each individual is faced with the challenge of justifying his true beliefs in presence of others, and precisely this process of justification makes knowledge creation a highly fragile process" (p. 132). He contends that there are four barriers to this public justification process. They are language, stories and habits, formal procedures and company paradigms. The barriers occur when there is a mismatch between the language, formal procedures and the strategic intent of the company with the individual.

In order to overcome these barriers, von Krogh (1998) discusses the role of caring in an organization. Koskinen (2003) addresses the factors which contribute to the use of tacit knowledge in an organization by categorizing them into internal and external factors. It is significant to note that internal factors are more controllable by the individual while external factors are not. Koskinen (2003) identifies the internal barriers to knowledge creation as memory, communication and motivational systems. External systems could consist of leadership style at the organization as well as the organizational culture.

Nonaka, Toyama, and Konno (2000) propose a model of knowledge creation consisting of the SECI process, knowledge creation through the conversion of tacit and explicit knowledge. They set the shared context for knowledge creation as 'Ba' and clarify the significance of assets, inputs, outputs and moderators in the knowledge creation process. They suggest that "knowledge creation process is a spiral that grows out of these three elements. The key to leading it is dialectical thinking" (p. 5). Dialectical thinking is defined as examining the contradictions. The contradictions can best be explained through the following:

**Comment [scm4]:** Was not able to obtain copyright on this figure. Omit figure but add explanation.

> Knowledge is created in the spiral that goes through two seemingly antithetical concepts such as order and chaos, micro and macro, part and whole, mind and body, tacit and explicit, self and other, deduction and induction, and creativity and control. We argue the

> key in leading the knowledge-creating process is dialectical thinking, which transcends and synthesizes such contradictions. (Nonaka, Toyama, and Konno, 2000 p. 7)

SECI is an acronym for one model of knowledge conversion developed by Nonaka, Toyama and Konno (2000). This model has four modes: (1) socialization (from tacit knowledge to tacit knowledge); (2) externalization (from tacit knowledge to explicit knowledge); (3) combination (from explicit knowledge to explicit knowledge); and (4) internalization (from explicit knowledge to tacit knowledge).

"Ba" is a concept that was first proposed by Japanese philosopher Kitaro Nishida and was further developed by Shimizu (Nonaka & Konno, 1998). "Ba" can be thought of as the shared space for emerging relationships. This can be shared physically as well. In this study, participants will have a myriad of shared spaces to occupy. Some examples might be the shared confines of a law enforcement squad car, or an office. Shared space can also be virtual or mental as well. Some examples of mentally shared space might be shared experiences or the same goals. "Ba" can also be a combination of the three afore mentioned shared spaces.

Nonaka & Konno (1998), posit that knowledge is embedded in "ba" or shared space. Participants enter the shared space with their own experience. If knowledge is taken out of context or relevancy, it becomes simply information and can be communicated independently from "ba". Knowledge resides in "ba" and is essentially intangible.

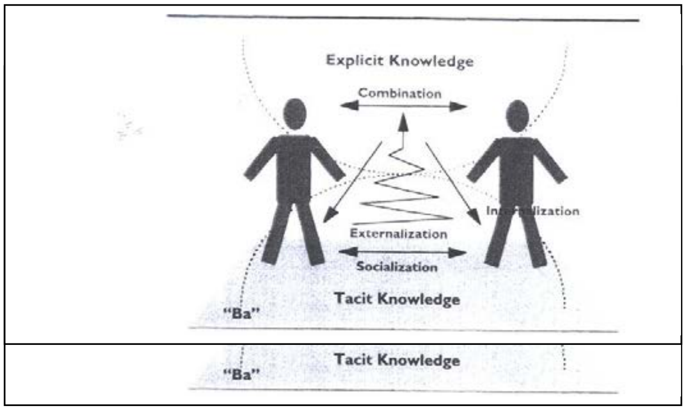



Figure 1. From " The concept of "Ba": Building a foundation for knowledge creation by I. Nonaka & N. Konno (1998).*California Management Review 40*(3), 40-54. Copyright by California Management Review. Reprinted with permission.

"Ba" has several key descriptors (Nonaka & Konno, 1998). The first is that ba is grounded in an existential framework. Value creation in knowledge-creating companies emerges from interactions within shared *ba* but is not restricted to the physical *ba*. *Ba* exists at many levels and these levels may be connected to form a greater *ba* (known as *basho*). The self is embraced by the collective when an individual enters the ba of teams and to participate in ba means to get involved and transcend one's own limited perspective or boundary.

*Critical analysis of Nature of Knowledge*

The idea of understanding knowledge is an ancient one. Placed within the context of the modern organization, knowledge is essential as a platform to creating a skill that is much needed to remain competitive in today's global economy (LaDuke, 2004). "Knowledge Management" is a term that has been questioned due to the nature of knowledge (Snowden, 2002). Knowledge being contained between the ears of employees suggests that it is not a tangible asset and, therefore, is not a commodity that can be "managed" like other assets. Snowden (2002) suggests a new term "Knowledge Exchange." Summarizing several key points regarding knowledge, he contends that knowledge can only be volunteered. In other words, knowledge cannot be forced. This is true especially in the realm of tacit knowledge. Tacit knowledge is held in the minds of the workers and is only evidenced upon application. The final point Snowden makes relates to the context: "People only know what they need to know when they need to know it." Polyani's(1966) concept of focal knowledge (1966) supports this. Knowledge, or lack thereof, becomes apparent when a focus is placed on a particular need or problem related to that information. Alvesson (2001) describes that "knowledge is slippery and an elusive concept and every discipline has its own secret realization of it" (p. 863). Bordum (2002) discusses the term "tacit knowledge" relative to culture. He contends that,

> Tacit knowledge contradicts not only the Platonic definition of knowledge, but many other conceptions of knowledge. If knowledge is an element of culture, or facilitates intersubjective communication between persons, or is just reflectively justified, knowledge cannot be tacit, although it may be kept tacit for

strategic reasons. (p. 52)

## Chaos Theory

Chaos theory will serve as a sensitizing framework for this study due to the fact that interactions between professionals in a dyad are dynamic. The term "dynamic" in the title of this study intends to capture the essence of "marked by usual continuous productive activity or change" (Webster's, p. 361). As described by Ditto and Munakata (1995), chaos theory has no standard definition, but rather, possesses a number of features.

Chaos theory implies sensitivity to an initial condition. This "butterfly effect" allows the possibility that even the slight perturbation of a butterfly flapping its wings can dramatically affect whether sun or cloudy skies will predominate days later. Chaos theory also notes sustained irregularity in the behavior of the system as well as hidden order including a large or infinite number of unstable periodic patterns (or motions). This hidden order forms the infrastructure of irregular chaotic systems or order in disorder for short. Long term predictions are mostly impossible due to sensitivity to initial conditions, which can be known only to a finite degree of precision. (Ditto & Munakata, 1995).

In this study, dyads are considered "dynamic." In other words, if humans create their worldview with social construction, their realities could be very different. As dyads encounter various experiences together they may each bear a different view on the same situation which makes the dyad sensitive to initial conditions. A great deal of this idea has to do with communication and the way dyads share information. Referencing Nonaka, et. al.(2000) spiral of knowledge creation, knowledge is created through a non-linear spiral. This may appear random, but in reality it is chaotic or has hidden order (Ditto & Munakata, 1995). Levy (1994) explains that chaotic systems are in the social sciences and uses an example to illustrate:

> In the social world, outcomes often reflect very complex underlying relationships that include the interaction of several potentially chaotic systems; crop prices, for example, are influenced by the interaction of economic and weather systems. (p. 169)

Relating to this study there are a number of systems that could influence the dyadic work relationship. For example, work schedules are often influenced by budgetary decisions which are enacted by state government or another governing board. Another example is that each participant will have a system where they reside, for example, a home and family that could possibly influence the dyadic interaction. There are implications for chaos theory in the social systems (Eijnatten, 2004; Eijnatten, van Galen & Fitzgerald, 2003; Levy, 1994; Galbraith, 2004; Sullivan,1999;) and Human Resource Development (Bolstorff 1998; Ditto & Munakata, 1995; Gregersen 1993; Murphy, 1996). Wheatley (1999) posits “Chaos and complexity have emerged as serious branches of science; the phrase “order out of chaos” has moved into our lingo, even into American advertising” (p .ix).

## Social Constructionism

This study is viewed through the lens of Social Constructionism. Crotty (1998) states that constructionism " is the view that all knowledge, and therefore all meaningful reality as such, is contingent upon human practices, being constructed in and out of interactions between human beings and their world, and developed and transmitted within an essentially social context" (p. 42).

This concept is especially crucial to this study because the focus is on individuals who work with a partner in a dyadic interaction. Knowledge (Crotty, 1998) is derived from meanings "constructed by human beings as they engage with the world they are interpreting." (Crotty p. 43). The following excerpt from Slife and Williams (1995) explain the role of language in social constructionism.

This way of knowing does not occur simply through sensory experiences, such as observations or experimental data, nor through logical reasoning, such as thought experiments or mathematics alone. This way of knowing does not occur within an individual at all. It occurs in the relations among individuals as they converse and negotiate and share their world with one another" (p. 82).

For this study, the keen awareness and ontological stance I portray will assist in discerning individual reality. According to social constructivism, two people can live in the same world and have two completely different points of view concerning this world. The phenomenon under study, dyads, will have different meaning to each participant but that is acceptable. The meaning will be based on their own personal experiences, world view, and paradigms.

## Summary

The literature review for this study is taken from business and economics, education and psychology. The first section addresses the literature on teams and teamwork. The existing research on teams is vast so this particular study began with a brief overview of the use of teams in organizations. The second section focused on knowledge. The area of knowledge is significant in this study because there is a question of how dyads share and create their knowledge. New knowledge can be generated through the exchange of currently held knowledge. This was discussed in the next section of knowledge creation. The term dynamic is of particular interest in this study because it infers a continually changing landscape within the team. Chaos theory was used as a sensitizing framework to inform the non-linear complexity of dyadic interaction. The research design is viewed through the lens of Social Constructionism.

# CHAPTER THREE

# METHODOLOGY

This chapter explains the rationale and assumptions behind the researcher's choice of qualitative design. Sample selection and data collection techniques will be addressed as well as the methods of managing and recording data. Data analysis will be discussed in this chapter. Finally, the issues of trustworthiness, verification of data and ethical consideration will be discussed.

## Restatement of Purpose and Research Methodology

The purpose of this qualitative study was to explore the experience of professionals working in dyads. Qualitative research offers an avenue to more fully understand the lived experience as well as provide in-depth understanding, rich data and an emic perspective. An emic perspective or the participants' perspective surfaces with qualitative methodologies. "Working in a dyad" can be tentatively defined as two people in an organizational setting that are actively pursuing a common goal. The goal of this study was to begin to understand how knowledge is shared between two professionals and to begin to understand how knowledge is created. The following questions guided the study.

1. How do partners in a team of two share their knowledge?
2. How do partners is a team of two create knowledge?

The design of phenomenology was employed so as to capture the essence of the experience through interviews. By exploring the essence of a person's lived experience phenomenology allows for a depth of investigation.

Phenomenology is the exploration of the essence of a person's lived experience. It is the study of perception by the individual and how that perception is brought into consciousness. Merleau-Ponty posits "phenomenology is the study of essences; and according to it, all problems amount to a finding definitions of essences; the essence of perception, or the essence of consciousness, for example" (1962, p. viii).

Patton (2002) delineates three key elements to a phenomenological design study. The first relates directly to subject matter. It is important to know what people experience and how they interpret the world. Methodology is the second implication. It is important to experience the phenomenon as directly as possible for ourselves. This requires skillful in-depth interviewing that is able to release, with authenticity, the experience of the individual. It is also significant that there is an essence to a shared experience. This essence is what is explored and "these essences are the core meanings mutually understood through a phenomenon commonly experienced" (p. 106). Moustakas (1994) explicates phenomenology is the first method of knowledge because it begins with "things themselves", it is also the final court of appeal.

> Phenomenology, step, by step, attempts to eliminate every thing that represents prejudgment, setting aside presuppositions, and reaching a transcendental state of freshness and openness, a readiness to see in an unfettered way, not threatened by the customs, beliefs, and prejudices of normal science, by the habits of the natural

> world or by knowledge based on unreflected every day experience. (p. 41)

## Rationale for the Design

The qualitative, particulary phenomenological approach, allows for an in-depth study of the experience of sharing and creating knowledge in a team of two. This study lends itself to the qualitative method because sharing knowledge within the realm of a team is a personal experience. How knowledge is created between members of a dyad is also a singular experience. Swanson and Holton (1998) state that "qualitative research uses methods that speak to quality, that is, nuances, perceptions, viewpoints, meaning, relationships, stories, and dynamic changing perspectives" (p. 89). This experience of working in teams generally, and a team of two specifically, is personal and unique to the individual because of what each individual brings to the experience. The nuances, perceptions and viewpoints referred to by Swanson and Holton (1997) will add richness of the human experience to this study.

Phenomenology, the qualitative tradition chosen for this study, captures the importance of the individual experiences of people as conscious human beings (Cresswell 1998). "Through phenomenology a significant methodology is developed for investigating human experience and for deriving knowledge from a state of pure consciousness" (Moustakas, 1994, p. 101). Patton (2002) describes phenomenology as how people make sense of their world. "There is no separate (or objective) reality for people. There is only what they know their experience is and means" (Patton 2002, p. 106).

This design allowed for in depth study of the phenomena of working in teams of two without imposing any presuppositions regarding what it is like working in a dyadic relationship (Moran, 2000). Clearly stated, “Explanations are not be imposed before the phenomena have been understood from within” (Moran 2002, p. 4).

## Sampling Procedure

The purposefully selected sample of four teams of two was taken from the local business communities in the southern region of the state of Florida. Patton (2002) explains that “the logic and power of purposeful sampling derive from the emphasis on in-depth understanding” (p. 46) and “information rich cases are those from which one can learn a great deal about issues of central importance to the purpose of the inquiry, thus the term *purposeful* sampling” (p. 230). For this study, a criterion based sample was derived. A request for participants appeared in a Chamber of Commerce newsletter. This request for participants took the form of an advertisement with specified criterion (Appendix A). I contacted all participants that expressed interest and met with them to verify the criteria. I recruited for the study on a voluntary basis. The logic of criterion sampling “is to review and study all cases that meet some predetermined criterions of importance, a strategy common in quality assurance efforts” (Patton 2002, p. 238). The purposeful sample was based on the following pre-determined criteria:

1) Partners must have been working together for a minimum of one year.

