2011

Exploring strategies for obtaining a workable balance between organizational support for formal training and self-directed learning via personal learning networks at a midsized university

Don Gladney

Pepperdine University

Graduate School of Education and Psychology

EXPLORING STRATEGIES FOR OBTAINING A WORKABLE BALANCE BETWEEN ORGANIZATIONAL SUPPORT FOR FORMAL TRAINING AND SELF-DIRECTED LEARNING VIA PERSONAL LEARNING NETWORKS AT A MIDSIZED UNIVERSITY

A dissertation submitted in partial satisfaction

of the requirements for the degree of

Doctor of Education in Educational Technology

by

Don Gladney

October, 2011

Jack McManus, Ph.D. – Dissertation Chairperson

This dissertation, written by

Don Gladney

under the guidance of a Faculty Committee and approved by its members, has been submitted to and accepted by the Graduate Faculty in partial fulfillment of the requirements for the degree of

DOCTOR OF EDUCATION

Doctoral Committee:

Jack McManus, Ph.D., Chairperson

Paul Sparks, Ph.D.

Monica Goodale, Ed.D.

TABLE OF CONTENTS

Page

Page

Page

LIST OF TABLES

Page

LIST OF FIGURES

Page

DEDICATION

To my wife Sandra, your love, sacrifice, support, and confidence in me through this doctoral journey enabled me to realize this goal. We have overcome so much together to arrive at this place in time. I find it impossible to express how making this journey through life is so much easier because I make it with you. To my children, James, Jerome and Latrice, I started dreaming about the goal of becoming a doctor long before I took the first step towards achieving that goal. Keep your dreams alive for they are one of the few things you truly own. Changes in the course of life often begin with a dream and the unpredictable alignment of events. May you persist in the pursuit of your dreams and strive to happy. To my parents Jimmie and Addie, I thank you for all that you have given me in life and for all the sacrifices that you have made to make my journey through life possible.

ACKNOWLEDGMENTS

I would like to express my appreciation for the support of my dissertation chair and friend, Dr. Jack McManus, who has fostered a working relationship that enabled me to explore personal learning networks in the workplace. While I have always had an interest in workplace learning, Dr. Paul Sparks introduced me to the topic as part of my consultancy work. I am grateful, for his guidance and support. The diversity of faculty backgrounds and collective experiences is one of many things that make the Pepperdine University doctoral program so special. I greatly appreciate Dr. Monica Goodale's guidance and contribution to this effort as one of my program faculty and dissertation committee members.

VITA

EDUCATION

2007 – 2011	Doctor of Education in Educational Technology Pepperdine University Malibu, California
1992 – 1994	Master of Project Management Keller Graduate School of Management Chicago, Illinois
1988 – 1991	Bachelor of Arts in Management North Central College Naperville, Illinois

PROFESSIONAL EXPERIENCE

2010 – Present	Associate Dean College of Business and Management DeVry University Keller Graduate School of Management Dallas, Texas
2005 – 2009	Learning and Development Program Manager IBM Dallas, Texas
2003 – 2005	Global Methodology Leader, Signature Selling Method IBM Dallas Texas
2000 – 2003	Global Project Development Team Leader IBM Chicago, Illinois
1998 – 2000	Business Information Executive IBM North America Chicago, Illinois
1994 –1998	Sales Opportunity Business Executive IBM Midwestern Area Chicago, Illinois
1990 – 1994	Systems Engineering Manager IBM Sales & Distribution Division Chicago, Illinois

1989 – 1990	Advisory Instructor Entry Marketing Education IBM Dallas, Texas
1983 – 1989	Systems Engineer IBM Sales and Distribution Division Chicago, Illinois
1978 – 1983	Hardware and Software Field Engineer IBM Field Engineering Division Chicago, Illinois

ABSTRACT

While there has been significant research in the area of workplace learning, few studies have explored the balance between organizational support for formal workplace learning and the organizational support for informal learning by those who are nurturing and developing their Personal Learning Networks (PLNs) in the workplace. A Personal Learning Network (PLN) is a way of describing a collection of resources to which a worker (learner) can go to learn something. PLN resources can be family, friends, coworkers, and managers, documents, methods, procedures, or job aids (Warlick, 2009). Because of this lack of research, examining the relationships of PLNs and organizational support for workplace learning little guidance is available to organizations on how to allocate resources to support PLNs to maximize worker (learner) job role performance.

This study is the product of a qualitative research approach using semi-structured interviews of workers in a variety of job roles within an information technology (IT) organization at a midsized university. The purpose of this study was to explore this IT organization's formal and informal support for worker PLNs. Simultaneously the study explored how workers grow, develop, and nurture their PLNs to leverage available organizational support. The study explored, for a given workplace context, the strategies for obtaining a workable balance between how an organization provides support for traditional formal training (learning) and how an organization provides support for informal learning both used by Personal Learning Networks. This study aimed to identify personal and workplace characteristics that represent definable, repeatable practices useful for organizations and individuals who wish to better understand what a workable balance would be. Achieving a workable balance of the intersection of formal and

informal learning creates a climate conducive to high performance in the workplace because a deeper understanding of how to analyze a workplace environment to support a culture of formal and informal learning will enable an organization to better address future challenges.

Chapter 1: The Problem

Introduction

Organizations in the United States are struggling to confront the challenges presented by global trends such as growing competition for the recruitment and retention of a talented workforce, shifting geographic centers of economic activity, unpredictable marketplace growth and decline, and a workplace environment that is increasingly formally and informally networked (Athey, 2008; McKinsey, 2007). These workplace challenges now demand that the workforce engage in lifelong learning to address skill gaps created by these challenges (Galagan, 2010). Because of these marketplace dynamics, organizations are finding new and creative ways to increase workforce productivity through workplace learning. *AgelessLearner.com*, an educational resource and advisory firm, reports 75% of organizational learning to be informal (Conner, 2009). The U.S. Department of Labor estimates informal learning to be as high as 70% in the workplace (Cornell, 2008; Dobbs, 2000). Estimates range from 70% to as high as 95% informal learning for knowledge workers in highly creative roles (J. Cross, 2006). Yet, despite these research-based numbers, organizations spend the largest share of their focus and resources on tools, systems, content, and effort in support of formal (training) learning (Bersin, 2009; Cross, 2007; Hager & Halliday, 2006). In 2006, *Chief Learning Officer* magazine declared informal learning in the workplace to be a pervasive event: "learning professionals realize that it is not a matter of whether informal learning occurs within their workplace, but whether it is something they are willing or able to support" (McStravick, 2006). Today's workforce has come to rely upon varying levels of organizational support

for formal and informal workplace learning to close skill gaps in a constantly changing workplace environment.

In addition to reacting to marketplace change organizations are faced with five scenarios that negatively impact their current investments in formal worker training as documented below by Brinkerhoff and Gill (1994).

- Employees receive the right training but it is too late to use.
- Employees receive training that is irrelevant to their work environment.
- Employees forced to wait for training that they need.
- Employees forced to wait for training that they do not need.
- Employees attend training to escape a punishing work environment. (p. 3)

Organizational Impact on Learning

Organizational support that manifests itself in a welcoming climate and culture provides an opportunity for new workers to make authentic contributions to work activities (Rismark & Sitter, 2003). According to DeLong and Fahey (2000), organizational culture defines the relationship between the worker and the workplace and creates the context for social interaction that determines how knowledge gained from these interactions is created, applied and distributed. Organizational investment in the creation and maintenance of procedures, policies, methods, job aids, such as reference manuals, and other technologies, represents an ongoing investment in support of workers engaged in work activity to meet the needs of the organization.

Creating and Managing the Personal Rolodex of Learning Resources

Just as organizations struggle with workplace challenges, such as competition, efficiency and innovation, workers must adapt to many of these same challenges on a

personal level. Workers (learners) must be competent in creating, nurturing and contributing to dynamic personal learning networks. A Personal Learning Network (PLN) is a way of describing a collection of resources that a worker (learner) can access to learn something. PLN resources can be family, friends, coworkers and managers or documents, methods, procedures, or job aids. Personal Learning Networks provide workers (learners) with resources that can answer questions, assess performance, coach, and reinforce previous formal and informal learning (Tobin, 1998). Informal learning often occurs as an exchange of tacit knowledge between the novice and more experienced worker. Galagan (2010) refers to the economic term, *tacit interactions*, to describe transactions that rely heavily on judgment and context. Galagan further cites data from the Bureau of Labor Statistics that report that in recent years the majority of new jobs have tacit interactions as their main component.

The creation of PLNs represents an application of the constructivist concept of learning that avers that meaning is learned by using the network constructed by the learner through the association and integration of the new information with information they already know (Bruner, 1960). That is, learning is contextualized in a defined work environment. Learning is dependent on the learner's interpretation of experience, resulting in the assimilation and accommodation of new information within previous learned knowledge structures (Vavoula & Sharples, 2009).

Workers today find themselves in workplace environments that vary in culture, climate, and organizational support for Personal Learning Networks. Workers play a key role in workplace learning as the new literacy measured by how well the worker (learner) can create, nurture, and contribute to these networked resources. Organizations invest in

technology and foster workplace cultures and climates that significantly impact how well these Personal Learning Networks operate (Cross, 2007).

Statement of the Problem

While there has been significant research in the area of workplace learning, few studies have explored the strategies and relationships between organizational support for formal and informal workplace learning and the establishment, nurturing, and development of Personal Learning Networks (PLNs) by workers in the workplace. Because of this lack of research examining the relationships of PLNs and organizational support for workplace, learning little guidance is available to organizations on how to allocate resources to support PLNs to maximize employee, job role performance.

Purpose of the Study

The purpose of this study will be to explore a single organization's formal and informal support for worker PLNs. Simultaneously the study will explore how workers grow, develop, and nurture their PLNs to leverage available organizational support. The study explored, for a given workplace context, the strategies for obtaining a workable balance between how an organization provides traditional formal learning and how an organization supports formal and informal learning used by Personal Learning Networks. This study aimed to identify personal and workplace characteristics that represent definable, repeatable practices useful for organizations and individuals. Specifically, this study examined the feedback and input of Information Technology knowledge workers in a midsized university.

Research Questions

The study addressed the following four research questions:

1. What characteristics (environmental factors) are present in an organization where PLNs thrive?
2. What are the reasons for workers willingness to contribute their knowledge to other PLNs?
3. What are the barriers to workers contributing their knowledge to other PLNs?
4. What is the relationship between organizational support for workplace learning and the establishment nurturing and development of PLNs by its workers?

Significance of the Study

Research indicates that organizations continue to struggle with making learning investments that result in a more productive and competitive workforce. Emily Stover DeRocco, president of The Manufacturing Institute and senior vice president of the National Association of Manufacturers, contributed the following insight to Galagan's (2010) report. "Eighty percent of U.S. manufacturers cannot find educated, skilled workers for their entry-level jobs. Without a skilled workforce, our manufacturers cannot continue to be the drivers of innovation and will not be successful in the global economy" (Galagan, 2010, p. 48). This environment for the near future will require a workforce that is in a constant state of development to achieve the goals and objectives of the organization. The challenge for organizations becomes how to achieve a workable balance of organizational supported formal workplace learning and informal workplace learning leveraging personal learning networks. Achieving a workable balance of the intersection of the two creates a climate conducive to high performance in the workplace because a

deeper understanding of how to analyze a workplace environment to support a culture of formal and informal learning will enable the organization to better address future business challenges.

Workers must be skilled in the management of their PLN in ways that allow them to adapt as appropriate to changes in workplace contexts. The challenge for workers is that the literacy required for such PLN management requires an understanding of a wide array of tools and a budgetary commitment to ongoing organizational support for PLNs.

Research Assumptions

The following research assumptions were implicit in this study:

- Those interviewed would be available based on the scheduled appointments.
- Interview respondents would understand the questions and answer them honestly.
- Additional organizational data requests could be satisfied as well as requests for follow-up interviews to obtain additional clarity.

Limitations of Research Defining Relevant Terminology

The limitations of this study included but were not limited to the following:

- Results from this study would not be generalizable to all organizations in all industries.
- Organizations seeking to implement programs based on this research should fit the profile of the organization studied, which is a midsized university IT organization. The scope of the subsequent research effort discussed in this research would be the application of technology in support of informal personal learning networks in the workplace. The subsequent research does not

aim to provide insights that extend across all worker professions and all work environments. Instead, the research aimed to identify common factors, personal, and workplace characteristics that represent definable, repeatable practices useful for organizations and individuals.

- Workers participating in this study represented a specific profession with established norms of conduct and development that contribute to the development of Personal Learning Networks (PLNs).
- Unforeseen workplace conditions could affect the availability of interview participants.
- Job role methods, practices and policies concerning access to resources might vary in the population based on job role.
- Technology access and therefore application in PLNs might vary by job role.
- Technology skills might vary amongst interview participants.

Definitions of Key Terms

- *Blogs:* A blog is a type of website, maintained by an individual with regular entries of commentary, descriptions of events, and reporting of status or dissemination of content useful in a particular context. Blogs invite readers to comment thereby supporting a topic driven dialogue. The origin of the term is a shortened version of the term web log (Merhotz, 1999).
- *Job Role:* A Job role is a set of responsibilities or expected results associated with a job. Jobs are a collection of job roles important to the study of PLNs because they help to define how and when a particular PLN resource may be used based on the work situation.

- *Lifelong learning*: For purposes of this research, lifelong learning is the voluntary and self-motivated pursuit of knowledge for either personal or professional reasons in a range of situations. As such, it not only enhances social inclusion, active citizenship, and personal development, but also competitiveness and employability (Commission of the European Communities, 2006).
- *Personal contact lists:* Physical and /or electronic lists of personal contact information, also referred to as PLN Contacts, these include, but are not limited to, e-mail contact lists, mobile phone contact lists, organizational charts, and for-more-information contact references.
- *Personal learning environments (PLEs):* A personal learning environment (PLE) describes the systems that help learners (workers) take control of, and manage, their own learning. Organizations and individuals share the support responsibility for enabling learners to set goals, manage content, process, and communication with others during the process or learning. A PLE enables a single autonomous or independent learner (Johnson & Liber, 2008; Van Harmelen, 2008).
- *Personal learning networks (PLNs):* A personal learning network (PLN) is a way of describing a collection of resources that a worker (learner) can go to learn something. PLN resources can be family, friends, coworkers, and managers or documents, methods, procedures, or job aids (Warlick, 2009).
- *Personal learning network nodes (PLNNs):* Any resource known and used by the individual (worker learner) for a useful purpose. Nodes can be people, electronic media (blogs, wikis), books, magazines, journals, procedures, methods. Nodes are scalable in that they can be individuals or communities that are physical or virtual.

- *Really simple syndication (RSS) aggregators:* These programs aggregate updates to blogs and other types of websites by monitoring these sites for new content (updates). The level of sophistication and content filtering capabilities varies but aggregation occurs either as an automated function or a manual one in the operation of a PLN. Aggregator examples include, but are not limited to, Bloglines, www.bloglines.com; Google Reader, www.google.com/reader; Netvibes, www.netvibes.com; and PageFlakes, www.pageflakes.com .
- *Social software:* Social software lets workers find expertise, rendezvous, connect or collaborate by use of a networked computer device. It supports networks of people, content, and services that are more adaptable and responsive to changing workplace contexts. Social software adapts to its environment, instead of requiring its environment to adapt to software.
- *Wiki:* A wiki is a type website that supports the creation and editing of interconnected web pages using a web browser Wikis support PLNs use in their ability to support collaboration with others in a work community.
- *Workplace context:* Work context is a way of describing workplace environment. Workplace contexts produce forces, channel resources, activities, attitudes, and motivations. Structure and climate represent conditions that organizations can influence through management of the workplace environment (Olmstead, 1975). A workplace context (situation) drives the need to engage PLN nodes.
- *Workplace information literacy:* The ability to recognize when assistance is needed to perform work and have the ability to locate existing resources or find new resources and evaluate and use these resources as new additions to the PLN.

This literacy is beyond knowing how to use computers to access information to exhibiting competency in reflecting on the nature of information itself, its technical infrastructure and its social, cultural, and philosophical context and impact. The literature often refers to this as *metacognition*, an individual's awareness of their own knowledge and their ability to understand, control, and manipulate their own cognitive processes in formulating and directing one's own learning (Hartman, 2001).

Chapter 2: Review of the Literature

Introduction

Chapter 1 provided the groundwork for understanding that a significant amount of learning in the workplace is done informally and that individuals rely on their personal networks of resources to deal with a wide range of work situations. Helping organizations and individuals improve productivity and performance through a better understanding of the relationship between organizational support for workplace learning and the creation and productive use of personal learning networks in the workplace presents an opportunity to advance the body of knowledge. This review does not attempt to be an exhaustive review of all the available literature on workplace learning, rather this review is selective and purposeful focusing on contributions to the body of knowledge relevant to this particular type of study.

The review of the literature begins with a discussion of the relevant theoretical frameworks for the workplace as an environment for learning. How workers learn in the workplace with two special case operations of personal learning networks, finding resources to learn from and career advancement will conclude the discussion of workplace as an environment for learning. The next section will discuss personal learning networks (PLNs) operating in these workplace-learning environments. The discussion of PLNs will include both the skills required and technologies commonly used. An examination of the intersection of PLNs and the impact of organizational support for formal and informal learning will set the stage for the proposed research study suggested in Chapter 1 and defined in Chapter 3.

The researcher expects that through the examination of research, methods and relevant theories and frameworks that appear in the body of knowledge a useful approach will emerge for further study of the relationships of organizational support, as evident in the workplace environment and worker competency in the creation, nurturing, and contribution to personal learning networks.

The Workplace as an Environment for Learning

There are numerous theories and frameworks on workplace learning. Many of them focus on work context and workplace motivation but very few adequately describe the dynamic of organizational support for personal learning networks (PLNs). There have been numerous studies of workplace learning that have determined that keeping workers in their work environment while they learn is an efficient and effective organizational learning strategy (Littlejohn, 2006; Sambrook, 2005).

The previous research of Eraut (2004) and Sambrook (2005) resulted in a useful theoretical framework framed by typologies that represent learning and context factors. The chosen theoretical models are included because during the literature review several common themes that represent workplace environmental factors surfaced repeatedly regardless of the type of research and analysis conducted. In Eraut's et al. (2004) research, Kirby et al. (2003), Lohman (2005), Olmstead (1975), Wright (2004), and the approach to work independence (autonomy), workload, and interaction with colleagues including supervisors appear to be common factors. Eraut et al.'s (2004) *Learning Factors* theoretical framework for learning in the professional workplace appears in the literature frequently. The framework provided two broad categories of factors that the study could examine, context factors and learning factors. Observation research and interview research

was done on 16 trainee accountants, 34 graduate trainee engineers and 40 newly qualified nurses. Their analysis led to a two-triangle model: (a) the *Learning Factors* triangle shows the interactions between the key variables of confidence and commitment, the challenge and value of the work, feedback and support; and (b) a similar triangle of interacting *Context Factors* shows allocation and structuring of work, encounters and relationships with people at work, individual participation, and expectations of progress and performance (Eraut, 2004)

This work is relevant to this study because the factors chosen incorporate both organizational and individual perspectives on workplace learning. Organizations play a significant role in the allocation and structuring of work and managing the culture and climate that supports of discourages relationships with people at work and feedback and support. Individuals derive workplace expectations confidence, commitment and perception of challenge and value of the work from both the context and learning factors presented.

Sambrook (2005) conducted research, designed to integrate and analyze organizational, individual and technological factors, drawing upon qualitative methods to gain insight into the various stakeholders' perspectives. summarized the factors influencing work-related learning by assigning them to three main categories: (a) organizational factors, (b) functional factors, and (c) individual factors. Organizational factors are culture and structure, senior managerial support, organization of work, work pressures, tasks, and task vs. learning orientation. Functional factors relate to how the role of human resources development (HRD) is defined and to the general characteristics of the organization, such as number of staff, expertise, amount of information, and use of

information and communication technology (ICT). Individual factors were motivation to learn, time, IT skills, and confidence.

Pragmatic factors take into account the perception of the learner (worker) as to the availability of learning resources, which could be formal or informal, attitudes towards training, time available to learn and learning outcome reward. With organizational, functional and individual factors as inputs, the output can be formal or informal work related learning. For the purposes of this study, the researcher considered functional factors to be a subset of organizational factors as both represent the organization. These two frameworks will prove useful in subsequent research and analysis of the relationships between organizational support for workplace learning and the establishment nurturing and development of personal learning networks (PLNs) by workers in the workplace.

Organizations committed to supporting learning in the workplace seek ways to increase congruence and limit or eliminate dissonance between the organizations' and the workers' perspectives of workplace learning (Keeling, Jones, Botterill, & Gray, 1998). This effort is at the heart of finding a workable balance between organizational support for formal learning and organizational support for informal learning both important parts of personal learning networks.

Exploring the Meanings of Formal and Informal (Self-Directed) Learning

There is no one generally accepted definition of formal and informal learning. Rather there are at least two general categories of definitions. In this study, the researcher uses training and formal learning interchangeably. Also, the researcher uses informal learning and self-directed learning interchangeably. The first and most common distinction between formal and informal learning is delivery modality where the delivery

of formal learning occurs in a traditional instructor led academic learning setting. In this category, learning delivered in the classroom is formal with defined student/teacher roles. The ultimate goal is for the worker (learner) to apply the training in an appropriate way on the job. Formal training (learning) is organized and delivered in a way that allows it to be formally controlled, scheduled, delivered, and tracked. Like other types of business, activities there are costs and budgets associated with formal learning (training). In this category, there is a range of definitions that include academic versus workplace settings to formal and informal learning that occurs in workplace settings. Sambrook (2005) examined work related learning and characterizes formal learning as learning at work and informal learning as learning in work. The inclusion of both an organizational and personal factors along with clear definitions of formal and informal learning support the use of this framework in subsequent analysis of the balance between organizational support for formal and informal learning as perceived by individual workers.

However, there are alternative views concerning formal and informal training as well. Cofer (2000) writes, the terms formal and informal learning have nothing to do with the formality of the learning, but rather with the direction of who controls the learning objectives and goals. This is the second category of definitions of formal and informal learning. In this category, the formal learning environment the training or learning department sets the goals and objectives, while informal learning means the learner sets the goals and objective. If the organization (other than training and development department) sets the learning goals and objectives, such as a functional management directing on the job training, training is often referred to as *non-formal learning* (Hanley, 2008) in a defacto way. Thus, in the case of formal classroom learning the trainers set the

goals, while *non-formal learning* interventions have someone outside of training and development, such as a manager or supervisor, setting the learning goals or objectives, which tend to be job related performance goals. In the same category of definitions is the work of Billett (2002) who proposes a different perspective on the notion of formal and informal learning in the workplace. Because informal learning is often considered inferior to formal teacher learner didactic interactions, Billett proposes a new conceptualization of formal and informal learning in the workplace. Billett proposes the replacement notion of formal and informal learning with, "learning as an outcome of participant thinking-acting occurring, through engagement in goal-directed activities that are structured by workplace experiences" (p. 4). These workplace contexts provide a different platform to discuss and conceptualise workplace learning experiences free from the legacy of describing learning in the lexicon of educational institutions. This conceptualization informs further research into the learning pedagogy that PLNs support and will be used in this study. The researcher used a hybrid definition of workplace formal and informal learning as one that merges both categories of definitions.

Context and Workplace Environmental Aspects of Formal and Informal Learning

The workplace environment or work context defines the need for formal or informal learning or both. Workplace context affects motivation to learn through the establishment of goals, creation and enforcement of policies, constraints, cohesion, relationships within and between work groups leadership and communications practices. Structure also plays an ongoing role in that it represents the framework of job roles resulting from the allocation of authority, responsibility and duties (Olmstead, 1975). Workers function (learn) within contexts both cognitive and social that define and limit

behavior. How workers learn in the workplace determines how and when a PLN is used. Candy and Crebert (1991) proposed that four differences exist: (a) academic environments involve propositional knowledge, (b) are de-contextualized, (c) encourage elegant solutions, and (d) tend to be individualistic and competitive. Workplace learning is said to involve procedural knowledge, be contextualized by the nature of the organization, aimed at problem solving, and seen as encouraging collaborative teamwork. Kirby et al. (2003) study of approaches to learning at work and workplace climate posits that while the workplace has a performance orientation the nature of workplace learning is fundamentally the same as academic learning. Workers are therefore learners in a work context who will adopt learning strategies based on the same types of motivations found in academic domains. Billet (2002) suggests that we not consider workplace learning as somehow inferior to formal classroom learning by classifying workplace learning as informal, situational determinism. Instead, learning is proposed as being inter-dependent between the individual and the social practice that enables PLNs to be positioned as useful in all workplace-learning settings.