2) Partners should be in mutual agreement that their relationship is platonic.

3) Partners should be perceived professional ‘equals’ in the organization.

Included partners may be real estate professionals who began a company together several years ago, law enforcement officers who partner on a daily basis, lawyers who collaborate on cases, or small business owners.

In order to inform my sample of participants I arranged an initial meeting to discuss the purpose of the study as well as how the study was to be conducted. I obtained informed consent that clearly identified the nature and purpose of the study. In this study the participants had rights and were informed of them. Essentially they were:

1) Participants had the right to withdraw from the study at any time without repercussions.

2) Participants were assured of confidentiality. The concept of confidentiality versus anonymity was discussed. It was important that they knew that they would not be anonymous because this was not possible using face to face interviews, however all identifying data was removed from the data prior to publication.

This included their required level of commitment, the interview process, the amount and length of time they needed to offer. Permission was obtained from each of the participants for them to participate in the study as well as the participants’ permissions to audiotape the interviews and then publish the data in my dissertation. After everything was explained I verified that they understood and I was made certain that all their questions were answered.

## Data Collection

I collected data primarily through individual and paired interviews. After an initial contact, each member of the dyad was invited to a separate thirty to forty five minute interview. Team interviews were scheduled to occur after individual interviews had taken place. Team interviews were sixty minutes in length. I audio tape recorded the interviews. The questions were the same for both interviews so that individual and team perspectives could be investigated through the questions. For each interview, the participants had an opportunity to preview the questions. The interview questions were presented in an interview guide format for individual preview (Appendix D1) and team preview (Appendix D2). Patton (2002) informs the use of an interview guide, “An interview guide is prepared to ensure that the same basic lines of inquiry are pursued with each person interviewed ”(p. 343). The interview guides also allowed the participants to preview the questions and then respond reflectively to the questions. All interviews were audio taped with the consent of the participant. The audio tape recording machine was placed so as to not be hidden from the participant yet it was not placed in such proximity as to be obtrusive and make the participant feel uncomfortable. Audio tape recording an interview is a useful tool that frees the researcher to concentrate on the technique of interviewing rather than trying to speedily take notes. All interview audio tapes were labeled prior to use and verified for correct labeling immediately after extraction from the tape recording device. All audio tapes have been kept in a secured lockbox at my residence where only I have access to them.  I transcribed all of the audio tapes.  I completed this process within a twenty-four hour period after the interviews took place in order to retain the “memory” of the interview. The audio tape recorder served as a memory for the content of the interview. The other nuances of the interview were recorded in my researcher’s journal. These additional notes served as contextual reminders while transcribing the audio tapes. Six months after transcription the tapes were destroyed.

An advantage of the face-to face interview was that participants were able to present historical information regarding the team. Another advantage of the structured interview was that it allowed researcher “control” over the line of questioning. The tradition of phenomenology explores this individual experience. What each member brings to the team is significant for the individual and dyadic experience.   This can best be revealed through individual interviews first and then team interviews.  The sequence of interviews is significant as a part of the initial interview was to put the participant at ease. It was crucial for the participants to feel relaxed and comfortable. Swanson and Holton (1997, p. 97) offer a checklist for the group and individual interviews. Among the useful suggestions are: Is there something being implied but left unspoken? What is the main message this person is giving me? Have I discovered feelings a motivation as well as facts about this work situation?  The researcher enters into the interview with “the assumption that the perspective of others is meaningful, knowable, and able to be made explicit.” (Patton, 2002, p. 341).

Another reason to have conducted interviews is that it was not practical to observe the individuals in their work setting firsthand. For this study the work situations varied. For example, one of the teams was an emergency medical technician (EMT) team. These teams are similar to law enforcement officers who work in dyads and rely upon each other for information to make decisions (Pinizzotto, Davis, & Miller, 2004). However, observational access for a paramedic and an emergency medical technician team was highly problematic. Since the participants need to be productive during their work day the researcher’s presence could have been considered obtrusive and counterproductive to the efficient treatment of patients.

My researcher’s journal was another data collection tool (Cresswell, 1998) that was maintained in order to provide a written ‘memory’ of the experience of the study. This journal, a simple notebook, was where I record my non-participative observations. Non-participative observations were used in order to gain additional understanding of the dynamics between the individuals during the team interview process. This should not be confused with *participative observation* or the methodology aiming to generate practical and theoretical truths about human life grounded in the realities of daily existence using the insider’s perspective. Non-participative observation does not use the insider’s view because the researcher does not become immersed as an insider, but rather retains the outsider’s perspective. Examples of these types of observations were notes regarding the environment where the interview took place, the perceived state of mind the participant as they entered the interview (were they late and rushed or did they enter calm and composed?), as well as other researcher noted information that was relevant to the study.

## Data Analysis

Patton (2002) notes, "we interview people to find out from them those things we cannot directly observe. The issue is not whether observational data are more desirable, or valid, or meaningful than self-report data. The fact is that we cannot observe everything" (p. 341-342). I transcribed the interview data and the participants had an opportunity to review the transcribed data from their own interview and their dyad interview to ensure accuracy. The data was stored in a secure location. The participants will received a copy of their own statement. Upon completion of the study, participants received a copy of the final report of the research study if they desired one. The data analysis method for this study was phenomenological analysis. "Phenomenological data analysis proceeds through the methodology of reduction, the analysis of specific statements and themes, and a search for all possible meanings" (Cresswell, 1998 p.52). Patton (2002) describes the purpose " the phenomenological analysis process as seeking to grasp and elucidate the meaning, structure, and essence of the lived experience of a phenomenon for a person or group of people" (p. 482).

The first step in phenomenological analysis is called epoche. Moustakas (1994) describes epoche as "to refrain from judgement, to abstain from or stay away from the everyday, ordinary way of perceiving things" (p. 33). Rigor, an essential quality in research in reinforced through epoche (Patton, 2002, p. 485) as the researcher is to become aware of any biases, points of view or assumptions regarding the phenomenon under question. With the removal of, or significant awareness of, these preconceived notions the researcher is now able to proceed with a new set of eyes and a fresh perspective of the phenomenon. Epoche, according to Patton (2002), is an "ongoing analytical process rather than a single fixed event" (p. 485).

Phenomenological reduction is the next step in analysis. There are four steps in phenomenological reduction (Denzin & Lincoln, 2000): bracketing, horizontalizing, clustering and organizing. The first step, bracketing, involves locating the personal experience, or the self story that speak to the phenomenon in question. the following. These phrases are interpreted and, if possible, the subjects' interpretations of these phrases are obtained.

The phrases are then inspected for meanings for what might be revealed about the essential, recurring features of the phenomenon. A definition of the phenomenon in terms of the essential recurring features is then developed. In bracketing the meaning of the statements or the statements themselves are not weighted. In other words all statements "are treated with equal value" (Patton, 2002, p. 486). This is what is meant by being "horizontalized" (Patton, 2002, p. 486). The data is the examined for repetitions, extraneous information and "clustered" into themes identifying significant phrases that occur relative to the phenomenon under study. Organizing the horizons is the final step of phenomenological reduction. This means the emerging themes are identified.

Imaginative variation is the next step in phenomenological analysis. Breaking down the words “imaginative variation” this process entails the researcher using their imagination, their vision, their view to perceive variations on the possible meaning of the phenomenon. Moustakas (1994) states that the researcher is able to “seek possible meanings through the utilization of imagination, varying the frames of reference, employing polarities and reversals, and approaching the phenomenon from divergent perspectives” (p. 97*).* The steps of Imaginative Variation (Moustakas, 1994) include a systematic varying of the possible structural meanings that underlie the textual meanings and recognizing the underlying themes or contexts that account for the emergence of the phenomenon. There must also be a consideration of the universal structures that precipitate feelings and thoughts with reference to the phenonmena, such as the structure of time, space, bodily concerns, materiality, causality, relation to self, or relation to others. The researcher should then search for exemplifications that vividly illustrate the invariant structural themes and facilitate the development of a structural description of the phenomenon (p. 99).

All of the previous steps lead to “the intuitive integration of the fundamental textural and structural descriptions into a unified statement of the essences of the experience of the phenomenon as a whole” ( Patton, 2002, p.100). The essence of the phenomenon is unique to the sample in the study, “the phenomenologist looks beneath the affect inherent in the experience to deeper meaning for the individuals who, together, make up the group.” (Patton, 2002, p. 486).

**Comment [scm5]:** Need citation try Patton

Semi-structured open-ended interviews were used to collect data. All interviews were audio-taped and I transcribed all data verbatim. The interviews yielded nearly 200 pages of transcription for data analysis. . I decided to retain the coding for each team and participant rather than issue pseudonyms. While transcribing I discovered that retaining the original coding increased accuracy. Therefore, for this study each team was assigned a letter A-D. Each team member was assigned a number 1-8. The first person in the first team would be A:1, the second person in the first team would be A:2. This continues until all teams A-D and participants 1-8 are lettered and number. Therefore Team A would be comprised of Participants 1 and 2. Team B would be comprised of Participants 3 and 4. The second member (Participant 6) of the third team (C) interviewed would be identified as C:6 . Two rounds of interviews were completed, individual and team. Data obtained in each round will be identified as originating in either individual or team interviews.

After the interviews were completed the following steps occurred: 1) transcription 2) careful review 3) horizontalizing of data 4) color coding of theme and 5) identification of sub-themes. Each emerging themes were presented in a data grid. Additionally, data was included in-text when short quotations were used. Longer quotations were set off from the text and were displayed as a single-spaced, justified and italicized paragraph.

## Verification of Data and Trustworthiness

**Comment [scm6]:** Pick up here 2/10/06

Cresswell (1998) views the verification of data as “a process that occurs throughout the data collection, analysis, and report writing of a study” (p. 194).

Thus the verification of data is an ongoing, continuous engagement. Denzin (1978) reasoned, "because each method reveals different aspects of empirical reality, multiple methods of observation must be employed" (p. 28). To verify data, the researcher has to keep careful records and involve the participants. In this study, the participant had a number of opportunities to verify the transcribed data collected during interviews. After the interviews I asked the participants to read over and note an inaccuracies or misrepresentations in the transcribed data.

Patton posits that "triangulation within a qualitative inquiry strategy can be attained by combining both interviewing and observations (2002, p. 248). By conducting two rounds of interviews, first an individual interview then a partner interview, I had an opportunity to verify the information from each participant. During the individual interviews participants often related incidents that were again mentioned by their partner. Examples of projects currently being worked on were mentioned by both individual and teams. This showed a consistency between the partners. Another method of verification was through the use of multiple sources of data. In this study interviewing and non-participative observation notes in my researcher's journal were each used to gain increased depth of understanding of the employees working in a dyad.

Verification of data does not mean that multiple sources necessarily support or strengthen the researcher's stance, but rather they provide additional depth and richness to the qualitative study. Patton (2002) elucidates this point: understanding inconsistencies in findings across different kinds of data can be illuminative. Finding such inconsistencies ought not be viewed as weakening the credibility of results, but rather as offering opportunities for deeper insight into the relationship between inquiry approach and the phenomenon under study (p. 248). Trustworthiness, according to Patton (2002), is "tied directly to the trustworthiness of the person who collects and analyzes the data-and his or her demonstrated competence". In research, whether qualitative or quantitative, the researcher must be able to approach, collect and interpret the data in an honest and forthright manner. In quantitative studies the rigor of the study is addressed through terms such as validity and reliability. In a qualitative study rigor is addressed through the terms trustworthiness and credibility. As the researcher is the primary tool in qualitative studies the researcher must exhibit forthrightness and integrity. Patton posits "the issue need not be quantitative versus qualitative methods, bur rather how to combine the strengths of each in a multimethods approach to research and evaluation" (2002, p. 574). The purposeful sample wase chosen strictly against the criterion established for this sample in this study. The participants were fully informed and aware of their rights and responsibilities as well as my intentions as the researcher. The data was meticulously transcribed and careful consideration was given to allotting sufficient time in this researcher's schedule to complete the transcriptions in an expedient manner so as not to lose any nuances of the interview that may have proven valuable to the study.

**Comment [scm7]:** Come back here

## Ethical Considerations

I was intrigued by Patton (2002) stating that "the purpose of a research interview is first and foremost to gather data, not change people" (p. 405).The process of preparing for and beginning to write a dissertation has not only

changed me, it has transformed me. This has been an exhilarating, exhausting, bewildering, humiliating and miraculous process of transformation. However, change is expected and beneficial for a doctoral candidate. This is not the same case for a research participant. The ethical consideration is: how do I conduct interviews that are informational, rich in depth and understanding and not harm the participant? Harm, in the case of an interview could mean asking a question that is hurtful, or probing to the extent of raw emotional exposure of the participant. An ethical consideration I have pondered is how do I, as the researcher, approach the participants individually and then together and not cause a rift between them? It is only human nature to be curious as to the responses of the other half of the "team." The answer to my own question is sensitivity. The researcher must be sensitive, open and willing to place the well-being of the participant before their own research agenda. The value of the participant should be continually reflected in the actions and words of the researcher (Patton, 2002): using words that make sense to the interviewee, words that reflect
the respondent's worldview, will improve the quality of data obtained during the interview. Without sensitivity to the impact of particular words on the person being interviewed an answer may make no sense at all-or there may be no answer.

I openly stated that the participants would have the same questions for each round of interviews and that the purpose of the study was to glean insight into the phenomenon of professional partners working in dyads. It was distinctly not the purpose of the study to compare the individual partners with each other or the varying dyads with each other. All of this was shared in the beginning with the participants prior to obtaining their consent for participation.

All interviews were scheduled ahead of time at a location most convenient for the participant. For the team interview the participants met together at a time conducive to conversation. Since the individual interviews had already been completed participants knew the questions and were relaxed during this time.