Lave and Wenger (1991) provided a conceptual framework to examine workplace learning as a contextualized situated social activity. Their study of Yucatec midwives, VAI and Gola tailors, Navy quartermasters, and meat cutters explored how the gradual acquisition of knowledge and skills as novices learn from experts occurs in the context of workplace. These small PLNs represent diverse workplace and social settings. Work context is a way of describing workplace environment; both terms appear extensively in the literature to describe essentially the same thing. Workplace environment is more than just a description of the place that one works.

Impact of Culture and Climate on Learning

Climate operates within a culture and together they significantly define how knowledge sharing occurs between individuals and groups. Delong and Fahey (2000) provide a deeper perspective diagnosing cultural barriers to knowledge management. Delong and Fahey link culture to behavior via values, norms and practices and submit that culture, particularly subcultures, shape assumptions about what knowledge is and which knowledge is worth managing. Culture defines the relationships between individual and organizational knowledge, determining who is expected to control specific knowledge, as well as who must share it and who can hoard it. Culture creates the context for social interaction that determines how knowledge will be used in particular situations, and shapes the processes by which new knowledge with its accompanying uncertainties is created, legitimated, and distributed in organizations. Delong and Fahey (2000) and Olmstead (1975) help to frame context in terms of organizational conditions in the case of Olmstead and social interaction in the case Delong and Fahey. The shorthand of work context is used to describe work environment from its broadest sense down to the task level. Organizational support is more than just an investment in hardware, software, networks and databases. While these investments support infrastructure and architectures that automate and enable the use of tools that increase efficiency and effectiveness, these investments do not operate independently from climate, culture and workplace learning context.

Learning contexts involve more than just the antecedents found in social cognitive theory; they also involve situational learning contexts such as newcomers to workplace communities of practice. Rismark and Sitter (2003) conducted a study of immigrant

newcomers to the workplace in Norway. The observation of the newcomer community interaction spanned three months. Participants in the study included an unskilled car mechanic, doctor, and seamstress and was part of a larger two year seven hundred participant study on learning in the workplace. This aspect of the study looked at initiative on the part of the immigrant and invitation to participate in the community as a function of activities, procedures, values and norms. This research added to the body of knowledge that confirms the importance of the social aspects of the work context namely community acceptance of newcomers by old-timers, work structure and managerial support, all working in concert to move the study participants from the periphery to full and valued participation in the sociocultural practices of the community through authentic contributions (Lave & Wenger, 1991). This movement from the periphery to full valued participation in the sociocultural practices of the community is enabled by the use of personal learning networking skills and competencies. Community acceptance is significantly influenced by organizational culture and climate.

Like Rismark and Sitter (2003), Lohman (2005) conducted a study of factors influencing the engagement of public school teachers and human resource development (HRD) professionals in informal workplace learning activities. Like the Rismark and Sitter study, the use of a Likert scaled survey instrument followed by a field test provided insights into the interrelationships between the personal characteristics that enhance motivation and work context. Lohman found that both professional groups reported that two environmental factors frequently inhibit their engagement in informal learning activities: a lack of time and a lack of proximity to colleagues' work areas. Three additional environmental factors inhibited HRD professionals from engaging in informal

learning, an unsupportive organizational culture, the unwillingness of others to participate in informal learning activities, and the inaccessibility of subject matter experts. Various environmental and personal characteristics strongly influenced participant's selection of specific learning activities. As jobs in today's organizations continue to intensify in scope and complexity, the ability to decrease environmental inhibitors to informal learning as well as enhance personal characteristics that promote informal learning becomes critical to cultivating workplaces where working and learning are integral and natural parts of the workday.

Olmstead (1975) proposes that structure and climate constitute the environment within which the work of an organization is accomplished. Climate has contributing factors that include but are not limited to goals, policies, constraints, cohesion, relationships within and between work groups, leadership and communications practices. Structure represents the framework of roles resulting from the allocation of authority, responsibility and duties. Workers function within contexts (environments) that define and limit behavior. Workplace contexts produce forces, channel resources, activities attitudes and motivations. Structure and climate represent conditions that organizations can influence through management of the workplace environment. Table 1 summarizes formal and informal learning. The literature reviewed provides a useful lens for subsequent discussion and analysis.

Table 1

Definition of Formal and Informal Learning

Formal Learning:	Informal Learning:
Organizational driven learning delivered as an intentional event. Often instructor led delivered away from the work environment. Learning content is designed and delivered to close a skill gap by satisfying a learning objective.	On demand learning delivered in the workplace. It can be learner led and is typically self-directed, learner controlled in terms of timing, extensiveness, and depth. Informal learning can be intentional or unintentional, consumed in varying individualized sizes. Its on demand nature can have the learner establishing the learning objective.

Through investment decisions, organizations manage the workable balance between formal and informal learning. Through operations and leadership, organizations manage conditions such as culture, climate and context. Table 2 summarizes learning culture, climate, and context in the organization.

Table 2

Learning Culture, Climate, and Context

Learning Culture and Climate	Learning Context
Culture defines the relationships between individual and organizational knowledge. Culture creates the context for social interaction that determines how knowledge will be used in particular situations, It includes things like values, traditions, norms Climate operates within a culture it is a label used to describe the dimensions of the work environment.	Context defines the need for learning. It is the why learning needs to occur. It is the situation and in its broadest sense describes the work environment. Learning environment components include but are not limited to things like time, place, task or problem to be solved, and relationships that need to be utilized.

How do Workers Learn in the Workplace?

Workers learn in the workplace by: " (a) by doing the work itself, (b) through co-operating and interacting with colleagues, (c) through working with clients, (d) by tackling challenging and new tasks, (e) by reflecting on and evaluating one's work experiences, (f) through formal education, and (g) through extra work contexts" (Tynjälä 2008 p.134). The literature contains numerous examples of these types of learning experiences, for example, (Billett, 2001; Collin, 2008; Collin & Valleala, 2005; Eraut, 2004). These seven ways in which learners learn in the workplace are useful in defining the work context in which organizational support satisfy learning needs and PLNs operate.

The study of all possible work contexts would prove to be unwieldy but there are in most organizations a set of core common and critical job role based tasks that represent critical work activities like those just listed. Organizations can influence how they construct the design of work and the supporting environment in ways that balance

organizational support for formal learning and organizational support for informal learning. Both types of learning are required in the creation, nurturing and development of personal learning networks. Management that implements work context changes to meet the dynamic business challenges that resonate positively with the workforce creates opportunity for PLN development and use.

Career Advancement, Expertise Location, Special PLN, and Organizational Support Situations

The seven ways workers learn in the workplace represent situations or work contexts where organizations invest in support at various levels and ways. There are special workplace situations that stress test the workable balance of organizational support and PLN operations worth noting in that they are non-routine. Two such situations are career advancement and finding relevant expertise to assist in the performance of work.

Career Advancement

An analysis of the intersection of PLNs and organizations would not be complete without some mention of career networking for the purposes of career advancement, given the volume of literature and popularity of social networking websites. Career advancement reflects one of the key reasons why individuals create, develop, and nurture PLNs. Much of the literature is focused not on how or when to make PLN connections but what content to communicate and how to value and nurture the network connections once established. Higgins and Kram (2001) wrote that:

> given the boundaryless model of the work environment, in which firms no longer provide the sole or primary anchor for an individual's personal and professional identity, individuals are increasingly looking beyond the, senior-level, intraorganizational relationships to multiple internal and external relationships that can provide valuable developmental assistance as evidenced by the popularity and growth of websites like Linkedin. (p. 267)

The changing nature of organizational structures affects the sources from which individuals receive career developmental assistance. Organizations are expanding internationally, align and collaborate with other organizations in a variety of structural arrangements. For example, joint ventures, licensing, outsourcing, and global operations workers will need to look beyond traditional sources to others who can provide them with developmental assistance. Organizations have become increasingly diverse, particularly in terms of race, nationality, and gender which affect both the needs and resources available for development (Higgins & Kram, 2001). Organizational support for personal learning networks evidenced by investments in ongoing diversity training aimed at increasing cultural competency as a subset of professional development. Finally, De Janasz and Forret (2008) wrote:

> developing and maintaining relationships with others for the purpose of mutual benefit can help individuals search for and secure employment opportunities, gain access to needed information or resources especially on short notice and obtain guidance, sponsorship, and social support. Such networking skills are crucial for enhancing social capital and career success; however, many individuals feel uncomfortable with, or unskilled in, networking. (p. 629)

The creation and development of mentoring relationships with others and the skills required to do so present an opportunity for both the worker (learner) to grow professionally and the organization to invest in formal and informal learning for mutual benefit. In a *Society of Human Resource Management (SHRM) Foundation* study on personal learning in mentoring relationships, Lankau and Scandura (2002) studied 440 hospital workers and concluded the following:

> Findings from this study indicate that personal learning may explain how mentoring functions influence job attitudes. Relational job learning mediated the relationship between vocational support and role ambiguity and that between

> vocational support and job satisfaction. The vocational support provided by mentors helps protégés increase their understanding of their job context, which resulted in less confusion about the expectations associated with their roles in the organization and greater job satisfaction. The study also found that personal skill development mediated the relationship between role modeling and job satisfaction. Having a role model may result in greater job satisfaction owing to social learning effects on skill development. These findings highlight the importance of mentors being proactive in managing mentoring relationships to ensure that they are resulting in personal learning. (p. 787)

There are other studies along with this one that have concluded that strong relationship mentoring is an important component in career advancement (Ibarra, 1993). From onboarding a new employee to coaching an experienced one having a mentorship program is one way that an organization can work towards a workable balance in support of informal workplace learning (Lankau & Scandura, 2002; Paradise, 2008).

Finding Expertise in the Workplace

Many organizations are investing in formal skills database systems that provide expertise locator functionality. Implementation of these systems internally represents significant organizational investments in capturing and validating skills at the job role and task levels. These systems have a significant dependency on the accuracy of job skill needs reflected in skill taxonomies. An *American Society of Training and Development* (ASTD) and *Institute for Corporate Productivity* (I4CP) study authored by Donna Bear (2008) indicated that orientation and onboarding present organizational opportunities for the worker to start the process of building a network of useful workplace resources for their personal learning network. This research included 1,100 national, multinational, and global organizations and asked respondents to what extent do and should employees use informal learning to familiarize workers with the organization? Table 3 indicates the gaps between the percentage of employees that currently use informal learning and their

perception of the percentage of employees that should be using informal learning (Bear, 2008). The percentages represent those who chose to a high or very high extent. This indicates that when it comes to things like politics the perception of survey respondents is that informal learning occurs more than perhaps it should. When it comes to finding the right resource, corporate history, onboarding, orientation and the communication of company values respondents felt that more learning that is informal should occur.

Table 3

Extent to Which Employers Should Use Informal Learning to Familiarize Workers with the Organization

Informal Workplace Learning	Employees Currently Use Informal Learning	Employees Should Use Informal Learning
Learning internal politics of the organization	41%	31%
Unofficial Who's Who (best resource)	39%	46%
Official who's who (names faces titles, responsibilities)	32%	39%
Historical Background (why things are done the way they are)	31%	34%
Orientation/Onboarding	23%	42%
Company Values	18%	38%

Adapted from "Tapping the Potential of Informal Learning," by (Bear, 2008), *ASTD Research Study.* Copyright 2008 by the American Society of Training and Development (ASTD).

Since informal learning often occurs at the person-to-person level, linking workers to the right resource becomes a critical part of organizational support for the development and nurturing of personal learning networks. The strength of these network connections is based upon the relationships established and nurtured over time. A study done by Deloitte Research suggested that among other actions organizations should:

> Stimulate rich networks of high-quality relationships. People have always reached out to those they know and trust to ask for on-the-job help and to create new

> opportunities. Yet as jobs and roles become more complex, people need to reach out to an ever-broader array of players to learn and progress. Most people build their networks instinctively. (Athey, 2008)

According to Cross and Parker (2004) as cited by Athey (2008), the networks of high performers share common traits:

- They are broader and more diverse than those of average or lower performers;
- They span borders, hierarchies, generations, gender and ethnicity;
- They are carefully formed, not ad hoc; and
- They are cultivated in ways that engender trust.

High performers – and innovators in particular – also build robust external networks with people who will challenge their thinking.

Organizations may choose to implement technology that not only supports finding expertise through common interests but the sharing of opinions and other artifacts. Beyond electronic tools, workplace relationships play a critical role. Galagan (2009) wrote that at Sabre Holdings, the company that owns Travelocity and several other global travel reservation systems, an interdepartmental team created an internal social networking tool called SabreTown that facilitates informal learning and communication in ways that addressed many of the issues holding other companies back. Galagan quoted Johnson, the general manager for Sabre Holdings: "The goal was to provide an internal tool for professional networking so that employees could connect quickly and easily" (p. 27). Galagan continued:

> To use SabreTown, employees complete a profile of their interests and expertise. When someone posts a question to an online bulletin board, the system's predictive modeling software will automatically send it to the 15 people whose expertise is most relevant to the question. The more people who complete profiles and the more questions that are asked and answered, the better the inference engine is able to assign questions appropriately. (p. 27)

The literature suggests that informal learning occurs far more frequently and is not inferior to formal learning (Billett, 2002). An approach used to describe the main difference between formal and informal learning in many work contexts is the time, place and delivery modality. Workplace learning because of its on demand nature tends to be procedural and contextualized to the workplace environment. Organizational culture and climate affect workplace environments. Tynjälä (2008) provides a framework for looking at how workers learn in workplace environments. The review of the literature examined two special cases of personal learning networking, career advancement and finding expertise in an organization. The researcher then discussed workplace activities such as onboarding and problem solving using social networking software. Having examined the workplace as an environment for learning, the next step in the literature review is to explore in more depth, the concept of a personal learning network (PLN) and how it facilitates workplace learning, using technology.

Personal Learning Networks

A personal learning network (PLN) is a way of describing a collection of resources that a worker (learner) can go to learn something. PLN resources can be family, friends, coworkers, and managers. Connectivity to these resources may be face-to-face or may only be available to the worker via the telecommunications infrastructure such as telephone and the internet (Warlick, 2009).

Telephone and Internet technologies are examples of ways in which technology amplifies the size of the network and yet allows the worker to access a personalized collection of *experts* on various topics that could be physically located anywhere in the world. PLNs can link to online communities and tap collective resources through

collaborative activity. PLN resources can also include non-human resources, such as books, journals both physical and electronic. PLNs in the workplace can be used to support collaboration. Baltatzis, George, and Grainger (2008), industry experts in computer-supported cooperative work, write: “Truly effective collaboration lives at the intersection of technology, organizational dynamics, and social dynamics” (p. 78). Organizational culture and context are ways of describing organizational and social dynamics. Personal learning networks are created, modified, and grown to meet individual workplace learning needs. These networks adapt to how a worker learns in the workplace. The motivation to learn can range from the requirements of an immediate work task to establishing mentoring connections for career advancement. Portability of critical PLN information can range from remembering who a critical contact is, to leveraging technology to display a wide range of electronic resources to guide the worker through the execution of a task.

What Can be Accomplished Using PLNs to Learn?

The value of a personal learning network can be determined by its usefulness in supporting learning used in goal directed activities. Tynjälä (2008), writes that on the basis of the typology of learning outcomes at work developed by Eraut and his colleagues, it can be said that there is little that people cannot learn at work. The typology includes the following categories of learning outcomes:

- Task performance, including sub-categories such as speed and fluency, range of skills required and collaborative work;
- Awareness and understanding, involving understanding of colleagues, contexts and situations, one's own organization, problems risks, etc.;

- Personal development with aspects such as self-evaluation and management, handling emotions, building and sustaining relationships, and the ability to learn from experience; teamwork with subcategories such as collaborative work, and joint planning and problem solving;
- Role performance, including prioritization, leadership, supervisory role, delegation, crisis management, etc.;
- Academic knowledge and skills, such as assessing formal knowledge, research-based practice, theoretical thinking and using knowledge sources;
- Decision making and problem solving, involving, for example, dealing with complexity, group decision making, and decision making under conditions of pressure; and
- Judgment, including quality of performance, output and outcomes, priorities, value issues and levels of risk. (Tynjälä, 2008, p. 134)

For the purposes of this research, the examination of the intersection of organizational support and PLNs will be restricted to a defined set of workplace learning situations. While the non-technology based implementation of PLNs is useful it has inherent limitations. A PLN based on an individual's memory is subject to the effects of aging and often requires the translation of a memory to some other format, which introduces additional limitations and concerns about accuracy, bias and completeness of the recollection. For example, a person can describe his or her memory of a movie by either writing down his or her recollection or providing an oral account. The electronic copy of the movie is the movie itself, which provides a richer account of the actual film.

This is not to suggest that PLNs do not involve individual cognition since all PLN operations require the application of judgment by the individual using the network; technology provides a practical repository, amplifies and expands the size value and scope of the network making it easier to know more things and access more resources. The investment in technology is one of several ways that an organization can visibly demonstrate its support for PLNs. A well thought out and implemented investment in technologies designed to support PLNs creates a personal learning environment (PLE) that workers can choose to exploit to create, develop and nurture their networks and/or contribute to the networks of others. The balance of applying judgment in the use of PLN technology in a workplace context creates a unique personalized learning environment.

PLEs and PLN Supportive Technologies

Technological implementations of personal learning environments are comprised of tools based on *Web 2*.0 technologies. *Web 2.0* supports user creation and sharing of content, rather than merely accessing external artifacts. Social software such as blogs, web logs, wikis, support the sharing of all kinds of different personal knowledge bases including bookmarks, book collections, and documents of all types and formats. Companies such as IBM have their own internal versions of social networking software (SNS). IBM's SNS called Beehive went from zero users to over 30,000 employees. Interviews and content analysis determined that employees used Beehive for three reasons: (a) connecting on a personal level, (b) advancing their careers within the company, and (c) campaigning projects and ideas within the company. In this regard IBM has chosen to invest in technology to provide support for its employee personal learning networks (DiMicco et al., 2008).

Personal learning environments (PLEs) provide workers with their own spaces under their own control to find expertise, contribute to the PLNs of others, share ideas, and perform work activities. PLEs provide a more holistic learning environment, bringing together resources that are work context relevant for learning. Workers learn how to take responsibility for their own PLNs while organizations enable the technology through investment in technology and in the policies and practices that define the culture and climate of the organization (Attwell, 2007).

Individual PLN Skills and Competencies

Knowing who or what to add to a personal learning network requires a mix of individual, social, and collaborative practices. The PLN hub requires *metacognitiv*e skills to operate. *Metacognition* is the workers automatic awareness of their own knowledge and their ability to understand, control, and manipulate their own cognitive processes. It is the ability to formulate and direct one's learning. The competencies Baber and Waymon (2010) described in *The Connected Employee: The 8 Networking Competencies for Organizational Success* is discussed here because the competencies provide a useful starter set of best practices for personally and socially maintained synchronous and semi-synchronous connections. Eight field-tested competencies were examined in orientation, leadership development, employee development, career development, diversity, and business development training programs for corporate, academic, and government organizations.

They are:

1. Capitalize on style. Appreciating how personality (introversion, extroversion, communication styles, and shyness) and mindset (previous learnings, attitudes, and misconceptions) affect the ability to build relationships.
2. Take a strategic approach. Targeting specific organizational and career outcomes (macro) and agenda-building for specific networking events and encounters (micro).
3. Envision the ideal network. Identifying WorkNet, OrgNet, ProNet, and LifeNet contacts and appreciating the benefits, challenges, and leveraging opportunities faced in developing them.
4. Develop relationships. Seeing relationship development in six stages and managing the trust-building process by teaching character and competence.
5. Increase social acumen. Becoming more comfortable, confident, and professional by mastering relationship rituals.
6. Showcase expertise. Using examples and stories to teach contacts about expertise, experience, talents, and interests.
7. Assess opportunities. Choosing optimum networking opportunities and making participation pay off.
8. Deliver value. Contributing to the organization's networking culture and capitalizing on networking to affect the bottom line. (Baber & Waymon, 2010, p. 52)

The literature suggests that the workable balance will require that individuals will need personal competencies to capitalize on the available Organizational Support.

PLN Diagram

Figure 1 provides a basic schematic diagram of a personal learning network. The hub represents an individual worker's PLN. The figure shows three generic samples of node types. For the sake of simplicity a *thing node* is a physical artifact, a *person node* is a human resource and a *community node* is a virtual community entity.

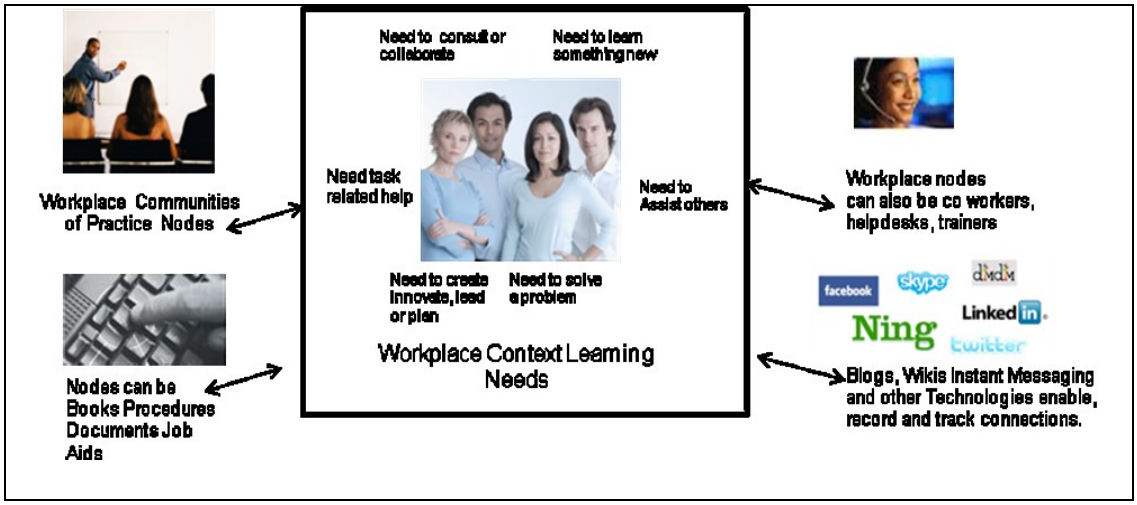

Figure 1. Personal Learning Network schematic diagram

The arrows between the nodes represent connections or ties to network nodes. These ties can vary in strength and value to the network and are enabled and amplified by technology. The center box (PLN hub) represents the workplace context/ learning need that drives the active use of the PLN. Nodes can be static or dynamic, self-updating, pure content or based on a evolving relationship. Workers exploit organizational support to form and maintain connections or ties and these connections can be bidirectional (Siemens, 2005).

PLN Hub Node Connections

A significant amount of the literature reviewed describes and classifies the technology used in PLNs into three connection types. Warlick (2009) developed this schema in his research entitled *Grow Your Personal Network* which describes personally maintained sychronous connections, socially maintained semi synchronous connections and dynamically maintained asynchronous connections. These categories provide a useful framework for reviewing the literature and describing the PLN environment. Whereas aspects of the work environment primarily affect an individual's constraints and opportunities for PLN cultivation, individual-level factors affect developmental help-seeking behavior. A discussion of the specific organizationally supported technologies covered later in this chapter.

Organizationally Supported Personally Maintained Synchronous Connections

These are the traditional people and places that a worker goes to answer questions, solve problems, and accomplish work related goals. PLN technologes such as chat, instant messaging, teleconferencing, and virtual worlds provide real time synchronous connetivity making the barriers of geography, background, language, and culture transparent (Wellman et al., 2000). Baltatzis et al. (2008), and others have conducted research that suggests that social networking tools mentioned earlier useful in the workplace.

Personally and Socially Maintained Semi-Synchronous Connections

These are communications that are broadcast messages to networked members of a community with common interests. The community norm is to ask questions of the entire community or some selected subset. The common interest is expertise that has already been determined to be useful in a particular workplace context. Semi-synchronous means

that the interaction does not occur in real time but there is an expectation that members of the PLN are monitoring this connection channel and will respond. The community norms establish how responsive members are to the needs of the community. Contribution of social capital to the community facilitates reciprocity and cooperation (Kilpatrick, Field, & Falk, 2001). Examples of personally and socially maintained semi synchronous connections are blogs, and wikis.