## Role of Researcher

In Chapter 1, I briefly described the origin of this study. I addressed my subjectivity by restating that I have had a very successful and personally fulfilling experience with working in a dyad. In qualitative design, the researcher is the primary instrument (Patton, 2002). Because of my interest, my role as researcher in this study required empathetic neutrality and mindfulness. Empathetic neutrality is the ability of the researcher to remain neutral and empathetic simultaneously. “In interviewing [the researcher] seeks understanding without judgment by showing openness, sensitivity, respect, awareness and responsiveness” (Patton 2002 p. 40). I had to caution myself to not be overly optimistic regarding others’ experience and not to compare their experiences with my own. Also, it would not be prudent for me to share my own experience. When the researcher is the primary tool, as in qualitative research, the skill of the researcher has a direct effect on the study. This is a disadvantage of qualitative research but can be balanced with the investigator becoming diligently aware of sources of their own bias and error (Moustakas 1994). Regarding my role as the primary research instrument I wanted to be especially prudent and conscious of any possible biases. Two of the participants worked for an emergency medical response team. I had to be certain that I did not have any preconceived notions regarding their work in general or participants specifically. Two of the participants were in the education field. My subjectivity within this area lies in a certain preconceived notion of the role of the teacher having taught for almost twenty years. I needed to be aware that my knowledge of the various fields that were represented in my study, while more than likely inaccurate, is still *there.*

The subjectivity arena is laden with pitfalls for any thoughtful researcher. If I was aware, reflective and thoroughly honest I would be able to address them as they surfaced.

## Summary

This chapter explained the rationale and assumptions behind the researcher's choice of qualitative design, particularly phenomenology. Next, it presented methods for collection and analysis. Finally, the issues of trustworthiness, verification of data and ethical consideration were addressed.

# CHAPTER FOUR

# FINDINGS

In Chapter Four, I will present the findings obtained through interviews with the research participants selected for this study based upon the criteria defined in Chapter Three. First a description of the participants will be presented. Following this will be a description of the data collection process.

*Participant Description*

There were four teams in this study consisting of eight participants. The interviews lasted between thirty and forty five minutes for the individual interviews and between sixty and ninety minutes for the team interviews. Each of the participants were interviewed individually first and then in a team setting. Of the research participants five were male and three were female. Two of the teams were both male and one of the teams were both female. Only one team represented a male/female grouping. The levels of education varied, yet all participants had some college education and most had a Bachelor's degree or higher. All of the participants were Caucasian although this was not deliberate. All the people who volunteered for this study all were Caucasian. See Table 4.1 for the demographic information.

Table 4.1. Participant Demographic Information

| Team | Gender | Decade Age | Race | Education | Occupation | Years in Occupation |
|---|---|---|---|---|---|---|
| A:1 | Male | 50's | W | Bachelors | Medical Service | 30+ |
| A:2 | Male | 30's | W | Associates of Science | Medical Service | 12+ |
| B:3 | Female | 40's | W | Bachelor's | Education | 25+ |
| B:4 | Female | 50's | W | Master's | Education | 20+ |
| C:5 | Male | 40's | W | Bachelor's | Not for Profit | 10+ |
| C:6 | Male | 50's | W | Master's | Not for Profit | 10+ |
| D:7 | Male | 40's | W | Bachelor's | Museum Organization | 10+ |
| D:8 | Female | 40's | W | PhD (ABD) | Adult Education | 6+ |

## Themes

The following section has four themes which were derived from the transcribed data. The themes are 1) Shared space, (2) Active process of relating, (3) Sensitivity to initial conditions, and (4) Support. Within each of these themes are sub-themes. Each theme and sub-theme is discussed in the section below.

Table 4:2 Themes and Subthemes

| | |
|---|---|
| <u>Shared Space</u> | <u>Active Process of Relating</u> |
| Time<br>Ideas<br>Physical Space | Process<br>Learning<br>Non verbal |
| <u>Sensitivity to Initial Conditions</u> | <u>Support</u> |
| Experience<br>Skills | Task Support<br>Emotional<br>Collegial |

Theme One: Shared Space

"Ba" is a concept that was first proposed by Japanese philosopher Kitaro Nishida and was further developed by Shimizu (Nonaka & Konno, 1998). "Ba" can be thought of as the shared space for emerging relationships. This can be shared physically as well. In this study, participants shared physical space in their work. This included space in a motor vehicle as well as working on site in close physical proximity. Shared space can also be virtual or mental as well. Some examples of mentally shared space might be shared experiences or the same goals. "Ba" can also be a combination of the three afore mentioned shared spaces.

*Theme One: Shared space*

A criterion of this study is that partners work together for a minimum of one year. Within the interviews three sub themes were revealed within the broader "shared space." These were shared time, shared ideas and shared physical space. The findings in each of these areas are discussed on the following page.

Table 4.3.~~2.~~ Theme 1: Shared Space

| Theme 1 | Sub-theme |
|---|---|
| | Shared time together<br>Shared ideas<br>Shared physical space |

*Shared Time*

The participants described sharing time together but often within the confines of a busy schedule. There was recognition on the part of participant 5 that this occurs intentionally "We build in time for it, usually. It's going to be dictated by the appointments that we have. Participant 3 from Team B related that time together is limited during their work day.

> *We talk about that some of the time. We don't have a lot of time and we don't see each other a lot outside of school, but I know what her children are doing…we don't spend hours sitting talking and dwelling because we don't have time during the school day.*

Participants explained that the sharing of time was more often than not when other things were happening. Table 4.4~~3~~ describes the way in which teams shared their time.

Table 4.~~4.~~3. Theme 1: Shared Time Perspective

| Team | Shared Time perspective |
|---|---|
| A | "…you cannot live in separate worlds. There is not a curtain between the driver's side and the passenger's side in this truck. You have to meld together. That has to happen and in this line of work, this job…we are all in the same boat. We are together for 24 hours. |
| B | "Usually it is when we are walking down the hall or eating at lunch or a few minutes before the kids come." |
| C | "We have our time when we sit down and talk and a lot of our sharing comes then when we sit down and talk- a lot of our information sharing comes with that." |
| D | "It's nice to know that the time we have scheduled for a lunch meeting or some other thing- we're just going to talk about this little idea – and you know that that's going to be kind of fun to throw around." |

Within the realm of sharing time, the following participants shared that they were able to "get to know them" which, in turn, facilitated working with their partner.

> *When you work with people to get to know them in a personal way, to get to know the way they feel about certain situations it helps you work with other people, you know where that person is coming from-you know their thought process, their philosophies, their preferences. I think that when you know someone at all those different levels it makes them easier to work with especially if you agree with their opinion of the philosophical thoughts or their personality or whatever it might be. C: 5*

> *So that is where we come back to the underscoring of working with the same person on a regular basis as close as we do you can read each other pretty quick. It gets to the point where you*

*can, you know. A:2*

There was only one participant, from the medical service industry, that admitted that so much time was already built in to their day that they had to plan for time away from each other.

> *Sometimes, my friend will go upstairs and play a video game, that is his time. I don't invade that space it's no different than me sitting in here reading a book. That's my time and you have to be respectful for that.* A:1

*Shared Ideas*

According to (Oerlemans, Meeus, and Boekema, 1998) shared space can be in the realm of ideas. Participant 6 spoke candidly regarding his thoughts about this.

> *I believe fundamentally, philosophically we are very much aligned, however, the delivery of it and the mindset, we come from a different generation, a different background, a different discipline so our ideas are in conflict.*

A little later in the interview Participant 6 expressed the following, "The longer we work together I think the closer we are to realizing how much on the same page we are". Team D, Participant 7 concluded,

> *I think it's been great. I have a much better understanding of S's world. I hope she feels like she has a better understanding of my world and eventually you get to the point where some of these things will be able to go almost unsaid. You get comfortable in the other person's world, then you become more fluid.*

Several of the participants expressed significance of shared ideas,

> *Team D: Participant 7 when you find a friend who is of like mind across that rift you hold on tight. And you develop that relationship because it is a very powerful relationship when they are there and they are in place a lot of really wonderful things can happen.*

Team D, Participant 8 spoke consistently of shared goals.

> *Although it looks like it is very loose I think we both have a pretty Good idea of what we want to get out of it when it is finished.*
>
> *I think that ultimately we both want the same result so when someone comes forward with an idea we tend to kind of feed off of it and sometimes things work very quickly.*
>
> *…it took a few weeks to pin down what we wanted to do and we really haven't gotten specifics pinned down yet, but we have a general plan.*
>
> *I think at one point during that time we both kind of looked at each other and said 'hey, its time to put our money where our mouth is.*

Participant 6 stated clearly that "*our roles are different –the goal is the same*." In the team interview from Team C, Participant 6 stated,

> *Once you develop an understanding that we do come at things from different angles but always wind up at the same place there becomes less of a need to shout out about how I may oppose a certain idea because I understand now that we are eventually going to wind up at the same place anyway so what is the point in arguing the means if the end is always going to be the same?*

While not mentioned specifically by all teams the idea of role delineation was mentioned by Team A:1.

> *He has things he needs to do and I have things I have to do and I'm anticipating what he is going to do so like I said, I am kind of like his right hand, doing things while he is working with his left hand.*
>
> *There is no way that I could function without him and he does a lot of things behind the scene. The truck and the equipment are his responsibility. I have to have piece of mind knowing that I don't have to follow him around to see what he is doing. I trust him. If we use a back board the backboard will be put back on or whatever or inside the truck or whatever so that part of the working relationship*

*is that I don't, I respect him for his job and for him being here.* A:2

During the team interview with Team D participant 7 spoke earnestly about sharing ideas of goals but in the sense of setting limits.

> *We did look at each other and realized we couldn't push it as far as we wanted to. If we had pushed it all the way out I don't think we would have probably ended up with anything to hang our hat on. I think by stopping where we did and not trying to push too far that we wound up with a pretty decent result at the end. I think that we met some goals and I think that the ideas are all a conglomeration.*

Team B, Participant 3 expressed that she and her team member worked interdependently.

> *as K. said yesterday 'one brain' Sometimes we are that. Sometimes it takes both of us to get something accomplished.*

Participant 7 from Team D explained,

> *so when we work together it's a lot of ideas being thrown together, we're both big idea people and it starts with the big ideas coming from both of our fields-I can do this and you can do that. What if we put these things together? Then figuring out how that fits with what we are trying to accomplish and then stepping back 3 or 4 steps and saying okay let's plug this in to a model and see if that model will do what we need for it to do. So it's informal, it's flexible, it's roundabout and it's effective.*

*Shared Physical Space*

Three of the teams shared physical work space. These teams shared an ambulance as well as housing quarters during their shift, a classroom and a business office. The team sharing the most space together was the Team A and Participant 1 emphatically stressed that " … it's a very unique job in the fact that you are so joined a the hip, ”  as well as “ I am just there to be his right hand whatever he needs as he is working” . He spoke of the importance of the same partner, “if you work with the same person for a period of time they’ll put everything out and all I have to do is reach out and grab it.”

This team reiterated their need to be aware of where there bodies were in their shared space.

> *Let me tell you, we have hit heads inside the truck because there is only so much space inside the truck…he knows what I want and he may go to do something at the same time so it’s not uncommon…*

The team laughed about these incidents and continued with sharing “ There are times we have to climb over each others’ back to get the positions we need to do something.”

Team C shared that the close physical proximity resulted in being able to communicate more freely.

> *We have the benefit of sharing office space and being able to talk about what is going on in our own specific arena with the knowledge levels that we might bring in, different seminars or workshops that we might go to, or kids that he is dealing with or that I am dealing with. The free flow of information that exists because of shared office space is great but what is also great is that we are own people doing our own jobs.*

Participant 4 reflected on the feelings of sharing a classroom space and revealed her high level of comfort with this arrangement “I have always felt like it was home with her.”

## Theme Two: Relating as an Active Process

Cook (1999) argues that “knowledge” is different from the act of “knowing.”  Stacey (2001) suggests that “knowledge is not a thing, or a system, but an ephemeral, active process of relating. If one takes this view then no one, let alone a corporation, can own knowledge. Knowledge itself cannot be stored, nor can intellectual capital be measured, and certainly neither of them can be managed" (p. 13). Two people who work together on a project share a dynamic, not static, relationship that mirrors what Stacey (2001) describes as an "active process of relating" (p. 15). The research questions for this study evolved from my initial research interest. The question I had in mind to investigate was: What does one partner know that that the other partner does not know and how can they combine their knowledge to meet a need or create something new? The three sub-themes that emerged from within theme two are, 1) process 2) learning and 3) non-verbal.

They are presented in Table 4.5

4

Table 4.5.~~4.~~ Theme 2: Relating As An Active Process

| Theme 2 | Sub-themes |
|---|---|
| Relating as an Active Process | Process |
| | Learning |
| | Non-verbal |

*Sub-Theme One: Process*

The first sub theme surfaced as teams began to explain *how* they share information. Each of the teams described their experience of sharing as a process, as involving both of the participants. Each of the teams used the phrase "back and forth", implying mutual involvement. Participant 7, during the team interview, described it more fully as a game of badminton.

> *I think it starts off when one of us throws something out. It's like a badminton game – one of us shoots a birdie and then the other one takes it and runs with it a little bit further and the I think there is a period where we both kind of try to play devil's advocate with it and then I think that it evolves into an idea that we can both live with and an ideal that we can both call our own-together so it's an idea the when we go out and try to get someone else to buy into it or go along with it we both feel ownership for it.*

The following reveals how each team, during the team interview, described the process of sharing information as verbal. In the following entries communication is purposeful. The participants not only divulge how they share information but also for what reason which appears in bold-faced type.

> *it's mostly verbal because that is the best way you can get to the point , **the other person doesn't have to guess what is going on** …A:1*

> *We are telling each other what we are doing **so that we both know what page we are on** so that if he's got an IV bag out and spiked I'm not….that's wasting time…A:1*

> *what about…this or that…and so bantering back and forth with each other bounding ideas back and forth across each other **we are able to come in there and narrow down the problem a bit A:** 1*

> *we ate quietly and just sort of talked and visited and **made some plans for tomorrow** and most direct communication is done orally and we talked together back and forth. B:3*

> *Always face to face and very informal, sitting down, might have been lunches, might have been sitting down in the office and making sure we blocked off a*

*couple of hours* ***just to riff and see where it got us*** *and then always backing up a notch to capture what we had, grab it and document it somehow…..D:7*

Team B described the process of sharing information within the team with an emphasis on application.

*I just think it's ongoing. It's continual, it's like day in, day out, I am learning and sharing with her things I know from past experience or things I just learned from new trainings or new experiences I have had so unlike other professional development opportunity it's not like you go and you get info. And then you apply it, it's like this continual building and integrating it into your daily practice so it's much more powerful, I think, than other forms of professional development. B: 4*

*Sub-Theme Two: Learning*

Learning from one another was a theme that surfaced continually during the interviews. The participants were very gracious in discussing how they were able to learn from one another as well as the challenges they faced.