Dynamically Maintained Asynchronous Connections

Individuals can create as well as consume content for their PLN or to contribute to another PLN or to a community of PLNs. These dynamically maintained asynchronous connections required *Web 2.0* literacy's in search, navigation, content creation, and online community contribution. Ideally, in an automated environment a software aggregator is used to monitor these content sources for changes (updates) and alert the worker. However, in the absence of such software capabilities many individuals act as the aggregator launching these asynchronous connections in response to workplace situational needs. Dynamically maintained asynchronous connections are good examples of informal learning activities that are employee (worker) controlled in terms of breadth, depth and timing (Bear, 2008).

Using Organizationally Supported Technology to Enable a PLN

The three high impact workplace technologies that support PLNs found in the literature are Instant Messaging, Social Networking, and Collaboration. Early advocates of these technologies have reaped significant and measurable benefits from their implementation.

Instant messaging. Instant Messaging (IM) is a form of real-time (asynchronous) direct text-based communication between two participants using personal computers or other devices, along with Instant Messaging software installed on each computer. IM supports the immediate receipt of message acknowledgment or reply. In many implementations instant messaging includes additional features such as support for participant video using webcams, or file transfers as well, although they are typically limited in the permissible file-size. Bellman (2000), for example, discovered that organizations he surveyed had reduced their phone and email usage by 81% and 67% respectively, by introducing Instant Messaging (IM) software for use by employees. Instant messaging provides the user initiating contact, over a wide range of hardware devices with other available IM users in real time. Immediate connections allow both parties to add additional (users) nodes. while engaging in written dialog (Bronstein & Newman, 2006). IM falls under the umbrella term *online chat*. The distinction between *online chat* and IM is that IM does not support anonymous communications. Participants are registered users of the system and connections facilitated by using specified Buddy List, Friend List or Contact List.

Another type of messaging involving the use of cell phones is called text messaging. Text messaging, or texting, refers to the exchange of brief written text messages between fixed-line phone or mobile phone and fixed or portable devices over a network. Text messages can only be used to communicate with people, but they can also be used to interact with automated systems such as ordering products and services. Automated message alerts can be sent to pre-determined cell phone devices based on events.

Social networking technology. Commercial social networking sites like Facebook, Blogs, Twitter, social bookmarking tools, and Linkedin, are examples of communities of common interests that PLNs can utilize. Many corporations have intranet equivalents of these social networking sites to support their workplace environments in the same way. Social networking technology supports the dialog of virtual communities through semi- synchronous connections. Community members share ideas, opinions, and contribute to the content of the community repositories of information. Search engines support individual PLN connections not possible through the normal course of workplace activity. These same search engines found on the internet and intranet flag tagged content representing common subject matter interests and recommend connections to users. Many of these commercial internet capabilities are now routine search capabilities within organization intranets.

Collaboration technology. *Web 2.0* wikis and enterprise collaborative software technologies like Lotus TeamRoom, Webex, and Google Groups represent a specialized kind of collaboration technology designed to support multiple users collaborating on a single deliverable. Feature sets for these technologies vary as does accessibility. Collaboration technology fits under the umbrella of Social Networking software and represents an opportunity where organizations can provide direct support of personal learning networking across organizational boundaries. The expansion of open, collaborative technology further enables external with consumers and customers, suppliers and business partners. All this is not without its challenges since these *Web 2.0* tools require thoughtful design to ensure both usability and sociability (Krug, 2005; Preece, 2000). Organizations invest in the support infrastructure, policies, staffing, and manage

access (Bingham & Conner, 2009; Li & Bernoff, 2008; Wenger, McDermott, & Snyder, 2002). Libert and Spector (2008) write in *We are Smarter Than Me* that no one single person or organization can have all the right answers. By inviting others into the dialogue to solve problems, make suggestions, or provide feedback stakeholders can become involved in new and creative ways. Responses to dialogue invitations are mediated using tools such as discussion forums, community of practice facilitated help desks, blogs, and wikis. The *crowds* know more than you do, and they are often quite willing to be part of your success if you'll let them. By providing the right amount of support organizations can enable disparate groups of people to collaborate in new and innovative ways from inside and outside of the organization (Tapscott & Williams, 2008).

Examining the Balance of PLNs and Organizational Support

The literature reviewed suggests that organizations create, influence, and maintain workplace environments that create a climate that fosters a willingness of workers to participate in informal learning activities, and a technological infrastructure and architecture that enables makes subject matter expertise accessibility. The balance of organizational support for formal training and support for informal learning via PLNs is shaped by the organizations management systems. These management systems often rely on traditional accounting methods and have difficulty with isolating and accounting for cross-functional benefits. The researcher looked at several frameworks and selected three approaches. The Kirkpatrick and Philips approach, the Sloan Consortium Five Pillars approach, and Social Network Analysis approach (SNA), (Kirkpatrick & Kirkpatrick, 2006; Moore, 2005; Philips, 1997).

Measuring Formal Learning and PLNs

An inclusion of a discussion of measurements is useful in the literature review because the topic is consistent with understanding a workable balance of organizational support for formal and informal learning. Perhaps the most well-known contribution is the work done by Donald and James Kirkpatrick (Kirkpatrick & Kirkpatrick, 2006). This researcher found in the literature several books on work-based learning that utilize the Kirkpatrick model but for formal work based learning project rollouts (Raelin, 2008). The left side of Table 4 reproduces the Kirkpatricks' model.

Table 4

Kirkpatricks' Four Levels

Kirkpatricks' Four Levels	Learning Effect
Level 1: Reactions	Evaluate participants' satisfaction with the learning intervention.
Level 2: Learning Level 3: Behavior	What do participants know they did not know before? How are they using knowledge in their jobs? What is the learning and performance effect of the intervention?
Level 4: Organization-level benefits	Has the development of higher levels of domain knowledge improved organizational productivity?

Note. Adapted from "Evaluating training programs: The four levels," by Kirkpatrick, D. L., & Kirkpatrick, J. D. 2006.

The model's purpose is to assist organizations with the measurement of formal learning interventions. It provides a useful way of measuring the impact of training events. The model fits a broad range of work contexts reliant upon standardized repetitive procedures, processes and methods. Subsequent to the Kirkpatrick and Kirkpatrick (2006) contributions are the contributions of Philips (1997) who provides a means for isolating and calculating the impact of training and measuring and calculating the financial return

on learning investment (ROI) for training and performance improvement programs. Kirkpatrick's model is not without its critics and the work of Philips responds to some of the key criticisms. There are several examples of the ROI methodology being used to measure learning effectiveness through isolating the impact of training. Nathan (2009) wrote about a 6-year study of a formal English as a Second Language (ESL) training effort where both the Kirkpatrick and Philips methods were successfully applied. It is also important to note that this work targeted organizational investments in formal learning (training) and not self-directed informal learning which is the focus in the operation of a personal learning network.

There are other learning investment measurement frameworks that incorporate the work of Kirkpatrick. Most notably in the research is the Sloan Foundation's Consortium, which includes universities and other institutions of higher education. The consortium has developed a five-pillars model to measure the quality of organizational learning. Diagrams of the model have a set of pillars, which hold up the quality of organizational learning. The *student satisfaction* pillar is about the satisfaction of students with their learning and personal growth opportunities. This pillar could include the Level 1 metrics of the Kirkpatrick model. There is a *faculty satisfaction* pillar and the third pillar of *cost effectiveness* examines the capital efficiency of learning investments. The next pillar, *learning effectiveness*, examines indicators of the impact of learning on the organization's strategic direction. Parts of Kirkpatrick model's Levels 2 and Level 3 approaches could be adapted for use within this pillar. Finally, the pillar of *access* looks at the availability of learning at the time, place and delivery modality needed. Each pillar equally supports

learning with no one pillar more or less important. Kirkpatrick model is embedded within the five- pillars model (Moore, 2005).

The Sloan and Kirkpatrick approaches tend to look at learning as an event or project. Informal learning is on demand and requires a complex set of circumstances in which to operate in. Skule (2004) and others have examined job design, specifically learning intensity to define workplace learning conditions that will require both formal in informal learning resources.

Social Network Analysis

Social network analysis (SNA) maps and measures relationships and flows between people, groups, organizations, computers, web pages, as long as the connection activity can be captured or logged. Nodes in the network are the connection points while the links show relationships or flows between the nodes. SNA tools provide a means to both display a visual and a mathematical analysis of human relationships. Management consultants typically use this methodology and tools with clients to explore how organizations operate. The researcher did not find research that represented workplace learning, rather most of the research reviewed centered on the frequency of contact and network cartography of subsequent contacts. SNA is not without its critics as an analysis approach. Common concerns of SNA include, but are not limited to, the inability to include invisible links without direct observation, offline ties not captured, or the interaction between offline and online ties. These aspects of the network can be unknown when visualizing and mapping the social networks. Other concerns include SNA's inability to explain the motivations of network participants (actors) and the meaning of the

relations they establish and maintain (or neglect and fail), Tzatha (2009). Even with these concerns, SNA continues to be a popular approach for social network analysis.

Measuring Informal Learning

In contrast to instructor led, content based learning interventions occurring away from where work actually occurs informal leaning is self-directed, ad hoc, on demand but just in time, and not reliant upon formal classroom pedagogy. Because there are no formal learning events to base evaluations, measurement of learning impact becomes more challenging. It is impractical to survey workers to determine the learning impact upon work after every engagement their PLN. Matthews (1999) writes in *Workplace Learning: Developing a Holistic Model*:

> Universities as institutions of learning should aim to be learning organizations. Through discussion of the concept and application of workplace learning, and the examples drawn from "new" universities, it is clear that the universities advocate and support the need for workplace learning, but like other organizations there is an unwillingness to allocate resources to this area as tangible, quantitative results of the benefits to the organization are not clear, and take time to become visible. This trend is seen also in the business sector where management concerns are focused on the productivity, efficiency and profitability issues of the here and now, and are often unable or unwilling to invest in the development of staff, as they cannot quantify the advantages of doing so. (p.5)

When the nature of work requires dealing with exceptions and reliance upon relationships to solve problems, it is more likely that the workers will need to rely more upon their personal network of contacts than formal business processes. Organizations do not buy informal learning, it occurs organically due to social interaction, worker imitative and technological enablement. In this regard, organizations cannot completely control how workers learn as well as the resources available to them.

Vaughan (2008) writes in *Workplace Learning a Literature Review:* "Workplace learning can certainly include both formal and informal learning, and important informal

learning can include workers consulting with or seeking advice from other workers or even from wider contacts such as professional networks, suppliers, and customers" (p. 12).

Summary

While there is little research in the literature that describes the workable balance between formal training and PLNs, there is research that describes each separately. A synthesis of the research allows the researcher to identify common factors that make up the workable balance for further study. The literature review of the topic of informal learning yielded many of the same findings as previous literature reviews. Notably the work done by Marsick (2011) who wrote the book, *What We Know About the Value of Informal Workplace Learning.*

There is widespread agreement that informal learning is pervasive. Estimates of informal to formal learning continue to be 70-80%. According to the 70-20-10 rule, learning occurs: 70% informally, 20% intentionally but not highly structured, and 10% formally. In addition, studies that seek estimates of informal learning confirm that it is prevalent, e.g.

- In a 2008 survey by ASTD and the Institute for Corporate Productivity of 1,104 human resources and learning professionals, 7% reported informal learning occurring to a very high extent, 34% to a high extent, 34% to a moderate extent, 23% to some extent, and only 2% had no experience of informal learning (Bingham & Conner 2010).
- Case study research in six states in the USA by the Education Development Center found that 70% of learning was likely to be informal, a figure

confirmed by 1996 Bureau of Labor statistics (Leslie, Aring, & Brand, 1997).

Determining Value and Impact of Informal Learning is Challenging

Informal learning is often tacit, may be semi-conscious, and not easily observed. Research design is for measuring informal learning is challenging. There are sampling difficulties, limited access to sites, few good measures, inability to study informal learning comprehensively across many sites with a common framework, and reliance on self-report. It is difficult to measure informal learning directly. Studies have turned instead to assessing group/community learning outcomes, learning culture or learning agility, or measuring job learning intensity. It is difficult to disentangle informal learning from work practices and it often interacts with other forms of learning and various environmental factors.