*we kind of, more or less, critique each other as the calls go through so that information is a constant thing that goes on…A: 1 even when it's what we did wrong. What did we do badly? We learn from that….It's not just always wow that was the most wonderful thing she has ever done. It's like wow-that was a rough day. Then we reflect back and do some discussion and kind of diffuse the day and 'okay, let's not let that happen again and we learn from that. B:4*

**Comment [scm8]:** ind who from ?

*We do have disagreements. It's kind of funny, sometimes, we have a disagreement about the process but the end part is the same. The means part might be different, but the ends are the same. he means part might be different, but the ends are the same, we believe in the same philosophies just approaching it from different aspects. C:6*

*these are constant professional issues that really make us think and challenge the methods in which we are willing to proceed and how we are going to represent the need and connect? C*: 5

> *We are really challenged between ourselves to say ' can we stand up to that and can we respond to that pressure in a positive way? Can we make those changes or do changes have to be made? But it never feels like pressure. It just feels like creative… how can we make it better, which is a good thing. D:8*

*Sub-Theme Three: Non-verbal*

One of the issues that surfaced repeatedly was sharing information using non-verbal cues. All four teams noted that they used some form of non-verbal communication. The reasons they noted to use this form was ranged from necessity as in Team A:1 " A lot of times eye contact or facial expressions come in to call when we are working with patients" . This team later explained that they don't speak about the condition of the patient in front of the patient or relatives. This reduces the amount tension in high anxiety situations such as an injury. Team B noted that they used non-verbal communication for convenience, "we use sign language." One team member in Team B is skilled in American Sign Language and this team used sign language to communicate without words, " you go that way to catch a child or things like that" (signing).

The participants noted that there can be the use of non-verbal communication within the active process of relating. Three of the four teams spoke specifically of communicating without the use of words. In Team A, participant 2 spoke of working with one previous partner.

> *So that is where we come back to the underscoring of working with the same person on a regular basis as close as we do you can read each other pretty quick. It gets to the point where you can, you know. When I worked with M. for 5 years we barely talked on calls. It was pretty quiet.*

Participant 2 concluded that time spent with one particular partner affected the non-verbal communication.

> *After so long in working with that person he is going to read you like a book. He's going to be like your spouse, he is going to know everything about you and know every way your mannerism, your way, he can tell if something is bothering you.*

Also present in the interviews was the discussion of non-verbal cues in order to intentionally convey a message such as this contribution by Team A, Participant 1.

> *if I still am not clear and maybe there is still something going on or maybe he saw something I did not see at the time or know something that I don't know then he shoots me a 'look' just like ( eyebrows raised). Then I know that it is not very important.*

Participant 3 spoke of the brevity of the conversations, "I just think that we don't need to say long sentences, 'well, you do this and I'll do that." You just know it is going to happen. You know that you have to get with that person and we do communicate mostly orally, we very rarely write each other. " This participant later shared in the team interview that "K (partner) is the writer in the group so she writes much more than I do. She communicates with a lot of people by e-mail whereas I will pick up the phone and talk to someone in person." When asked *how* they shared information Participant B:4 noted a difference in the beginning of the partnership to later on.

> *I think initially a lot of it came through observation. You know when we were co-teaching , or whichever format we took, I would be observing what she did and learning from watching her do good teaching. But now, once we were in to it much deeper I think we had more time to sit. We got our planning time to be a common planning time and we could do more when the kids aren't in the room talking about thing sand kind of reflecting on what went well and what we could do differently and we learned a lot from that type of reflective sharing, too.*

## Theme 3: Sensitivity to Initial Conditions

In this study, dyads are considered “dynamic.” This means that they are continually changing. Of the many variables associated with dynamic change is the idea of initial conditions. Each dyadic member enters with their own perception of the world around them. This perception has been created, in part, through social construction. Initial conditions implies that participants initially enter the dyad with their own reality. As dyads encounter various experiences together they may each bear a different view on the same situation which makes the dyads sensitive to initial conditions. A great deal of what the participants shared regarding this idea was in relation to varying experiences and skills.

Table 4.6~~5~~: Theme 3: Sensitivity To Initial Conditions

| Theme 3 | Sub-themes |
|---|---|
| Sensitivity to Initial Conditions | Experience |
| | Skill |

*Sub-Theme One: Experience*

Experience is a sub-theme that emerged as participants talked about what they knew, not from formal education but rather, from having been there.

Participant 2 mused, **"**You learn it if you go through it". Formal learning was mentioned by 2 of the 4 groups as a beginning point. Team A: Participant 2 said, "so that kind of thing and then too we are taught by the book in school and once you get out of school you find that there are short cuts to anything and they you learn it only because 'hey, this looks like this would work better. In speaking with participant 2 from Team A he indicated clear insight that he and his partner were from very different backgrounds "We come from different parts of the country, two different worlds but we work together, so his experience and my experience fit, come together." This particular participant felt that his partner might even be more congenial with certain patients because of his laid back 'Georgia' style. He shared the following:

> *I am more impatient with people and with Kyle he's got more of a laid back attitude which is good because if I get to the point where I aggravate this guy so bad, Kyle can calm him down-it's a routine. It's like good cop, bad cop. Kyle can come in and pretty much sweet talks these people-especially the old ladies. He gets along with them so well but he has the very laid back, Southern, calming attitude so, it, he brings that to the table and I think that is a good thing, you know?*

Three of the four teams referred to specific incidents where partners brought different experiences to the team and thus, benefited the team.

Participant 7 regarded his education as a beginning point from which to continue to evolve as a professional.

> *It wasn't formal schooling at all. I don't think any formal schooling could do this and I think most people when they talk about their profession, the formal schooling gets them to the point where they are licensed or able to walk into the building and say 'okay', this is my job' but it's the*

*experience that gets it done. It is seeing other people do what they do and knowing that works.*

When asked "How do partners in a team create knowledge?", participants shared that it is necessary to be open to others' point of view.

*he may have some different insight or he may have some information from where he worked. We can't ever close our minds to anything that is new or may improve because once you do that you are going to become a dinosaur-you may shut down.* A:1

Comment [scm9]: Who said this?

Each team related their varied experiences, both professional and personal, that led them to where they are now. For example,

*Any experience that you have . We come from different parts of the country, two different worlds but we work together ,so his experience and my experience fit, come together as far as patient care, or how to resolve a situation but I think that coalition of both of our worlds coming together, our education, our training, different experiences ,if that all comes together than it is pretty much.* A:1

One particular interviewee, participant 7 from team D, spoke of similarities in experiences and referenced their differences as a combination of job role and the resources they had available to them.

*I think we are very similar in the types of knowledge and experiences we have. The nice thing about the product that we are creating right now is that it does combine my informal side and the resources I have available with (name) more formal mandate.*

He continued to attribute these very differences to the success of the end product.

*I think that in a team of two, we can both bring different things to the table. I don't think that alone either one of us would have been as successful with the project we created. Possibly I could have gone to another organization and said this is what I want to do and gotten the time from them or whatever, but I don't think we would have turned out the product that we turned out. I think that, like I said in the beginning , that* *we each brought different things to the table that allowed us to be both creative and successful in our endeavor.*

Table 4.7~~6~~ charts the responses from three of the four teams regarding their views on their varying roles within the teams.

Table 4.7 ~~6.~~ Sub-Theme: Varying Roles and Responsibilities

| Team | Varying roles and responsibilities |
|---|---|
| C:6 | "We all have different roles, different responsibilities and identities and different independence which is a pleasure working on the team that way because we all respect each others' role and what we each bring to the table so I think that is the first important part". |
| B:3 | "we have a dynamic happening which, I think, is an important one. Kids come and can relate to one or the other of us in different ways because of the physical age and the life experience and definitely because of our delivery". |
| D:7 | "Sometimes we huddle before addressing a group and we'll say 'what do we have to talk to them about today?' and I'll often say ' I really think that is your boat and that comes better from you…that's really for you to talk to them about". |

*Sub-Theme Two: Skill*

A skill is defined as something that the team member knows how to do. Skills can be acquired formally or informally and can be explicit or implicit within the team. This could be a competency based component of their profession or something entirely unrelated. While only speaking for their dyad, during their

**Comment [scm10]:** Whose def. is this?

team interview participant 4 shared “ we also have strengths in different areas so that really helps us in different ways.” All teams referred to skills of each member. Team C: 5 explained that, for their team, the process of determining skill sets required time.

> *(he) gravitated toward what he is doing now and I Gravitated toward what I am doing now basically by sitting down initially and figuring out what it is we do best according to our skill set, as far as our backgrounds, experiences and things of that nature. I don’t want to say it was a ‘eureka’ moment because it was more of a slow process.*

Team D, participant 8, in the team interview, gave a clear example regarding deadlines.

> *I really hate deadlines and I really like that open space in between . I will never impose a deadline on myself. I will play with an idea forever-that’s why you need a (partner) She is the one who will say- okay we need to get this down on paper- or we need to produce something that will do what ever it is. (name) understands and it is good to have one of those on a team so I don’t just continually play with the idea and eventually somebody says‘alright', do something with it! And that’s another one of those good things about having a team. You both bring your strengths and that is not one of mine, but I think that is one of hers so she calls me to account and makes me tow the line every once in awhile which is good for me. It makes me clarify my ideas and I guess you get what you get out of it.*

Theme Four: Support

The fourth theme derived from the individual and team interviews is in the area of support. Each of the team members indicated that they supported each other as reflection of teamwork. Table 4.8~~7~~ charts the three types of support mentioned within the overall theme of support.

Table 4.8~~7.~~ Theme Four: Support

| Theme 4 | Sub-themes |
|---|---|
| Support | Task specific |
| | Emotional |
| | Collegial |

All three types of support were evident in the response from Participant 1 in team A. By using the word reassurance he is expressing an emotion. The fact that he is as informed as possible refers to a specific task. The collegiality is evidenced when this participant discusses having the other person there to "back you up".

> *It's reassuring. Because especially in this line of work where I am not out on my own trying to think- well, what could be wrong? Having self confidence and being on top of your game and being as informed as possible is always good to carry as much knowledge as possible, but when you have another person there to back you up or to say let's look at it from a different angle what else could be going on?*

*Sub-theme one: Task specific support*

Several of the interviewees referred to task specific support. This is charted in Table 4.9.~~8.~~ Specific task support related to completing a particular task.

Table 4.~~9~~10 ~~8.~~ Sub-Theme: Task Specific Support

| Team | Task Specific Support |
| --- | --- |
| C | "if you give it to someone who doesn't know they have a lot more questions. So I use (name of partner) as a sounding board a lot of times for things like that. This also helps me with the creation of knowledge because I didn't see something that he might see". |
| A | "I see things differently than he does and so if I am thinking a certain thing he's thinking of something else . Together we are able to come to an agreement or conclusion about what is really going on where as if I am by myself I may not always feel as comfortable treating someone based on my knowledge-just by myself". |
| B | "within the last year, virtually any document that we are creating for public we'll run it by each other." |

*Sub-Theme Two: Emotional support*

Emotional support is evident with an appreciation of the partnership as well as a reassurance that having someone else there provides for more than one person thinking. Each of the teams alluded to or spoke outright regarding their feelings about their partner. This is charted in Table 4.10~~9~~.

Table 4.~~10~~~~9.~~ Sub-Theme: Emotional Support

| Team | Emotional Support |
|---|---|
| A:2 | "…people are scratching their heads okay… 'I've never seen this before-what are we going to do with this?' and it's just one thing after another but when you work with a partner, it's like it's a good thing in the fact that there are two people thinking. There can't be only one person". |
| B:4 | "Whenever I come back from those meetings I always want to run it past her and get her feedback just because she has been doing this for so long and I am looking at it from a different perspective …" |
| B:5 | "I think the important part is verbal, I mean, conversations like we are having now but I think that another important part is that it is really honest and it's safe to be honest with her. I can tell her how I really feel and it doesn't go any further and I'm not worried about other people coming up and …" |
| C:4 | "It always comes back to the fact that we know each other pretty well and what we each bring to the table. We respect each other on a personal and professional level ". |
| D:7 | "I think that, for me, I am very comfortable working with name. I think that that comfort came quickly and I feel like we both kind of hit our stride. " |

*Sub-Theme Three: Collegial Support*

Sub theme three presented itself as an opportunity for equality regarding team support. Team members gave examples of how they used each other for " bouncing off of one another" or as a "go to person". Team C Participant 6 noted that she "wouldn't want to do this without her (partner) any more". There seemed to be a reliance on one another for insight, verification and advocacy. Team D, Participant 8 stated,

> *It's the whole I challenge you to defend that idea and make me understand that idea, put me in a place where I say "okay, I got it. I know exactly what it is, what I have to do" So there is a lot of poking with the other person's idea and that helps, he poking at my idea-it forces me to formulate. Ideas have to be convincing. They don't come out fleshed out so while the initial idea "this is a great idea!" but then you start to hammer things out with that idea…so that is one of the effective things we have discovered in our relationship is to analyze what we are doing and we do it in a way that is very relaxed. In a nutshell is this really going to work type of thing. So, that is all the poking that goes on-the devil's advocacy-taking it to the edge with it works.*

Table 4.11~~10~~ presents additional support for the participants' view of collegial support.

Table 4.11~~10.~~ Participants' View of Collegial Support

| Team | Collegial Support |
|---|---|
| A:2 | "He may look at if a completely different way from what I am seeing it and I have to take that, accept that and say listen 'that's a great idea-let's try that' ". |
| A:1 | "We are always open to each others' thoughts as far as I may be stumped and he may have a suggestion or it might be vice versa, you have to be open to that. If it resolves the situation hell yeah let's try it." |
| B:4 | "A lot of her criticism is always so on target and it is always constructive, it's always 'you know it really would be better this way Oh wow I wish I had thought of that- that is going to make me look good at the next meeting. So, yeah she is a very good person to use in that capacity". |

C:5 “How I would do it, how I would describe things, they would only come to light after I talked with S-”`

During the team interview for team C participant 6 very poignantly looked at his partner and began speaking quite sincerely about how he felt toward him.

> *We had talked earlier about equality, of professional equality of working together. I have always seen that and I have always respected that about what you bring to this particular team and that’s a given. You influence me, and maybe we have been talking about this a little bit, in terms of my ability to communicate what I, the truth in the thing that I want to say because you frequently challenge my initial, the initial statement, you will challenge it, you always give me an opportunity to stop, shift and approach it from maybe a little different angle. I always know that I am going to get that from you.*

While this is threaded with sentiment and emotion it also presents itself as an each of the partners interacting in a collegial fashion. The term “influence” and the fact that the partner accepts what the other has to say implies a level of support based on a collegial relationship.

This was echoed by Team B, Participant 4 during their team interview.

> *and it helps, too to have two people. Some of the kids sometimes, I mean just issues come up, I mean sometimes it’s nice just to have another person witness you know ,their background, their information when you’re talking to a parent or an administrator. It’s sometimes, too, for the kids that need a lot of attention. It’s nice to have another person to send them to when you need a break.*

The “break” referred to by this participant implies that the one team member relies on the other in order to provide respite from a student.

Summary

This section discussed four themes and eleven sub-themes which were derived from the transcribed data (Figure 4.2). The themes were 1) Shared space 2) Active process of relating 3) Sensitivity to initial conditions and 4) Support. Within each of these themes were sub-themes. Theme 1, shared space had three sub-themes which were time, ideas~~Each theme~~ and physical space. Theme 2 was active process of relating. The sub-themes were process which described how ~~sub-theme is discussed in~~ the participants related. Non-verbal, the second sub-theme, referred to eye signals and cues the participants gave to one another. Learning was the third sub-theme and related to participants' teaching each other on the job formally or informally. . Theme 3 was sensitivity to initial conditions. The sub-themes of experience and skill emerged within this theme. ~~section bel~~Theme 4 discussed participants' various experiences and skills which can together they may each bear a different view on the same situation which makes the dyads sensitive to initial conditions. A great deal of what the participants shared regarding this idea was in relation to varying experiences and skills.

# CHAPTER FIVE

# DISCUSSION, IMPLICATIONS AND CONCLUSION

In this final chapter of my dissertation, I will interpret the meaning of the emerging themes uncovered in my data analysis. I will discuss the relevance of my findings to the existing body of literature, as well as distinguish my findings from those summarized in my literature review. I will also address the limitations of this study. I will conclude this chapter by discussing the implications to human resource development.

## Discussion of Findings

The responses from my eight interview questions were coded into four major themes. After I organized the horizons of data by synthesizing the emerging and recurrent themes, I color coded and charted the relevant responses. The data became a complex and intricate blend of responses to all eight interview questions. With the use of sub-themes and charts, I was able to organize the data into four themes. In my literature review found in Chapter Two, I reviewed multiple studies and categorized them into three categories: (1) the literature on teams and teamwork, (2) studies about knowledge, and (3) chaos theory as related to the dynamic element of dyadic relationships. I will discuss my findings in comparison to the existing literature on the subject of teams of two in the workplace as well as discuss similarities and differences from the results in related research. Further, I will discuss the findings as they relate to my research questions. Those questions are:

1. How do partners in a team share knowledge?

2. How do partners in a team create knowledge?

Researcher Reflections

Each of the participants was eager to talk with me regarding their work albeit curious about the purpose of my study. Not one of the participants had ever been interviewed before so it was extremely important that I prepared them for the process so that they could be as comfortable as possible sharing their thoughts and feelings. There were several specific steps I took in order to alleviate their concerns. First, I spoke with each of the teams together to explain the process and to complete the informed consent. In my study of teams of two if one of the participants declines to participate or drops out then the team is eliminated.

It was an added bonus that each of the teams had the opportunity to decide together if they wanted to participate. Secondly, I addressed each of the questions the participants had. It was beneficial for their partner to hear the questions of their teammate. It also reduced repetition on my part. One of the participants asked me if I would be 'comparing' the answers to the questions and I assured her that would not be the purpose of the interviews. Two of the four teams had questions regarding the criteria for the study. More specifically they wanted to know if, in order to meet the criteria, they had to work together all day every day . I stressed that teams of two do not have to work together daily in order to be a team. Two of the four teams did work together on a daily basis. The other two teams worked together at will. All the teams wanted more information regarding what I meant by "a platonic relationship." As only one of the teams was of mixed gender there was some slight amusement regarding the possible involvement in a same-sex relationship. Perhaps they had never considered themselves in a same-sex relationship. I did not pursue the point but rather explained that primarily I meant marital teams, for example, i.e. husband and wife teams, this team relaxed. Actually, I was not seeking any team that was romantically involved. Each one of the participants appreciated reviewing the questions beforehand. I know this because they told me so. There were some doubts as to why the interview questions were the same for both the individual and team interview. This gave me an opportunity to explain the qualitative tradition of research and the search for depth of information. I still think that both team interviews and individual interviews provided this study with additional richness of data. Also, the interviews reveal the dynamics of the team members interacting together and this could not have occurred with individual interviews alone. The interviews resulted in nearly two hundred pages of transcribed data. Each of the participants had the opportunity to review both their own individual transcriptions as well as the team transcription. No participant recommended changes although one did insert punctuation until I explained that the transcriptions were verbatim. One member of a team found it interesting that they did not finish sentences when they spoke. Team B, Participant 3 was dismayed that she just let her thoughts drift off. Yet, after I explained that is how we each speak in conversation she let her concern fade.

In my study there were eight interview questions, the first five of which were related to the sharing of information. The first question was '*What do you have to know in your field?*' This was deliberately written to be an opening question. While directly related to the study this question was designed to open participants to the interview process and allow them an opportunity to share freely about a subject they were most familiar with. I did this with the intent of learning what they did and observing how they talked about it. Every one of these participants enjoyed speaking about their work and did so enthusiastically. As a lifelong educator I have had little outside experience with the three of the four fields in this study. As a researcher I entered their professions through the eyes and experiences of the participants. I had a general idea of their profession but I did not know the particular tasks they were engaged in or the type of knowledge and training required. Each of the teams spoke at length about their daily work, how they arrived at this point in their careers and about their education. The interview data was replete with personal stories taken from their work.

*Theme One: Shared Space*

This theme reflects the way that space was shared during the work day. Nonaka and Konno (1998) describe Ba as the collective and shared space for emerging relationships. The data revealed three sub themes within the theme of shared space. Within the work day the participants noted they shared time, they shared ideas and they shared physical space. Following is a discussion of each of these sub-themes as they relate to the research question, “How do partners in a team share knowledge?”

*Sub-theme One: shared time.* The interview data supports the importance of sharing time together as the participants expressed that they felt they knew their partner better because of the time they spent together. With the exception of one team, the participants noted that the time together existed because they planned for it. Three of the teams expressed that due to busy schedules they often spent time together while doing other things. In the team B interview, participant 3 shared, “We eat lunch together which helps a lot. (In) that time can do things that are changing at the moment.”

*Sub-theme two: shared ideas.* The concept of shared ideas was prevalent in this study, especially in the realm of goals. While the definition of team may vary, the common element is people working together to accomplish a goal. The literature reveals different types of teams (Katzenbach, 2005) such as steering, planning, process improvement, self managed (Decker, 1997) and cross-functional (Mohamed, Stankosky & Murray, 2004). Most teams are defined by the purpose they serve. This was evident in the interview data. The teams interviewed had varying purposes yet each member was aware of the common purpose of the team. Two of the teams spoke at length about sharing ideas although they freely admitted that they might have had completely different means to that shared end. The teams attributed their cohesiveness to the fact that they learned, over time, that they really were striving to reach the same goal. The other teams mentioned the individual contributions which will be discussed under theme four Support.

*Sub-theme three: sharing physical space.* Sharing physical space was directly mentioned by three teams and alluded to by the fourth team. Two of the four teams shared personal stories related to being very close to each other within physical space. Oerlemans et. al (1998) state, "Knowledge is thought to be partly codified and primarily tacit. The argument is that tacit knowledge is highly personal and specific, hence it is not easily codified and communicated." (p 302) They continue to discuss proximity as an important element in the transfer of knowledge. Before this point in my study the transfer of knowledge was referred to as sharing knowledge. From this point the term transfer of knowledge and sharing of knowledge will be used interchangeably. Whether knowledge is shared, or transferred, according to Oerlemans et. al. (1998) depends upon whether the knowledge is easily codified or is primarily tacit. Team A: 2 remarked, "it's a very unique job in the fact that you are so joined at the hip." The new learning for this study is that it may not be just the physical proximity that promotes sharing, or transfer of knowledge. It may rest upon the physical proximity *and* the level of knowledge that is being shared.

*Theme Two: Active Process of Relating*

The term "dynamic" in the title of this study intends to capture the essence of "marked by usual or continuous productive activity or change" (Webster's, p. 361). In Chapter Four the data revealed that the participants used a variety of words and phrases that imply action between the two members of the team. The literature suggests that information is gleaned through social interaction and this was evident during the coding of these interviews. Ford (1999) posits that reality does not belong to one “true” reality, but rather that reality is individual and socially constructed. He further notes that “realities are constructed and maintained through relationships” (p. 488).

The participants related their experiences with sharing and creating knowledge as a process that reflects some sort of activity. The sub-themes for this section revealed themselves to be process, learning and non-verbal cues. I will discuss each one of these sub-themes as related to the literature.

*Sub-theme one: process.* The idea of process and how knowledge was shared and created was a direct question in the individual interview in addition to being a research question. The participants discussed about how they share information. However, in the team interviews the idea of process was mirrored as participants answered my questions, but then also answered, conversed and discussed between themselves. At one point in time it was evident with Team C that they had forgotten I was even there. Their conversation continued without my prompting and I was no longer a participant in the process. The interaction belonged entirely to them and I was an outside observer looking in. This team spoke of dynamics between them that had challenged both of them in the past. It was an emphatic discussion that I perceived as argumentative. The literature on arguing is extensive (Boster, Levine & Kazoleas, 1993; Brossman & Canary, 1990; Canary, 1989; Canary, Brossmann, Brossmann, & Weger, 1995). This literature has revealed that arguments are a different type of conversation altogether. When participants argue, as perceived in Team D, the dynamics are altered between them (Semic & Canary, 1997). This exchange transpired the way it did because of their relationship and the nature of their conversation, which they had admitted could easily become argumentative. C: 6 managed the conversation with his choice of words that he knew would draw his partner out yet temper him at the same time.

> This way of knowing does not occur simply through sensory experiences, such as observations or experimental data, nor through logical reasoning, such as thought experiments or mathematics alone. This way of knowing does not occur within an individual at all. It occurs in the relations among individuals as they converse and negotiate and share their world with one another." (Slife & Williams, 1995, p. 82)

**Formatted:** Indent: Left: 1", First line: 0.04"

*Sub-theme two: learning.* Participants were very forthright in discussing what they had learned from each other. The interviewees spoke of learning from each other when they looked over each others' work in the form of critiquing. There was also mentioning of when things do not go well and that the process of reflecting together enabled them to learn what happened so that mistakes can be avoided next time. Team C indicated that the learning happened through the reflective process and through the discourse about what transpired. This occurs outwardly which relates to the literature on knowledge transfer. Snowden (2002) suggests a term "knowledge exchange" where he contends that knowledge can only be volunteered. Participants have to be willing to impart and receive knowledge. When the members of a team willingly learn from each other this is evidenced. Within the realm of tacit knowledge, Snowden (2002) imparts that the transfer of knowledge from tacit to explicit occurs upon application only when it is needed.

The concept of motivation, in reference to willingness to share or volunteer knowledge, is relevant in this study. The literature on motivation is abundant (Deci, 1992; Latham & Pinder 2005). In ~~this particular point in~~ my study motivation to learn (Wen & Wei, 2006; Wlodkowski, 1999), employee motivation (Remedios & Boreham, 2004), and motivation in the learning organization (Deci & Ryan, 2000) would each be relevant. However, for the purpose of this study, only a focus on motivation *within the environment* will be deemed most relevant to answer the question "How do partners in a team share knowledge?" In this study the transfer of knowledge occurs between dyadic members and each member needs to participate in the transfer of knowledge process. Wlodkowski (1999) in his work on motivation posits that "adult motivation can operate on integrated levels, with multiple feelings and thoughts occurring simultaneously" (p.13). Webster's (1994) defines motivation through the root word "motive" as *an emotion or desire operating on the will and causing it to act* (p. 759) It was within this part of the study that I began to think about the motivation of each member within the relationship. In other words, what happened between the two members that motivated them to learn from each other? This question lingers within this study.

**Comment [scm11]:** ite

*Sub-theme three: non-verbal.* During the team interview when we were discussing non-verbal communication, and American Sign Language specifically, B:4 was signing the entire time. When we changed subjects, she stopped. It is suggested, in this study, that when we communicate, our whole selves are involved (Smith, Cottrell, Gosselin, & Sehyns, 2005). The participants referred to sharing information as a holistic endeavor rarely separating the elements of verbal and non-verbal. Three of the four teams readily admitted using all elements as in Team B when they described the entire spectrum “by verbal communication, by eye contact, by facial expressions, even gestures…” The early work of Izard (1971) and Ekman & Friesen (1975) explored facial expressions and the way meaning was derived from them. Essentially, these researchers sorted all facial expressions into six basic categories: fear, happiness, sadness, disgust, anger and surprise. In the team interviews in this study I found that facial expressions were interpreted accurately, according to the research participants, within the context of the situation. The context played a crucial role for both members of the dyad-both the creator of the facial message receptor.

*Theme Three: Sensitivity to Initial Conditions*

In this study of dyadic sharing and creating of knowledge, chaos theory serves as the orienting framework as it implies sensitivity to initial conditions. For this study, it means that when participants enter the dyad for the first time, or initially, they bring with them certain traits, characteristics, knowledge, skills, attitudes, perspective and much more. Each partner enters, initially, in their own way. Their state, in their initial condition, affects the partnership. One indicator of this initial condition is depicted Table 4.1 where the demographic information regarding gender, education and years in the profession are revealed.

Other indicators, such as philosophical stance, perspective, efficacy, and alliances are more difficult to articulate. Each of the partners articulated the recognition of a variety of experiences and skills. Experience, as defined by Websters (1994) is "practical knowledge, skill or practice derived from direct observation of, or participation in events or in a particular activity" (p. 409). Experience, as taken from the definition, then could mean something a participant observed or actually participated in. This could be a competency based component of their profession or something entirely unrelated. In subsequent paragraphs I will discuss these findings as related to the literature on chaos theory with a particular emphasis on the sensitivity to initial conditions.

*Sub-theme one: experience:* A number of references were made by the participants regarding what team members had experienced before they became part of the current team. Coleman (1985) comments that experience, while it can be beneficial, can also be " accidental, such as being in the right place at the right time" or might not be transferable in a new context (p. 2). Coleman (1985) posits that "experience is not what it used to be. Compared to intelligence, ethics, communications skills and team spirit, experience is a shallow measure" (p. 3).