For the purposes of this research, the examination of the intersection of organizational support and PLNs will be restricted to a defined set of workplace situations. The literature reviewed suggests that organizations create, influence, and maintain workplace environments that create a climate that fosters a willingness of workers to participate in informal learning activities, and a technological infrastructure and architecture that enable collaboration and make subject matter expertise accessible. The intersection of PLN and workplace learning is further shaped by the individual's ability to adapt the PLN to the workplace environment. While there are some examples of organizations that have both the support and worker literacy necessary to realize the benefits, little research has been done to determined how a balance of PLN and organizational support can be made measurable, definable, and repeatable. To date, there

is little research that describes how a workable balance of formal training and PLNs might be achieved. Chapter 3 provides a research plan to explore and examine organizational support for personal learning networks in a midsized university.

Chapter 3: Research Methods

Introduction

The purpose of this study was to analyze one organization that has varying levels of technological support for worker Personal Learning Networks (PLNs). Simultaneously the study examined workers who adapt, or who fail to adapt, PLNs to leverage available organizational support. The study explored, for a given workplace, context strategies for obtaining a workable balance between formal training and Personal Learning Networks. This study aimed to identify personal and workplace characteristics that represent definable, repeatable practices useful for organizations faced with learning resource investment decisions. To accomplish this aim the research was conducted at a midsized university.

The conceptual framework of this study came from three previous research efforts regarding workplace learning: Olmstead's (1975) work in the area of the workplace as an environment for learning; Eraut's (2004), and Tynjälä's (2008) contributions in the area of how workers learn in the workplace; and Warlick's (2009) analysis and classification of PLN connectivity.

Research Design

The purpose of this research was to conduct a descriptive case study of a midsized university's information technology department to explore the workable balance of organizational support for formal and informal learning both used by Personal Learning Networks. A case study strategy of inquiry enabled the researcher to explore learning events, activities and processes from participants in the study (Creswell, 2003). The researcher conducted an emergent qualitative research study based on semi- structured

interviews using open-ended questions to capture insights into how Personal Learning Networks operate within a work context from both an organizational and personal perspective.

Research Methodology

This descriptive case study utilized qualitative research design methods. The following four reasons outline why this design approach was selected. The use of an interview approach incorporates the findings of earlier work done by Berings, Doornbos, and Simons (2006) who authored *Methodological Practices in On-the-Job Learning Research.* Their findings determined that since workplace learning is often spontaneous interview studies are better suited for the capture of worker (learner) insights.

The following four reasons guided the selection of qualitative methods for the research:

- Open ended questions designed to capture how interviewees lean in the workplace requires a design that qualitative research appears to be well suited for both measurement and analysis (Creswell, 2003).
- A qualitative design was used because this type of design is one which supports both a constructivist lens for conducting the research and the review of pertinent literature, and organizational documents, artifacts, and interview analysis (Gall, Gall, & Borg, 2003).
- The lack of any previously validated qualitative workplace climate and approaches to work surveys that have open ended questions (Kirby et al., 2003).

- The qualitative interview capability through analysis to reveal patterns and connections that might otherwise go unnoticed (Creswell, 2003, p. 16).

With this research approach, a single semi-structured interview questionnaire was used to capture, derive, and analyze relationships between organizational support and PLNs.

Data Gathering and Procedures

Data were collected through face-to-face interviews of participants on the campus of the university where the PLNs operate. Grounded Theory, inductive data analysis, was applied to analyze emerging themes from the interviews, to organize, and reorganize the database. Those interviewed were available, if needed, to provide clarity to the meaning of their interview responses (Miles & Huberman, 1994). The researcher developed an interview guide that was used during the interviews to guide the discussion in ways that facilitated the capture of information designed to answer the research questions. The interviewer made and kept notes during the interview and shortly after the completion of the interview to record impressions that were used in subsequent analysis (Bogdan & Biklen, 1982). The unit of analysis was the IT Knowledge worker at a midsized university.

Restatement of the Problem

While there has been significant research in the area of workplace learning, few studies explore the relationship between organizational support for informal ongoing learning and the establishment, nurturing, and development of Personal Learning Networks (PLNs) by workers. Because of this lack of research examining the relationships of PLNs and organizational support for workplace learning, little guidance is

available to organizations on how to invest learning resources to support its mission and goals through PLNs.

Restatement of the Purpose

The purpose of this study was to analyze an organization that has varying levels of technological support for worker PLNs. Simultaneously the study looked at workers who adapt their PLNs to leverage available organizational support. The study explored strategies for a given workplace context, what the workable balance of organizational support for formal learning versus informal learning in support of PLN's. This study aimed to identify common factors, personal and workplace characteristics that represent definable, repeatable practices useful for organizations and individuals. Specifically, this study examined the feedback and input of knowledge workers at a midsized university. While there has been significant research in the area of workplace learning, few studies have explored the relationship between organizational support for workplace learning and the establishment nurturing and development of Personal Learning Networks (PLNs) by workers in workplace settings.

The literature review in Chapter 2 on workplace learning provided a rich and deep understanding of the factors in workplace environments that support and encourage learning. By analyzing the factors in the work environment that either encourage or inhibit PLNs, a number of researchers have contributed to the understanding of learning that takes place as a normal aspect of working from an organizational perspective. What has been missing from these studies is the focus on the workers' perspective of workplace learning environments analyzed in a way that deepens our understanding of the relationship of PLNs and key factors organizations control that create the workable

balances. The aim of this study was to better understand the relationships that specific factors have on each other and on the workplace-learning environment as a whole.

This research used a qualitative study of worker perceptions of a workplace-learning environment at a midsized university. Olmstead (1975) wrote that people function within situational contexts that define and limit behavior. It is the workplace environment that shapes worker actions, attitudes, and motivations. To provide clarity in the discussion of the problem it was necessary first to define workplace learning and workplace learning environment. Workplace learning is defined as learning that takes place in a workplace environment as work is being accomplished. This is an important distinction because this study was not about learning that removes the worker from a work setting and takes place in a formal classroom, even if that classroom is in the workplace. There have been numerous studies of workplace learning that have determined that keeping workers in their work environment while they learn is an efficient and effective organizational learning strategy (Littlejohn, 2006) The focus of this study was on the factors of workplace learning that comprise the environment affecting, supporting, promoting, engaging, or facilitating informal workplace learning.

This descriptive study relied on Sambrook's (2005) *Influencing the Context and Process of Work-Related Learning* framework discussed in Chapter 2. The framework provided an appropriate mix of organizational and individual factors that the study could examine.

Restatement of the Research Questions

The following four research questions were addressed:

1) What characteristics (environmental factors) are present in an organization where PLNs thrive?
2) What are the reasons for workers willingness to contribute their knowledge to other PLNs?
3) What are the barriers to workers contributing their knowledge to other PLNs?
4) What is the relationship between organizational support for workplace learning and the establishment nurturing and development of PLNs by its workers?

Design of the Study

The design approach of this study represents grounded theory based on the lack of existing theory. The researcher expected theories or patterns to emerge during the research because of inductive data analysis as iterative synthesis and reorganization of field data. Data were collected through face-to-face interviews of participants on the campus of the University where the PLNs operate. The participants in this study were members of Information Technology organization at a midsized university. Because of vacations, leaves of absence, workload issues, and movement in and out of the organization a smaller targeted subset of the organization participated ensuring that the researcher had a reasonable representation of job roles and functions in the organization.

Description of Data Sources

Staff in various job roles from the Information Technology department at a midsized university agreed to participate. The names or any other types of identification were not associated with data captured. Certain demographic and job role data were captured. Tracking of interview participant responses required the use of a pseudo-identifier, which linked each participant's interview responses to specific questions used in the analysis. Other data such as descriptions of organizational investments in information technology infrastructure and architecture along with other internal data such as utilization, investment plans and forecasts were made available to the researcher, as appropriate, from the sponsoring executive and/or his designated representative as required.

Selection of Participants

The staff participants in this study function in a variety of roles in the Information Technology Department of a midsized university. Selected participants agreed to participate and represent various management and non-management roles in the organization and use PLNs to accomplish their mission. Participants chosen had a mix of job responsibilities that require learning new information to perform new tasks as well as collaboration to problem solve and accomplish a range of routine work assignments. An initial profile identified and classified the selected participants based on the range of prevalent technologies used in support of PLNs in the organization and their job roles and responsibilities. The profile of participants was reviewed and informed by the sponsoring management team to ensure that the researcher had a sufficient number of participants

available for interview during the site visits and that the participants represented an adequate range of perspectives.

To solicit participation from the members of the profiled group within the organization, an Invitation to Participate letter was electronically mailed to participants from the sponsoring executive who explained the purpose of the study, described the benefits of the study, outlined the selection criteria to participate, and described anticipated time commitment of the in-person interview process (see Appendix A). An Informed Consent letter invited all participants who met eligibility requirements to participate voluntarily and requested that they demonstrate their interest by initialing and signing the completed Informed Consent form (see Appendix B). This organizational domain of a midsized university Information Technology department was selected for the study because of executive sponsorship for the project, its computerized environment and centralized physical location of the study participants.

Data Collection Strategy

The staff selected for these interviews represented a variety of job roles in the Information Technology organization. These individuals are knowledgeable concerning the use and application of technology in formal and informal learning because of the nature of their organizational support positions in servicing faculty and students and ongoing personal learning to meet the demands of their role. The researcher collected data through face-to-face interviews of participants on the campus of the university where Personal Learning Networks operate. This data collection approach enabled the researcher to utilize a protocol that supported semi structured and opened ended questioning (Berings et al. 2006). As previously mentioned, the interviewing process was be launched with a

letter from the sponsoring executive explaining the plans for the use of the data and thanking participants in advance for their participation. The identifying code numbers used enabled the researcher to maintain respondent confidentiality and to enable the sponsoring organization to track and remind those needing to reschedule as appropriate. Historically, with vacations, leaves of absences, workloads, and transfer activity in and out of the organization, interviews completion required two site visits to obtain participant input. Historical experiences with non- mandatory management sponsored interviews enabled the researcher to realize a high participation rate.

Description of Data Gathering Instrument

The study instrument captured semi structured, open-ended qualitative data. The researcher conducted thirteen interviews over the two site visits. The taped, transcribed and coded interviews along with the researcher's notes are input to the subsequent analysis. The researcher's notes taken during the interview and immediately after the interview capture the researchers' impressions and non-verbal reaction that participants had towards specific questions.

Validation of Data Gathering Instrument

Internal validity of the interview instrument was accomplished via the review of the interview questions by external experts to determine if the questions proposed were capable of addressing the research questions and that current internal procedures and measures would result in useable data provided the researcher had acceptable participation rates. The data analysis methodology addressed measures of internal validity by pattern matching as part of the coding process. Examination of transcribed and coded interviews enabled the researcher to look for themes both positive and negative.

Reliability of Data Gathering Instrument

Reliability of the study was concerned with the question of whether the results of this study would be repeatable (Bryman, 2003,). Reliability of the interview responses was accomplished by having multiple coders, tabulate responses comparing their classifications. For the qualitative data analysis interview participant responses were coded by two different researchers tabulated to address reliability.

Data Analysis

The study utilized inductive qualitative data analysis of interviews and observations. The study included analytical efforts to leverage best practices to ensure validity and reliability. The researcher used content analysis to analyze the textual responses to the open-ended items. The qualitative analysis included interpretive inquiry to assist in the categorization and determination of interrelated common themes and through the coding of responses to open ended questions. The number of instances of certain qualitative data interview responses was transformed into numeric counts to facilitate the analysis of common themes. Patterns and themes within the data were compared and contrasted as well as the patterns and themes that emerged from the literature review.

Coding and Displaying Data

After the interview data had been captured, the researcher utilized an inductive coding procedure as described by Merriam (1998) that allowed for categories and groupings to emerge from the responses to the interview questions.

Merriam's procedure involves:

- The preparation and management of raw data files: the researcher formatted, organized and made a backup of each transcription file.
- Iterative reading of text: after the text had been prepared, the raw text was read in detail so the researcher became familiar with the content and gained an understanding of the themes and details in the text.
- Creation of categories: the researcher identified and defined categories or themes that emerged.
- Overlapping coded and uncoded text: segments of text could be coded into more than one category, and a considerable amount of the text could not be assigned to any category, as much of the text was not be relevant to addressing the research questions.
- Iterative revision and refinement of categories: within each category, the researcher searched for subtopics, including contradictory points of view and new insights. The researcher selected appropriate quotes that conveyed a category's core theme or essence. Categories were combined or linked under a superordinate category when meanings were similar. Data interpretation by the researcher was validated by at least one external person.