*Sub-theme two: skill:* Alvesson (2001) states that "knowledge is a slippery and elusive concept, and every discipline has its own secret realization of it. Problems of interpretation haunt every attempt to use the concept effectively, such as that even basic typologies that talk about say, formal versus tacit knowledge actually can be quiet meaningless in certain contexts" (p. 864). Myers and David (1992), discuss experience as "knowing and doing" and the value of tacit skill:

> A key feature of this aspect of skill is that it develops through direct experience rather than through formal training. Differences between intellectual and experience-based ways of 'knowing and 'doing' have important implications for performance and consequently for the methods of work organization and training." (p. 45)

The skill set a partner brought to the team was mentioned by all teams. This is closely related to the sub-theme "experience" in the sense that skills can be enhanced over time. While skills varied, each team mentioned that one or the other partner did something they could not or would not choose to do. There is no way of knowing, through this study, if this is ability or choice. Again, motivation, as previously mentioned, may play a role. Team A mentioned specifically enhanced skill through training (refer to demographic Table 4.1) while the three other teams noted different skills attached to each partner. There is a connection between the initial condition discussed earlier and the differing skills and abilities each member brings to the team. These individual experiences and skills can bring the team to a place collectively. In the literature on types of teams cross-functional teams (Mohamed, Stankosky & Murray, 2004) are mentioned. This type of team is comprised of members who deliberately have different experiences and skill, perhaps even specialties in areas that would benefit the team as a whole. In this study three teams mildly shared aspects of cross-functional teams. Team B, C and D each referred to various roles and responsibilities attributed to skill and to experience, thus exhibiting a characteristic of cross-functional teams. Team A showed strong components of being a cross-functional team. In the interview, participant A: 2 shared that “he has his job and I have my job but our goal is patient care.”

*Theme Four: Support*

Each team member made references to support for each other within the dyad. The three themes that emerged through the data each noted a particular type of support. However, more revealing for this particular theme than what was said during the interviews was how the teams acted during the interview process. In my researcher’s notes there is ample evidence of team members displaying supportive behavior toward each another. These actions could be described as friendliness such as a willingness to let the other person speak first, offering beverages or privacy if a cellular telephone call came through. Participants addressed each other with “please” and “thank you” when it was appropriate. The tone of the team interviews, for example, could best be described as one of ease. I noted that each team was relaxed and appeared to be forthright in their answers. They also joked with each other in a friendly, teasing sort of way distinctly not meant to injure the other person. The authenticity of this could not be doubted because it was apparent in all interactions, from the initial meeting to discuss the study, the actual interviews, when I dropped off transcribed data for individual and team verification.

## Discussion of New Findings

There are several new findings derived from this study that assist in answering the two research questions. In this study it was found that (1) many variables, and combinations of variables can impact the sharing and creating of knowledge (2) partners benefit from familiarity with one another and (3) partners think of shared space as time, physical environment and sharing organizational goals.

Figure 5.1 is a graphic representation of the many variables, and combinations of variables that can impact the sharing and creating of knowledge. Knowledge is constructed socially. Within that realm, the individuals bring their own knowledge, both tacit and explicit. This process of relating as depicted in Figure 5.1 happens within a space. A major theme that emerged in this study was shared space. This space can be thought of as time in the day, physical space or the space where ideas and goals are shared. Oerlemans, Meeus, and Boekema (1998) posited that sharing knowledge could vary with proximity and the type of knowledge being shared. This is worth noting because it describes a combination of a sub-theme of space as in proximity, and a level of knowledge.

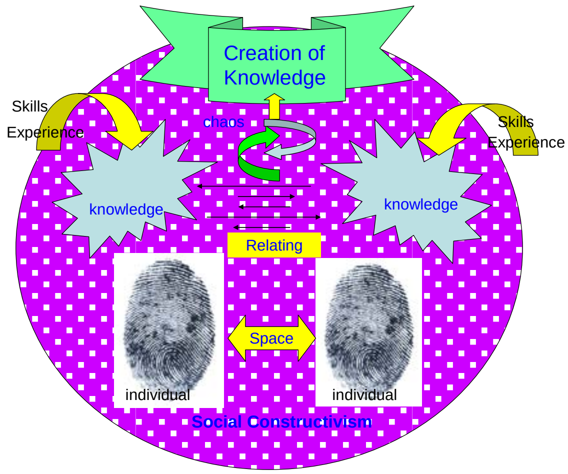
The individual’s knowledge is dynamic. Each team member brings their own skills and experiences to add to their knowledge which they then can share. This knowledge is continually changing and developing. As individuals share their knowledge, they, too are changed. The knowledge sharing process is chaordic or sensitive to initial conditions. A spiral is created as sharing knowledge and creating knowledge cycle around one another inseparably. This process is represented in Figure 5.1.

In this study, many of the themes were intricately woven together and the subsequent combination of variables had an effect on the sharing and creating of knowledge. The new learning to be considered is the arrangements of variables and how this effects employees. These variables are presented in Figure 5.1.

A finding of this study is that dyadic members benefit from familiarity with one another. In Figure 5.1 the element of space between the two individuals is not fixed. The relating between the two individuals occurs and the sharing of knowledge increases or decreases. There was a pattern of benefit that emerged in a number of the themes. The new learning is reflected when we consider how significant it is when dyadic partners get to know each another. For example, partners were able to talk things through when they encountered a problem. They revealed that they were able to do this because they felt they knew each other.

Finally, a new finding from this study is thinking of shared space in a different way than physical space such as an office or a vehicle. In this study shared space surfaced as shared goals and ideas, too. For this study shared goals and idea are related to organizational outcomes, not personal goals. It is important to note that participants had to be able to articulate their understandings of goals and ideas before they could share them with their partner.

Figure 5.1 Visual representation of new findings.




Limitations of the Study

There are several limitations in this study. The first is that only four teams of two participated. Involving more participants in the study could broaden the range of perspectives. This is not known for certain, but should be acknowledged as a limitation. In addition to involving just four participants this study is limited by the number and types of businesses that participated. Just as an increased number of participants could impact this study, it could be that having only four different types of businesses could limit this study.

A second limitation is that all the participants were of the same ethnic background. This was not predetermined, rather, those who volunteered happened to be Caucasian. It is not known how this might have affected the study, yet it should be mentioned. It could be that cultural differences could impact the perception of sharing and creating knowledge in teams of two.

Another limitation in this study is that no managers, supervisors or directors were interviewed. The concept of the “Romance of Teams” is the discrepancy between the belief held by managers that teams are effective and the empirical evidence that teams are more productive than independent efforts. Including managers, or other supervisors in this study would have added their perspective regarding teams of two which could provide valuable insight.

A final limitation of this study regards Social Loafing, or the tendency for individuals to exert less effort when working collectively than when working independently. This is a limitation because more information is needed about how teams of two determine who does what work within the team. As questions related to this topic were not asked this becomes a limitation.

## Implications for Human Resource Development Practice

There are implications for Human Resource Development within this study that impact work design. Human resource development professionals have influence and authority over the way work is designed in the organization (Brockbank & Ulrich, 2005).

### *Work Design*

The way that work is assigned can facilitate the best use of the organizational resources. The greatest resource of any organization is the people who are employed there. Other resources might be time, money and tangible goods. Work that is designed to be unnecessarily repetitive or fragmented in flow uses resources unnecessarily. Work that is unorganized can increase worker frustration and this can reduce productivity. Opportunity to work in environments where there is harmony reduces tension and can increase worker productivity. Examining who does the work and why it is organized in a certain way is extremely important. The decisions to assign tasks to a team of two instead of an individual or even a larger team is one that must be made deliberately. These decisions should be based on the knowledge, skills and attitude of the individual employees, as well as available resources, levels of commitment and intended outcomes. Each of these areas will be discussed below.

*Knowledge and skills:* Both explicit and tacit knowledge bring value to an organization (Nonaka & Takeuchi, 1995). Myers & David (1992) describe the use of tacit knowledge over the use of formal, prescribed knowledge. This was reflected in this study when teams made a distinction between "book learning" and "on the job training". HRD professionals who can value both tacit and explicit knowledge will better be in a better position to maximize their employees' potential. An appreciation of tacit and explicit knowledge can be expressed by allowing employees with less formal education but more practical experience to share what they know. This can occur in conversation related to a specific task or in the examination of organizational operating procedures. This brings to mind Argyris' (1996) idea of espoused theory versus theory in practice. The participants in this study shared knowledge with their partner. Sometimes, a task was not performed the way it was written in the organizational manual. The employees' experience and tacit skill, over time, proved it to be a better method. HRD professionals may be able to convince those who write operational manuals to review the espoused way of performing tasks versus the actual way tasks are being completed.

*Attitude:* Human Resource Development professionals must be able to gauge the attitude of their employees with regard to working in teams of two. Some employees will not carry a predisposition to working closely with another person. HRD professionals can assist by (1) providing professional development designed to explain *how* to work together, (2) examining the benefits of dyadic work relationships and share them with employees, (3) allowing teams a choice for selection of partners, and (4) providing incentives for partners who remain together in a productive way over time. A new learning from this study is that each team of research participants had difficulty working together at some point in time but they overcame the "roadblock" by processing the perceived problem. A positive attitude and a willingness to keep trying proved essential for the success of the teams in this study.

*Resources:* If teams are to work together to share and create knowledge, then several things must occur. The first is that time should be allotted for the team members to share information. Common planning time for teachers is an example of this. Human Resource Development professionals can convey the importance of allotting time for teams of two to supervisors or others responsible for creating schedules at the work place. Supervisors can, for example, allow them time to train together. Professional development as a team can foster understanding between the members of the dyad. For example, professional development situations should allow opportunity for questions and clarifications. Being together in the training permits team members to have their own questions answered and to listen to the types of questions their partner might have. Learning can become more meaningful through shared perspective.

There is also a need for participants to be given an opportunity to work together over time. A new learning I gleaned from this study is that dyadic partners benefit from familiarity. All the teams shared that they felt they knew their partner, that they had gotten to know their partner over time and that the team benefited from this. Human resource development professionals can facilitate this by encouraging supervisors to schedule partners together consistently. Even when one of the partners has to be absent perhaps the importance of having replacements that are familiar can be explained to the supervisor producing the work schedule. This consistency allows the teams members to remain familiar with one another.

*Commitment:* In this study commitment is approached in the realm of shared space. First, the commitment to sharing the work time, or agreeing to work together. Secondly, the commitment to shared space in the realm of ideas and goals. Bishop and Dow (1997) discuss the importance of commitment when working in teams. They state that “studies have shown that commitment to a team may translate into a willingness to improved team performance. Low levels of commitment to both the organization and team can be linked to absenteeism, turnover and intention to quit” (p 113). This discussion is not meant to be an exhaustive literature review in the area of commitment. However, the literature suggests that commitment to an organization is distinctly different than commitment to other entities in the environment. (Bishop, Scott, Goldsby, &

Cropanzano, 2005). Other entities in the environment include co-workers and supervisors. Field theory (Lewin, 1951) suggests that there is a relation between a person's reaction to their environment and proximity. Among the factors that affect commitment ((Becker, Billings, Evelth & Gilbert, 1996; Bishop & Dow 1997) are satisfaction with supervisors and satisfaction with co-workers. Commitment to the task at hand, commitment to the team and commitment to the organization are separate and distinct from one another. Becker (1996) posits,

> commitment to top management, supervisor, and work group were important determinants of job satisfaction, intent to quit, and prosocial organizational behaviors over and above commitment to an organization. Compliance, identification, and internalization as bases of commitment were unique determinants above and beyond commitment to the foci. The results support the reconceptualization of employee attachment as a phenomenon with multiple foci and bases. (p 232)

HRD professionals can increase their level of awareness related to commitment by engaging their employees in inquiry based activities. These activities can be designed to elicit what is most valuable to them, how they view their contributions to the organizations and the team in particular, and how things in their environment affect their level of job satisfaction. An example of environmental issues within the control of human resource professionals but out of the locus of control of employees might be as varied as vending machines in the break room being fully stocked to assigning employee substitutes when one member of the team is absent.

## Implications for Future Research

As organizations continue to use teams of all sizes, there is a need to continue research in the area of sharing and creating knowledge. The findings from this study prompt a need to explore. Two phenomenon to consider; the romance of teams and social loafing.

An area for further research is the concept of “Romance of Teams”. Romance, used in this context, refers to “something that lacks basis in fact” (Webster, 1994, p. 1016). Applied to teams the term “romance” refers to a discrepancy between the belief held by managers that teams are effective and the deficit in empirical evidence that teams are more productive that independent efforts. In this study only one of the four teams had jobs that required them to have a partner. Therefore, three of the teams could have been working independently. Continued research into when and how to use teams of two might answer the important question of how to maximize the use of employees’ talents in the organization.

Karau & Kipling (1997), in their exploration of social loafing, suggest that there is a tendency for individuals to exert less effort when working collectively than when working individually. In this area the idea of division of labor comes to mind. For example, when a team of two begins a project how do they determine who does what? Is this based on experience, skill, motivation or some other factor that is determined by the team? In this study the research questions focused on sharing knowledge and creating knowledge. Is it important to the dyad that the creating and sharing be evenly distributed between the partners?

In addition, a quantitative measure, such as a survey instrument might provide a different type of viable information regarding teams of two due to the anonymity afforded by a large sample. A group to include might be the managers or other HRD professionals who create and manage these teams.

## Conclusion

In the modern organization, employees are being encouraged to work smarter, not harder. Maximizing the efficiency of employees through job structure, managing and exchanging knowledge (White, 2004) is essential in today's highly competitive business market. This study examined teams of two partly because of the researcher's negative experiences of working with large teams and the successful personal experience with the dyad, or team of two. There are a myriad of factors involved with studying teams of two. The goal of this phenomenological study was to explore in-depth the experience of sharing and creating knowledge. Two questions guided this effort; (a) How do partners in a team share knowledge? (b) How do partners in a team create knowledge? The participants were four teams of two from a variety of organizations. There were two research questions written to encourage participants to discuss how they shared and created knowledge and to reveal specific personal experiences. Each individual was interviewed and then each team was interviewed. My researcher's journal provided anecdotal records regarding how the individuals and teams interacted during the interview experience. The in-depth interviews produced nearly two hundred pages of transcribed data. Phenomenological analysis was then used to analyze my data. Using phenomenological reduction I was then able to synthesize the data and identify the emerging themes.