Human Subjects Consideration

The Pepperdine University Institutional Review Board (IRB) reviews and approves all research involving human participants and this research study was conducted in accordance with accepted ethical, federal, and professional standards for research. The protection of the welfare and dignity of human participants was paramount in this study and is evident in the design of the survey and the management of the study data. Upon

approval of the proposal, an application was filed with the Graduate and Professional School IRB. Steps were taken to create a working data set that protected the interview participant's identity. The only foreseeable risk in this research was imposition on the participant's time during the interview process. As such, an application for the claim of exemption was filed with the Pepperdine University Institutional Review Board (see Appendix C). In addition, all participants received an Informed Consent form containing: (a) the purpose of the study; (b) the method that would be used; (c) the benefits of the study; (d) an estimate of the required time commitment; (e) a statement indicating that participation was voluntary and that participants could withdraw at any time during the process; and (f) a statement that the identity of participants, should they choose, would remain confidential.

The researcher insured confidentiality of participants by reporting results only in aggregate form. Only the researcher and the designated transcribers and coders had access to the raw survey data. Paper questionnaires, data files, and notes were kept in a locked file cabinet in the researcher's home, and electronic data were maintained in a password protected electronic file. All identifying information on survey responses were unavailable to anyone other than the researcher, and all data under the researcher's jurisdiction will be destroyed after a period of three years from the completion of the study.

The researcher addressed the six criteria for IRB approval of research noted as follows:

- Risks to the subjects are minimized and are reasonable to anticipated benefits of the research;

- Selection of subjects is equitable given the purposes and the setting of the research; (see Appendix D)
- Appropriate informed consent is given by each subject or subject's legally authorized representative, and such consent would be appropriately documented;
- The research plan makes appropriate provision for monitoring the data collected to insure safety of subjects;
- Appropriate provisions are made to protect the privacy of subjects and to maintain the confidentiality of data;
- Where some or all of the subjects are likely to be vulnerable to coercion or undue influence, appropriate additional safeguards have been included to protect the rights and welfare of each of these subjects.

Assumptions

Study assumptions are as follows:

- Those interviewed would be available based on the scheduled appointments.
- Interview respondents would understand the questions and answer the questions honestly.
- Additional organizational data requests could be satisfied and requests for follow-up interviews to obtain additional clarity could be accomplished.

Limitations of the Study

- Unforeseen workplace conditions could impact the availability of interview respondents.

- Job role methods, practices and policies concerning access to resources might vary in the population based on job role.
- Technology access and therefore application in PLNs might vary by job role.
- Technology skills were expected to vary amongst interview participants.

Delimitations

- The subjects of this study are knowledge workers in an IT organization at a midsized university.
- Interview findings for this population may not be valid for other workers in the same role at other institutions.
- The study does not cover the leadership's impact on intrinsic and extrinsic motivation of workers to use PLNs.
- The study will not examine the effectiveness of formal learning but may discuss current approaches to measurement.

Summary of Chapter 3

First and foremost this research study was designed to add to the current body of knowledge of organizational support for PLNs. It would accomplish this by providing answers to the research questions. Upon the completion of the study, results and findings would be produced and communicated to sponsoring management and published as appropriate. This significance of the study's contribution to a better understanding of worker perception of workplace learning environments is that organizations continue to struggle to confront the challenges presented by global trends such as growing competition for the recruitment and retention of a talented workforce, shifting geographic centers of economic activity, unpredictable marketplace growth and decline, and a

workplace environment that is increasingly formally and informally networked (Bryan, 2007; McKinsey, 2007). Organizations cannot afford to have barriers to, and the lack of support for workplace learning. Marketplace demands for improvements in worker productivity along with shrinking training budgets are driving the rethinking of how workplace learning environments impact workplace learning and ultimately worker performance. The workplace environment for the foreseeable future will require a workforce that is in a constant state of development. Research that provides insights into worker perception of their PLN and its relationship to the organizational support for the workplace learning environment presents a significant opportunity to further the collective understanding.

The researcher expects that the study will result in the development of insights into a greater understanding of the impact of actions taken to support workplace learning. It is through the careful study of actions taken in the work context that this research is expected to further define and uncover opportunities for management investment and focus on what matters most to the ongoing development of workers.

Chapter 4: Research Findings

Introduction

This chapter presents and discusses the results of the qualitative research. The findings focus on answers obtained for each of the research questions. The following four questions emerged from a review of the literature as being central to the understanding of how organizations and individual workers can achieve a workable balance between organizational support for formal learning and informal learning both used by personal learning networks. The research questions are:

- What characteristics (environmental factors) are present in an organization where PLNs thrive?
- What are the reasons for workers willingness to contribute their knowledge to other PLNs?
- What are the barriers to workers contributing their knowledge to other PLNs?
- What is the relationship between organizational support for workplace learning and the establishment, nurturing, and development of PLNs by its workers?

This research conducted a qualitative study of a midsized university to assess the impact of organizational support for personal learning networks as perceived by workers in the context of doing their jobs. A set of 16 interview questions were developed and mapped to the research questions as documented in Chapter 3. The interview data were transcribed and coded to identify emergent categories, patterns, and themes. Reliability of the interview responses was accomplished by having multiple coders tabulate responses with the researcher comparing their classifications. For the 16 primary interviews questions, three different coders coded and tabulated responses to address reliability.

Interview Question Sequencing

Interview questions were worded and sequenced to draw upon the professional workplace experiences and perceptions of the participants. The first group of three questions dealt with how collaboration occurred and participant perception of job role and culture and climate. The next set of questions asked responses from the participants on how they operate their individual personal learning networks. This set of three questions asked how often the participant assisted others in learning, how they learned from others and what tools that they found most useful when learning formally or informally. The next sequence of questions explored the support and operation of a PLN across the organization. This set of three questions asked the participant to describe the time spent finding resources to learn from, how the organization facilitated or failed to facilitate finding resources, and who the critical *go to* people were in the organization. Having provided an opportunity for the discussion of organizational support for the operation of personal learning networks, participants provided descriptions and value for their personal learning networks. The sequencing of the last group of questions occured because these questions required higher levels of reflection by the participants. This turned out to be the case during all of the interviews as noted in the researcher's notes. This set of questions asked the participant to discuss external resources used, learning motivation, job design, and finally participants provided descriptions of what a workable balance of organizational support for PLNs might look like.

The researcher discussed several possible conceptual frameworks for this study in the literature review in Chapter 2. The frameworks were useful in answering the following

question: How might the workable balance of organizational support and personal learning networks look and work?

The researcher chose to conduct qualitative research interviews because, qualitative research methods are better suited for research on the perceptions of the interviewed participants in any organization. Patton posits that qualitative methods permit the evaluator to study selected issues in depth and in detail (Patton, 1980, Patton 1990). By contrast, quantitative research designs are better suited when the goal is to measure the reactions of a great many people to a fixed set of questions, thus facilitating comparison and statistical aggregation of the data (Patton, 1990). Thus, the researcher chose the qualitative approach. The strength of qualitative study lies in its ability to explore a problem and then to describe a setting, a process, a social group, or a pattern of interaction (Marshall & Rossman, 1989). An interview guide was developed and used for each interview. The interview guide method chosen not only outlined the general questions, issues and protocols that were followed. The interview guide also allowed for flexibility in the sequencing of questions and linked interview questions and potential follow-up questions to four research questions (Patton, 2002).

Interview Participants

Thirteen staff selected for these interviews are members of the Information Technology staff at a midsized university. These individuals are knowledgeable concerning the use and application of technology in formal and informal learning because of the nature of their organizational support positions in servicing faculty and students and ongoing personal learning to meet the demands of their roles. Data were collected through face-to-face interviews of participants on the campus of the university where personal

learning networks operate. This data collection approach enabled the researcher to utilize a protocol that supports semi-structured and opened-ended questioning (Berings et al., 2006). The interviewing process began with a letter from the sponsoring executive explaining the plans for the use of the data and thanking participants in advance for their participation. The researcher used identifying code numbers to maintain respondent confidentiality and to enable the sponsoring organization to track and remind those needing to reschedule as appropriate. Historically with vacations, leaves of absences, workloads and transfer activity in and out of the organization, interviews took place over two site visits in May 2011. Historical experiences with non-mandatory management sponsored interviews resulted a high participation rate. The participants represented various technical and administrative job roles from departmental communications and professional development to infrastructure support and instructional advocacy. Participants were management and non- management in job role resulting in the sharing of a rich set of work experiences. Interviews followed a protocol, were taped, and were conducted on the university campus over a three-day period. In addition to the audio tapes, the researcher took notes during each interview, which lasted between 35 and 55 minutes.

The setting for the interviews was an office with comfortable seating. Interviews took place at a convenient campus location to limit travel for participants. Participation invitation went to selected workers from the sponsoring university executive. The researcher provided an interview orientation that consisted of:

- An introduction to the research, which included defining the term personal learning network;
- Quick overview of the purpose and objectives of the interview;

- Advisement of the use of tape recording and signing of any releases and consent documentation.

The researcher thanked each participant upon conclusion of the interview and gave the opportunity for questions to be asked of the researcher. Interview data were handled per the protocols noted in Chapter 3 and in the IRB approval.

Analysis and Discussion of Research Questions

Q1 What characteristics (environmental factors) are present in an organization where PLNs thrive? The researcher chose the following interview questions because they were expected to capture interview participant's perceptions of the characteristics (environmental factors) present where PLN's thrive. Several interview questions were used across multiple research questions.

1. How would you describe ways in which workplace *culture* and *climate* impact your ability to learn?
2. How often do you *assist others* in learning?
3. Describe how you typically *learn from others*?
4. What *internal job aids, tools, technologies, and reference* materials do you find *most useful* when learning formally and informally?
5. What tools do you use *to connect to or stay connected* with others to learn?
6. When working with others *how long does it typically take* to engage and obtain the needed learning?
7. How does the *organization help you get connected or stay connected to critical resource***s** in your network?
8. Describe your *personal learning network*?

9. What *external resources* do you use to do your job?

10. What *motivates you* to learn?

11. How does the *design of your job impact* how you learn?

A thriving PLN would be one where the worker is aware of available resources is able to access, resources, works in a culture and climate conducive to personal learning networking, has the skill and motivation to develop and nurture a PLN. Informal learning was established as the most frequent kind on learning encountered in the workplace in Chapter 2. There are descriptions of two theoretical frameworks in Chapter 2 because they surfaced frequently in the literature review. After transcription and coding of the interviews, the researcher discovered that the work of Sambrook (2005) provided the best theoretical alignment given the interview results. Sambrook's qualitative research resulted in the development of three main categories: (a) organizational factors,
(b) functional factors, and (c) individual factors. Organizational factors are culture and structure, senior managerial support, organization of work, work pressures, tasks, and task versus. learning orientation. Functional factors related to how the role of human resources development is defined and to the general characteristics of the organization, such as number of staff, expertise, amount of information, and use of information and communication technology. While called out as functional factors these factors are considered for the purposes of this study to be part of the organizations role. Individual factors were motivation to learn, time, IT skills and confidence. Sambrook's (2005) framework was useful in examining and discussing the interview results.

Table 5

Factors Present in the Organizations Where PLNs Thrive

Organizational Factors	Functional Factors	Individual Factors
• Supportive Culture & Climate • Support for finding critical resources • Job Design	• Job Aids tools, technologies used • Ways to connect and stay connected • Finding resources • Use of external resources	• Assist others in learning • Learning from Others • Perception of individual personal learning network • Motivation to learn

The question of whether these PLNs are thriving will be dealt with later in this chapter as the researcher examines the value interview participants place on their respective PLNs.