The findings from this study revealed that the teams of two worked together in shared space. Whether this space was space in the day, as in time, shared goals or shared physical space, all the teams recognized that they shared space and required it for their work in a team. The teams also revealed that they share and create knowledge using active processes and language. The teams, admittedly, learned from each other and they each used some form of non-verbal communication whether it was American Sign Language or nods, eye contact or gestures. Individual experience and skill were explored in the realm of sensitivity to initial conditions. In other words, what did each team member bring to 'the table' so that the team could share and create knowledge? It was evident that the teams enjoyed the interviews and the general ambiance of both the individuals and the teams were relaxed and congenial. This was relevant in the final theme where the individuals showed task specific, emotional and collegial support for each other.

In my personal experience I found that a team of two was extremely beneficial for my work style. While it is not expected that all work be done this way, HRD professionals might further explore teams of two as a way to maximize resources and provide a highly productive work experience. As Team B Participant 4 clearly expressed,

> *I think it is more stimulating for me to do this with another person . I am not real good at locking myself in a room and coming up with new*

*ideas and when I have someone to bounce things off of and I throw and idea out and they kind of modify it and then throw it back and then …it keeps going back and forth it becomes so much more then me and my little ideas that I just listed and say " look what I've done". It's not that I can't do that…it just it's more fun and it's more effective I think.*

REFERENCES

Alavesson, M. (2004). Knowledge work: Ambiguity, image and identity. *Human Relations*, *53*(7), 863-877.

Allen, N., & Hecht, T. (2004). The 'romance of teams': Toward an understanding of its psychological underpinnings and implications. *Journal of Occupational and Organizational Psychology*, *77*, 439-462.

Amar, A. (2003). *Managing Knowledge Workers: Unleashing innovation and productivity*. Westport, CT: Quorum.

Anand, V., Clark, M., & Zellmer-Bruhn, M. (2003). Team knowledge structures: Matching task to information environment. *Journal of Managerial Issues, 15* (1), 15-31.

Argote, L. (1999). *Organizational learning, creating, retaining, and transferring knowledge*. Boston, MA: Kluwer Academic Publishers.

Argyris, C.,& Schon, D. (1996). *Organizational learning II: Theory, method and practice*. Reading, MA: Addison Wesley.

Assudani, R. (2005). Catching the chameleon: Understanding the elusive term "knowledge". *Journal of Knowledge Management, 9* (2), 31-44.

Balderson, S., & Broderick, A. (1996). Behaviour in teams: Exploring occupational and gender differences. *Journal of Managerial Psychology, 11*(5), 33-55.

Becker, T. (1992). Foci and bases of commitment: Are they distinctions worth making? *Academy of Management Journal*, *35* (1), 232-245.

Becker, T., Billlings, E., Robert, S., Eveleth, D., & Gilbert, N. (1996). Foci and bases of employee commitment: Implications for job performance. *Academy of Management Journal, 39* (2), 464-483.

Bishop, J. & Dow, S. (1997). How commitment affects team performance. *HR Magazine*, *42* (2), 111-116.

Bolstorff, P. (1998). Chaos Theory: A new lens for the field of HRD to contribute to sustainable performance. Retrieved on May 5, 2005 from http://www.supplychainworld.org/na2002/Presentations/ChaosPaper.pdf.

Bordum, A.2002). From tacit knowing to tacit knowledge-emancipation or ideology? *Critical Quarterly, 44*(3), 50-54.

Brockbank, W. & Ulrich, D. (2005). The work of HR part two: The flow of information and work. *Strategic HR Review, 4*(6), 20-24.

Brown, S. L. & Eisenhardt, K. (1998). *Competing on the edge.* Boston, MA. Harvard Business School Press.

Clutterbuck, D. (2003). Teams and learning: The agenda has changed. *Journal of Quality and Participation, 17*(2), 10-11.

Coleman, D. (1995). Who needs experience? *Upside (U.S. edition), 7*(2), 88-89.

Collins, J., & Porras, J. (1994). *Built to last.* New York, NY: Harpercollins.

Cook, S., & Brown, J. (1999). Bridging epistemologies. *Organization Science, 10*(4), 381-401.

Corno, F., Reinmoeller, P., & Nonaka, I. (1999). Knowledge creation within industrial systems. *Journal of Management & Governance, 3*(4), 379-394.

Coy, K. (2001). Rhythm within collaboration: A qualitative study of male and female dyads. Dissertation Abstract International.

Cresswell, J. (1998). *Qualitative inquiry and research design: Choosing among five traditions.* Thousand Oaks, CA: Sage.

Cresswell, J. (2003). *Research design: Qualitative, quantitative and mixed methods approaches* (2nd eds). Thousand Oaks, CA: Sage.

Crotty, M. (1998). *The Foundations of Social Research: Meaning and perspective in the research process.* Thousand Oaks, CA: Sage.

Davenport, T., & Prusak, L. (1998). *Working Knowledge.* Boston, MA: Harvard Business School Press.

Deci, E. (1992). On the nature and functions of motivation theories. *Psychological Science, 3*(3), 167-171.

Deci, E., & Ryan, R. (2000). Self-Determination Theory and the Facilitation of Intrinsic Motivation, Social Development, and Well-Being. *American Psychologist, 55* (1), 68-77.

Decker, P. (1996). *Using Teams in TQM*. University of Houston-Clear Lake Houston, TX: University of Houston Press.

Denzin, N. & Lincoln, Y. (2000). Handbook of Qualitative Research. 2d ed. Thousand Oaks, CA: Sage.

Ditto,W., & Munakata,T. (1993). Principles and applications of chaotic systems. *Communications of the ACM, 38*(11), 96-102.

Drucker, P. (1999). Knowledge worker productivity: The biggest challenge. *California Management Review, 41*(2), 79-94.

Dunphy, D., & Bryant, B. (1996). Teams: Panaceas or prescriptions for improved performance*? Human Relations, 49*(5), 677-700.

Edmondson, A. (1999). Psychological safety and learning behavior in work teams. *Administrative Science Quarterly*, 350-383.

Eijnatten, F. (2004). Chaordic systems thinking: some suggestions for a complexity framework to inform a learning organization. *The Learning Organization, 11*(6), 430-449.

Eijnatten, F., van Galen, M., & Fitzgerald, L. (2003). Learning dialogically: The art of chaos-informed transformation. *The Learning Organization, 10*(6), 361-367.

Ekman, P., & Friesen, W. (1975). *Unmasking the face*. Englewood Cliffs, NJ: Prentice-Hall.

Ford, J. (1999) Organizational change as shifting conversations. *Journal of Organizational Change Management, 12*(6), 480-481.

Forsyth, D. (2000). One hundred years of groups research: Introduction to the special issue. Group Dynamics: *Theory, Research, and Practice, 4*(1) 3-6.

Galbraith, P. (2004). Organisational leadership and chaos theory: Let's be careful. *Journal of Educational Administration, 42*(1), 9-28.

Gardner, D. (1998). Knowledge that won't fit in a database—people. *InfoWorld, 20*,(14), 98-99.

Gautschi, T. (1989). Hawthorne Studies: A working classic. *Design New, 10*, 180-181.

Grant, R. (1996). Toward a knowledge-based theory of the firm. *Strategic Management Journal, 17,* 109-122.

Graves, L., & Elsass, P. (2005). Sex and sex dissimilarity effects in ongoing teams: Some surprising findings. *Human Relations, 58*(2), 131-122.

Gregersen, H., & Sailer, L. (1993). Chaos theory and its implications for social science research. *Human Relations, 46* (7), 777-803.

Guzzo, R., & Dickson, M. (1996). Teams in Organizations: Recent research on performance and effectiveness. *Annual Review of Psychology, 47*, 307-338.

Harris, P., & Harris, K. (1996). Managing effectively through teams. *Team Performance Management, 2*(3), 23-35.

Haldin-Herrgard, T. (2000), Difficulties in diffusion of tacit knowledge in organizations. *Journal of Intellectual Capital, 1*, 357-65.

Hodgkin, R. (1991). Michael Polanyi-Prophet of life, the universe and everything. *Times Higher Educational Supplement, 27,* 15-17.

Husserl, E. (1931). *Ideas* [W.R. Boyce Gibson, Trans.]. London: George Allen .

Izard, C. (1971). The face of emotion. New York: Appleton-Century-Crofts.

Jenner, R. (1994). Changing patterns of power, chaotic dynamics and the emergence of post-modern organizational paradigm. *Journal of Organizational Change Management, 7* (3), 8-21.

Karakowsky, L., & Miller, D. (2002).*Teams that listen and teams that do not: Exploring the role of gender in group responsiveness to negative feedback.* Team Performance Management. *8*(7/8), 146-155.

Karakowsky, L., McBey, K., & Chuang, Y. (2004). Perceptions of team performance: The impact of group composition and task-based cues. *Journal of Managerial Psychology, 19* (5), 506.

Karau, S.,& Kipling, D. (1995). Social Loafing: Research finding, implications and future directions. *Current Directions is Psychological Science, 4(*5). 134-140.

Katzenbach, J. (2005). The discipline of teams. *Harvard Business Review, 83* (7), 162—164.

Katzenbach, J.,& Smith, D. (1993*). The wisdom of teams.* United States: McKinsey and Company Incorporated.

Kogut, B.,& Zander, U. (1995). Knowledge and the speed of the transfer and imitation of organizational capabilities: An empirical test. *Organization Science*. 6(1), 76 -92.

Koskinen, K. (2003). Evaluation of tacit knowledge utilization in work units. *Journal of Knowledge Management, 7*(5), 67-82.

Kuhn, T. (1962). *The structure of scientific revolutions.* (3rd ed). Chicago, IL: The University of Chicago Press.

LaDuke, B. (2004). Knowledge creation: The quest for questions. *The Futurist, 38* (1), 68-76.

Larson, C., & LaFasto, F. (1989). *Teamwork: What must go right/what can go wrong.* NewBury Park, CA: Sage.

Lesser, E., & Prusak, L (2001). Preserving knowledge in an uncertain world. *MIT Sloan Management Review, 43 (1),* 101-102.

Levy, D. (1994). Chaos theory and strategy: Theory, application and managerial implications. *Strategic Management Journal, 15*, 167-178.

Lewin, K. ( 1951). *Field Theory in Social Science.* New York: Torch Books.

Linde, C. (2001). Narrative and social tacit knowledge. *Journal of Knowledge Management, 5* (2), 160-170.

May, M. (2005). Lean thinking for knowledge work. *Quality Progress***,** *38* (6), 33-41.

McKenna, R. & Martin-Smith, B. (2005). Decision making as a simplification process: New conceptual perspectives. *Management Decisions, 43*(6), 821-836.

McGrath, J. E., (1997). Small group research, that once and future field: An interpretation of the past with an eye to the future. *Group dynamics: Theory, research and practice, 1*(1), 7-27.

Merleau-Ponty,  (1962). The phenomenology of perception. (Routledge & Kegan Paul, Trans.). London: New York. (Original work published 1945).

Merriam-Webster (1993). *Merriam-Webster's Collegiate Dictionary* (10th ed.).Springfield: Merriam-Webster.

Mohamed, M., Stankosky, M., & Murray, A. (2004). Applying knowledge management principles to enhance cross-functional team performance. *Journal of Knowledge Management, 8* (3), 127-142.

Moran, D. (2000). *Introduction to phenomenology*. London: Routledge.

Moustakas, C. (1994). *Phenomenological research methods.* Thousand Oaks, CA: Sage.

Mullins, P. (undated) 'Michael Polanyi (1891-1976), deepsite.org. Retrieved on August 15, 2005 from http://www.deepsight.org/articles/polanyi.htm.

Murphy, P. ( 1996). Chaos theory as a model for managing issues and crises. *Public Relations Review, 22* (2), 95-114.

Myers, C., & David, K. (1992). Knowing and doing: Tacit skill at work. *Personnel Management, 24* (2), 45-48.

Nielson, B. (2005). Strategic knowledge management research: Tracing the co-evolution of strategic management and a knowledge management perspective. *Competitiveness Review, 15* (1), 1-14.

Nonaka, I., Toyama, R., & Konno, N. (2000). SECI, *Ba* and Leadership: An unfied model of dynamic knowledge creation. *Long Range Planning, 33,* 5-34.

Nonaka, I., & Konno, N. (1998). The concept of "Ba": Building a foundation for knowledge creation. *California Management Review, 40* (3), 40-54.

Nonaka, I., & Takeuchi, H. (1995). *The Knowledge-Creating Company*. New York, NY: Oxford University Press.

Oerlemans, L., Meeus, M.,& Boekema, F. (1998). Do networks matter for innovation*? Journal of Economic & Social Geography, 89*(3), 298 -310.

Parris, M. & Vickers, M., (2005). Working in teams: The influence of rhetoric- from sensemaking to sadness. *Administrative Theory & Praxis, 27*(2), 277-300.

Patton, M. (2002). *Qualitative Research & Evaluation Methods.* Thousand Oaks, CA: Sage.

Pinzotto, A., Davis, E., & Miller, C. (2004). Intuitive Policing: Emotional/rational decision making in law enforcement. *FBI Bulletin. 2*(4), 1-5.

Remedios, R., & Boreham, N.(2004). Organizational learning and employees' intrinsic motivation. *Journal of Education & Work*, *17* (2), 219-235.

Roethlisberger, F., & Dickson, W. (1939). *Management and the worker.* Cambridge: Harvard University Press.

Salas, E., Dickinson, T., Converse, S., & Tannenbaum, S. (1992). Toward an understanding of team performance and training. In R. W. Sweezey & E. Salas (Eds.),*Teams: Their training and performance* (pp. 3-29). Norwood, NJ: Ablex.

Scott, D., Cook, N., & Seely-Brown, J. (1999). Bridging epistemologies: The generative dance between organizational knowledge and organizational knowing. *Organization Science, 10* (4), 381-400.

Semic, B., & Canary, D. (1997). Trait argumentativeness, verbal aggressiveness, and minimally rational argument: An observational analysis of friendship discussions. *Communication Quarterly*, *45*(4), 355-379.

Slife, B., & Williams, R. (1995). *What's behind the research?: Discovering hidden assumptions in the behavioral studies.* Thousand Oaks, CA: Sage.

Smith, M., Cottrell, G., Gosselin, F., & Schyns, P. (2005). Transmitting and decoding facial expressions. *Psychological Science, 16* (3), 184-189

Smith, M. K. (2003) Michael Polanyi and tacit knowledge. *The encyclopedia of informal education*. Retrieved February 27, 2006 from www.infed.org/thinkers/polanyi.htm

Snowden, D. (2002). Complex acts of knowing: Paradox and descriptive self-awareness. *Journal of Knowledge Management, 6*(2), 100-112.

Sonnenfeld, J. (1985). Shedding light on the Hawthorne studies. *Journal of Occupational Behavior, 6*(2), 111-130.

Stacey, R. (2001). *Complex Responsive Processes in Organizations: Learning and Knowledge Creation.* London: Routledge.

Stankosky, M.A. (2000), KM World Special Millenium Issue: A Theoretical Framework. *KM World Magazine*. 13(1), i-ix..

Sullivan, T. (1999). Leading people in a chaotic world. *Journal of Educational Administration*, *37*(5), 408-423.

Sundstrom, E., McIntyre, M., Halfhill, T., & Richards, H. (2000). Work groups: from the Hawthorne studies to work teams of the 1990's and beyond. *Group dynamics: Theory, research and practice*, *4*(1), 44-67.

Sveiby, K. (1997). *Tacit Knowledge*. Retrieved on August 14, 2005 from http://www.sveiby.com/articles/Polanyi.html

Swanson, R., & Holton, E. (2001). *Foundations of human resource development.* San Francisco: Berret-Koehler Publishers.

Swanson, R. & Holton, E. (Eds) (1997). *Research handbook: Linking research and practice.* San Francisco: Berret-Koehler Publishers.

Sweeney, D. (1999). Dynamic duos: A descriptive analysis of high-functioning mixed gender teams. Dissertation Abstract International.

Teece, D. (1998). Capturing value from knowledge assets: The new economy, markets for know-how and intangible assets. *California Management Review, 40* (3), 55-80.

Young, S. (2004). Professionalism is illustrated through your actions. *The Canadian Appraiser, 48*(1), 22-23.

Yvgotsky, Lev. (1988). *Thought and Language*. (3rd Ed.) Cambridge: MIT Press.

vonKrogh,G. (1998). Care in knowledge creation. *California Management Review*, *40*(3), 133-154.

Wen-Chih, L., & Wei-Tao, T. (2006). Organizational justice, motivation to learn and training outcomes. *Social Behavior and Personality, 34* (5), 545-556.

West, M., Brodbeck, F. & Richter, A. (2004). Does the ‘romance of teams’ exist? The effectiveness of teams in experimental and field settings. *Journal of Occupational and Organizational Psychology, 77*, 467-474.

White, M. (2004). Knowledge management involves neither knowledge nor management. *EContent.* Wilton Press, *27*(10), 39-45. Retrieved on May 2005 from http://www.econtentmag.com/?ArticleID=7122.

Wing, L. (2001). Things to think about: why deploy teamwork? *Team Performance Management*, *7*(7/8), 135-137.

Winum, P., & Seamons, T. (2000). Developing A Team-Based Organization: A case study in progress. *Consulting Psychology Journal: Practice and Research,* Winter, 82-89.

Wlodkowski, R. (1999). *Adult motivation to learn: A comprehensive guide for teaching all adults*. San Francisco: Jossey-Bass: San Francisco.

Zollo, M., & Winter, S. (2002). Deliberate learning and the evolution of dynamic capabilities. *Organization Science, 13*(3), 339-353.

APPENDIX B: Chamber of Commerce Advertisement Copy

Do You Currently Work In A Team of Two?

Sophie Paul, a Ph.D candidate in the Adrian Dominican School of Education at Barry University, is seeking 4 to 5 teams of two to participate in a research project. The criterion is that those who are interested in participating are professionals that have been working together for a minimum of one year, have a platonic relationship and are equals in the organization.

**Comment [scm12]:** new

The title of this study is: Dynamic Dyads: Sharing and Creating Knowledge

The purpose of this study is to explore how knowledge is shared and created in teams of two.

All that is required is approximately two and a half hours of your time. You would be interviewed and asked to share stories about your perceptions of sharing and creating knowledge. You will be asked to participate in two interviews. The first interview will be individual and the second will be with your partner. As team dynamics are a part of this study, team interactions will be observed and noted during the team interview.

Your participation will be kept confidential and your name and identifying data will not be included in any reporting of the data found during the course of this research. To ensure confidentiality and provide an informal atmosphere for the interview, all interviews will be held off-site at a time and location convenient for you.

Please contact the researcher, Sophie Paul, at (941) 795.7266 or sophie62@earthlink.net if you think you meet the criteria and are interested in participating. She will return your call or e-mail to arrange a meeting.

Comment [scm13]: home number

APPENDIX C: Institutional Review Board Form

Barry University Informed Consent Form

Your participation in a research project is requested. The title of the study is Dynamic Dyads: Sharing and Creating Knowledge. The research is being conducted by Sophie T. Paul, a PhD candidate in the Adrian Dominican School of Education at Barry University, to seek information that will be useful in the field of Human Resource Development. The aims of the research are to describe how teams of two or dyads, share and create knowledge in order to maximize employee contributions in the work place.

The criterion is that those who are interested in participating are professionals that have been working together for a minimum of one year, have a platonic relationship and are equals in the organization.

Comment [scm14]: new

In accordance with these aims, the following procedures will be used to collect data: (a) a call for participants will be presented in the form of an advertisement in the Chamber of Commerce newsletter (Appendix A), (b) those interested who think they meet the criteria will contact Sophie through e-mail or telephone (c) a meeting will be arranged to verify the study criteria are met, explain the process and determine individual interest in participating in the study, and (c) a random drawing will take place to select participants from the total pool of interested individuals. I anticipate the number of participants to be 4 teams of two. Should participants choose not to participate the selection process will be repeated until the sample number is met. Should participants drop out of the study the sampling procedure will be repeated until the sample number is met. Data collection will be done primarily through structured interviews. As team dynamics are a part of this study, team interactions will be observed and noted during the team interview.

If you agree to participate in this research, you will be asked to do the following: (a) participate in an individual 45-60 minute interview on sharing and creating knowledge in a team of two and (b) participate in a 60 minute team interview. The interviews will be audio tape recorded and later transcribed by the researcher. You will be then be asked to meet individually for a third time for 30-45 minutes in order to (a) verify the accuracy of your own transcribed interview (b) verify the accuracy of your team interview and (c) answer follow up questions if there are any. The total participation time is estimated to be 2 hours and 30 minutes. .

Your participation in this study is strictly voluntary. Should you decline to participate or should you choose to drop out at any time during the study, there will be no adverse effects on you or your employment.

The participant may withdraw from the study at any time or they may refrain from answering any question they choose. If a member of the team of two withdraws the other member is automatically withdrawn as this is a study of teams of two. There will be no adverse effects should either or both of the participants decide to withdraw.

There is no anticipated risk. However, you may experience some discomfort talking about yourself or you and your work partner may feel awkward talking about how you work together. Due to this minimal risk you do not have to answer any question with which you feel uncomfortable. You will also have an opportunity to preview the questions prior to the interviews in order to think about them. Although there are no direct benefits to you, your participation in this study may help professionals in the field of Human Resource Development gain increased understanding of how teams of two share and create knowledge. This, in turn, may help organizations to make decisions regarding work design, such as scheduling or responsibility, that increase employee productivity. –same as above

As a research participant, information you provide will be held in confidence to the extent permitted by law. Any published results of the research will contain no names or other identifiers. All collected data will be kept in a locked file in the researcher's office where only she has access and will be held for five years following the completion of the study. Audiotapes will be destroyed within six months of the completion of the study. Your signed consent form will be kept separate from the data in order to ensure confidentiality.

If you have any questions or concerns regarding the study or your participation in the study, you may contact me, Sophie Paul, at (941)795.7266, my supervisor, Dr. Jia Wang, at (866) 936-6877, ext. 20 or the Institutional Review Board point of contact, Mrs. Nildy Polanco, at (305)899-3020. If you are satisfied with the information provided and are willing to participate in this research, please signify your consent by signing this consent form.

**Voluntary Consent**

I acknowledge that I have been informed of the nature and purposes of this experiment by Sophie Paul and that I have read and understand the information presented above, and that I have received a copy of this form for my records. I give my voluntary consent to participate in this experiment.

______________________  __________
*Signature of Participant*  *Date*

______________________  __________
*Researcher*  *Date*

______________________  __________
*Witness*  *Date*
(Witness signature is required only if research involves pregnant women, children, other vulnerable populations, or if more than minimal risk is present.)

APPENDIX D1: The Interview Guide for Individuals

Project: Dynamic Dyads: Sharing and Creating Knowledge

Date:___________________________________

Location:________________________________

Time:___________________________________

Interviewer: Sophie T. Paul

Interviewee: Confidential

Thank you for agreeing to be interviewed for this study on professionals that share and create knowledge within teams of two. You are one of eight participants who have been chosen to participate in this study. Your participation is strictly voluntary and your information will be kept confidential. Your responses will be audio taped recorded and the audio tape will be destroyed six months within the completion of the study. The interview will last approximately 60 minutes.  You will be asked to verify the accuracy of the verbatim transcription of the interview. Your participation is this study should not require more than two and a half hours of your time. I will now review the informed consent letter and we will start this interview once you have signed the consent letter.

1. What do you have to *know* in your field?
2. How would you *describe* the sharing of knowledge within your professional dyad?
3. *Describe* an incident when you shared something with your partner related to your work.
4. When you are interacting professionally *how* do you share information?
5. What is the first thing you *do* when you begin to share information with your partner?
6. How would you describe the creation of knowledge within your professional dyad?
7. Describe a time when knowledge might have been created.
8. *Tell me* about what it is like for you working within a team of two.
9. May I return to ask you any clarifying questions after the completion of this interview?

Probing and clarifying questions will also be asked as need during the interview process.

APPENDIX D2: The Interview Guide for Team Interviews

Project: Dynamic Dyads: Sharing and Creating Knowledge

Date:__________________________________

Location:_______________________________

Time:__________________________________

Interviewer: Sophie T. Paul

Team: Confidential

Thank you for agreeing to be interviewed for this study on professionals that share and create knowledge within teams of two. You are one of four teams who have been chosen to participate in this study. All participants in this study have been working within their team of two for a minimum of one year. Your participation is strictly voluntary and your information will be kept confidential. Your responses will be audio taped and the tape will be destroyed within six months of completion of the study. The interview will last approximately 60 minutes. . As team dynamics are a part of this study, team interactions will be observed and noted during the team interview.

You will be asked to verify the accuracy of the verbatim transcription of the interview. Your participation is this study should not require more than two and a half hours of your time. I will now review the informed consent letter and we will start this interview once you have signed the consent letter.

1. What do you have to *know* in your field?
2. How would you *describe* the sharing of knowledge within your professional dyad?
3. *Describe* an incident when you shared something with your partner related to your work.
4. When you are interacting professionally *how* do you share information?
5. What is the first thing you *do* when you begin to share information with your partner?
6. How would you describe the creation of knowledge within your professional dyad?
7. Describe a time when knowledge might have been created.
8. *Tell me* about what it is like for you working within a team of two.
9. May I return to ask you any clarifying questions after the completion of this interview?

Probing and clarifying questions will also be asked as needed during the interview process.

APPENDIX E: Sample of Interview Transcript

Team A: Participant 1 May 11, 2006

P1: Yes, we help each other when we are driving to a call but from a call it's strictly up to me I am the one driving or he is the one driving and we are by ourselves up there and the other one is with the patient in the back but a lot of times going to a call we are spotting things for each other and he's telling me " you have the right lane clear here" and " this car is far enough out of the , like if we get to an intersection and we can't go anywhere

S: I see..

P1: all the cars are jammed up and one is trying to get out of the way and I can squeeze through and go around then he'll say " okay you have it on the right side" things like that we help each other on lookout for one another so that we don't kill each other or someone else

S: when you describe the sharing of knowledge with your partner how do you share information? Is it verbal non verbal like you said they 'spot' for you, that term you used 'they'll spot for you' how do they do that?

P1: We communicate by verbal communication, by eye contact, by facial expressions, even gestures because if I am about to get creamed on the right side and I don't see it and he just (motion of bracing himself) so that I know something is happening then that is a form of comm.. the majority of the time is verbal comm. because we can't read what is on each other's minds all the time like I said certain facial expressions so we know what the other person is thinking to be able to communicate better we use verbal comm. to convey ideas to one another.

S: Are there approved designated codes that you use when you are driving so that you know certain phrases mean certain things…is that part of your training manual ?

P1: Yeah that is like when we pick up a patient to go to the hospital there are different priorities -3, 2 and then 1. A priority 3 patient means that they are not critical at all they are not in any life threatening situation so we are going to take it nice and easy driving to the hospital nice and slow following the laws. A priority 2 is a little more they are still not critical but it's a little more important we are still going to go normal traffic no lights and sirens but those are more ALS type things, advance life support things to keep the patient alive live IV's. Priority 1 lets me know that we…

APPENDIX F: Sample of Data Analysis

**Team D: Team Interview: shared space TI pg 12** ( J) It's nice to know that the time we have scheduled for a lunch meeting or some other thing-we're just going to talk about this little idea-and you know that that's going to be kind of fun to throw around and maybe it'll come to naught and maybe we'll just walk away saying " well, we poked enough holes in that idea that we know it'll never float and let's just go back to square one or you walk away saying " you now I really go something out of this"
I look forward to the time we work together. I find it relaxing and invigorating and also let's me now that things are happening and moving forward.

**Team D: Team Interview: shared ideas TI pg 14** ( J) That has created a challenge for us and makes it all the more intriguing and something to look forward to – it's going to be a challenge.

**Team A: P 1 support Pg 15** **It's reassuring. Because especially in this line of work where I am not out on my own trying to think- well, what could be wrong? Having self confidence and being on top of your game and being as informed as possible is always good to carry as much knowledge as possible, but when you have another person there to back you up or to say let's look at it from a different angle what else could be going on?**

**Team A: P1 support Pg 15** **I see things differently than he does and so if I am thinking a certain thing he's thinking of something else . Together we are able to come to an agreement or conclusion about what is really going on where as if I am by myself I may not always feel as comfortable treating someone based on my knowledge-just by myself.**

**Team A: Participant 2 skill Pg 4-5 initial conditions Well, there's book learning and then there's the other stuff.**

**Team A: Participant 2: experience Pg 5 you learn it if you go through it**

**Team A: Participant 2: experience Pg 5 so that kind of thing and then too we are taught by the book in school and once you get out of school you find that there are short cuts to anything and they you learn it only because 'hey, this looks like this would work better.**

| Color Key |
| --- |
| **Orange:** shared space for emerging relationships |
| **Pink**: sensitivity to an initial condition. |
| Blue: active process of relating |
| **Green**: support |