Organizational Factors

Every interview participants indicated that the workplace culture and climate support and encourage them to learn. Categories reflect answers to interview questions. Some participants gave multiple ways in which culture and climate affect their ability to learn. Tables 6, 7, and 8 were created as a result of analyzing interview participant responses and categorizing their answers by theme or pattern. Categories incorporate participant commentary with the researcher's categorization. One interview participants comment to the question on culture and climate was:

> As far as learning? Well, ideally I'd like to think that as an institution of higher education that's our primary reason for being is learning. And I've always felt that way and championed that, and I will share a story in a second. The truth is I think like any job some people get tied up, putting out fires doing the immediate work and don't take it upon themselves to take advantage of professional development opportunities, take advantage of the continued learning opportunities. I'd say that the climate encourages you to study. We have something in place called a training council, the professional development council and a structure in place that's fair and equitable where every quarter I believe it is people putting requests in for their own professional development. It could be books, it could be attending a conference, it could be any of number of resources, we rank them at its transparent,

> and you get to go frequently especially if you present at conferences. (Participant 8B2, personal communication, June 2, 2011)

Table 6

Culture and Climate Interview Response Categories

Culture and Climate Impact Categories	# of Instances
Culture and climate have an emphasis on professional development	5
Positive culture and climate are driven by the leadership	3
Culture and climate are ones that allow you to have time to integrate what you learn	2
Culture is an extension of the university's mission, which is learning.	3
Culture and climate invest in funding to try things out , to seed, test, and pilot new ideas	1
Culture & Climate has an organizational structure that supports learning	1
Culture and climate are ones where you are expected to learn	1

The next organizational factor is job design, the arrangement and prioritization of work tasks to satisfy the requirements of the job. All interview participants indicated that they had influence over the design of their respective jobs in some way. Interview response categories and response instances for the impact of job design interview questions appear in Table 7.

Table 7

Job Design Interview Response Categories

Impact of Job Design on How Your Learn	# of Instances
Job Design freedom and flexibility to learn	2
Job Design structure	1
Job Design control	1
Job Design time management	3
Mission of my workgroup supports and enables me to learn through (meetings interactions with peers,)	4

Several interview participants mentioned that they had been in their current position since its inception. They had therefore designed or significantly influenced the workflow and structure of their current job role, and therefore how learning occurs in their current job role. The following is typical of their responses:

> I think the job that I have right now encourages me to learn as much as I can. Being in a really good place I like what I do, I have the time, I have enough kind of the assistants that are working with me to do the daily things that need to be done to be leave enough time to learn the new things that I need to learn or to explore and continue with all my learning a lot of my learning is very exploratory, I explore and figure out where you are going or doing and how to need to think definitely about the work that we are doing. So, being able to perform or work at a higher level, I think this is very important to me in terms of my learning network. (Participant 8K4, personal communication, June 2, 2011)

Having influenced the design of a job role provides an example of how the individual and the organization have worked in concert to craft a work context. This is useful in the exploration of strategies of how an organization can formally and informally support personal learning networks. Formally, an organization can establish rules, structure, establish positional significance, and mission to a job role. But, it may very well

be the informal role of the persons who utilize their personal learning network to accomplish work through a flexible job design that may contribute the most to achieving a workable balance.

Functional Factors

All the interview participants indicated that the university has made significant investments in tools and technologies that they found useful. Interview response categories and response instances appear in the following table. While the data suggest a wide variety of internal tools technologies and reference materials are found to be useful, the researcher cautions against making an investment judgment based on this data for two reasons. First, interview participants represent a wide range of job roles often relying on multiple tools. Second, while the table shows instances where categories of tools are mentioned when looking at the entire set of transcriptions certain tools are mentioned frequently. Gartner is mentioned 12 times, Educause is mentioned 19 times, Conferences are mentioned 24 times, Google 14 times and so on. What this data suggest, therefore, is that the organization provides a wide array of resources for the interview participants to use and that they find these resources useful in the execution of their respective job roles. In Chapter 2, three connection types are proposed by Warlick (2009) to describe the technology used in PLNs. Many of the tools mentioned by interview participants fit in to the categories of personally maintained sychronous connections, socially maintained semi-synchronous connections and dynamically maintained asynchronous connections.

Table 8

Tools and Jobs Aids Found to Be Useful Internally and Externally

Internal Tools, Job Aids Technologies and Reference Materials Found to be Most Useful When Learning Formally and Informally.	Number of Instances Mentioned
Internal Tools	
Instructor Led Training	1
Internal Online Training Library Lynda.com	3
Five minute tutorial given by an internal subject matter expert	1
Blogs	3
Peers	2
Hardcopy Documents	3
Wikis	1
Create my own tools, job aids	1
Books internal	2
Magazines	2
Email	1
External Tools accessed internally	
Google	4
Peer institutions	2
How To Videos (YouTube)	1
Gartner Consulting	4
Educause	1
Conferences	4
Listservs	1
Safari Books online	1

Interview participants provided an interesting range of complex responses to this question which is why there are two categories both internal and external tools. Interview participants often explained how they orchestrated tools and personal skills like relationship building to accomplish work goals.

Here are some of the participant responses:

- (Midsized University) is so relationship based relationship focused work environment that is huge, that's really huge and it is something that is just an easy formula that speaks very well and so just the great thing for us.

  In terms of informal learning a part of it just comes from really learning, listening to conversations, I sit in a lot of meetings with the administrators of the university and you know, learn from them. In terms of IT and learning about technology and again I learn a lot by being in meetings with other people, have to learn a lot by looking at things like the internal wiki that people put in there about certain projects and what is going on, and I don't know why just by reading things online discovering for communication purposes and at times I go to higher ed campus technology, Educause articles. I read a lot especially about iPad, go to a lot of conferences. (Participant 8K4, personal communication, June 3, 2011)

Note the mention of the internal Wiki and external Educause articles. Another interview participant commented on internal online tools:

- Well, one of things that we do have is, we have an online, I know, if it's calllinda.com, it's like, it's an online learning program where you can go in there and learn excel, you can learn, you know, whatever and that has been very beneficial. We haven't had this particular one but we've had quite a few over the years. And when I first came there were several programs that I had never used, like I use Visiera now, which I never used before, so and then I have to learned how to do that. (Participant 6cd, personal communication, June 1, 2011)

Finally, another manager incorporated tools that he created along with management practices such as management by walking around.

- Well, the reference materials we have, in my department we write a lot of documentation on how stuff was installed and set up and configured. So I can refer to that that's good reference material when I am looking at, looking at something. I can look to how it was installed and configured. I

> also can look at some of our old documentation that's on the web or was on the web at some point for how to configure something user, user leveled stuff and e-mails, e-mail questions is my best, e-mail is my, my main form of communication for me. And I'll, as a manager I walk around. I manage by walking around and I learn by walking around. I have no problem with walking up to somebody's desk and just say, How are you doing? What's going on, how are things going? I learn as well as have help in that way. (Participant 5BD, personal communication, June 2, 2011)

Individual Factors

The frequency the workers assist others , learn from others, perceive their PLNs value, and are motivated to learn all impact the subsequent research questions as well as this research question. The work context opportunities described by these interview participants support the notion of teaching and learning when two PLNs interact. Based on the interview data at this midsized university in this organization it appears that workers (learners) are aware of available resources is able to access, resources, that they work in a culture and climate conducive to personal learning networking, and that they have the skill and motivation to develop and nurture a PLN.

Research question two examined workers willingness to contribute to personal learning networks. This and subsequent responses incorporate individual factors of learning from others, perception of individual personal learning network, its value and motivation to learn. Worker willingness is a clear indicator of how both the PLN and organization work in concert to foster a willingness to assist. Along with willingness is the ability to find resources and engage them in a timely fashion. This would suggest that the network of resources is established and can be engaged to accomplish work. The value individuals place upon the quality of the resources and their connection to them further expands upon how PLNs operate in PLEs.

Q2 What are the reasons for workers willingness to contribute their knowledge to other PLNs? The main reasons why workers are willing to contribute their knowledge to other PLNs include, but are not limited to, the need to assist others as a normal work requirement, the ease and speed at which assistance can be found and given, a colleague that consistently provides assistance and the need for reciprocity and finally the value workers place on their personal learning networks. Contribution willingness interview questions were:

1. How often do you *assist others* in learning?
2. When working with others *how long does it typically take* to engage obtain the needed learning?
3. Is there a person or persons you *connect with the most* to get your job done?
4. Describe your *Personal Learning Network.*
5. Describe the *value* you place on your *Personal Learning Network*?

Of the thirteen interview participants ten indicated that they assist others in learning every day, one indicated a couple of times per week, another indicated that they assist others by project assignment and finally one indicated that they assisted others on demand. When asked how long it typically took to engage others to learn interview participants explained how they navigate the organization to find learning resources and how existing relationships played a significant role in knowing whom to contact. The most frequent answer provided to the how long does it typically take to find a resource engage in learning and disengage was “it depends” - 7 out of 13.

Typical Interview Participant responses were:

- All depends on the goal. With that, the engagement needs to start with the meeting, with the requirements, once I understand the requirements then I go on my own to look for additional information. (Participant 5XY, personal communication, June 2, 2011)

- It depends on what it is and who I am dealing with. If it's a very simple thing and it's somebody that I have a relationship already, it could be minutes to get what I need and get out, is engaged. (Participant 5BD, personal communication, June 2, 2011)

Two responses were within the hour to half hour range and two responses were fairly quick and not long. One interview participant indicated three days to two weeks as the amount of time needed to find learning resources. None of the interview participants indicated that their answers to this question indicated a problem with finding or engaging learning resources. They often provided examples of how their robust job roles responsibilities required that they engage frequently with a wide range of colleagues within and outside of their department.

When asked if there was a person or persons who they connect with the most to get their job done the most common answer 6 of 13 was that the need to contact a single person varies by function or group. The interview participants have key contacts in multiple departments. Two department managers who participated in the interviews indicated that there was a go to person within their respective departments. Two different names surfaced four times of individuals that work within the Information Technology organization that are the *go to* people.

As individuals, the interview participants are in job roles that require that they give and receive assistance from others. As the following excerpts indicate the selection of a got to person is very situational. Analysis of the collective responses does not indicate a

pattern for a specific type of task or problem. Even the two names that surfaced were managers and the context of involvement was more along the lines of providing guidance.

Sample Interview Participant Responses for is there a "Go To" person:

- There's a couple. Part of my job that makes it challenging is there's three different areas I'm responsible for and that for each one they have a whole different set of problems and issues people, primary people we work with. (Participant AQR, personal communication, June 3, 2011)

- Well, per department, yeah. If a department has multiple people in it, I tend to know who the people are in that department, if it's not the manager. First, I will try the manager. If I can't get what I need from the manager then I know who inside the department is the unofficial leader or the person that would know the most about the particular subject. (Participant AST, personal communication, June 3, 2011)

Interview questions are sequenced to have each participant describe their personal learning network. This question tested for a common understanding of what a PLN is and provided interview participants with an opportunity give examples of network resources and work situations where PLNs are used. The following question asked them to describe the value they placed on the network.

These participants described their PLN in terms of relationships:

- Well, I mean it's basically two ways, one I have good enough relationships with people within IT like, you know, I have a go-to guy in server engineering, you know, I need something backed up or something whatever it is, it's my relationship with him or the relationship with people in customer service, I mean in client services, I think half of that is my personal relationship I built up both within IT and without IT. (Participant 6CD, personal communication, June 1, 2011)

- It's mostly personal relationships from people that I have worked with on projects or teams in the past. And as I work with more people from other departments, I gather more knowledge and more help when I need something, or when they need something from me, it's reciprocal (Participant 5BD, personal communication, June 2, 2011)

This participant engaged in a dialogue beyond just the IT organization:

- Participant: Very collaborative. I think that is, that is pretty much I want to describe it, not only is with whomever I work with or interact outside of Pepperdine, my personal learning network includes those people for me to grow as an individual, not only my capacity as a person that is important. So I mean, in personal level there are life lessons to learn, professional level there are many different things to learn, better collaboration.

- Researcher: Okay. So let's explore that a little bit. Would you say that, would you say that, that network involves the development of social capital, in other words when you say collaboration, do you mean that you are also contributing to other peoples personal learning networks as well as them contributing to your personal learning network?

- Participant: Yes, I mean exactly that. When I say, when I use the word, when I use the word collaboration very broadly is there are benefits to both sides. (Participant 6PT, personal communication, June 1, 2011)

This participant described the mechanics of their PLN as people and things (physical or electronic artifacts).

- There is still really a mental rolodex depending on the situation how would I describe it. So depending on situations there might be a thing, there might be a person and might be a thing that I go to first and foremost depending on how sensitive it is and I try to find out as much of information as possible before I approach anyone at all. I guess my personal learning network would just be this, keep pull us getting there is a lot of interconnected pieces, and resources that even connected with certain people and depending on what you need or where they are at those resources and those people change and the time there is also the whole time investment piece, there are something that are getting quick and you don't always get to have those resources when you make a decision and you just make a decision and move on and get the best I could in that situation. (Participant 84K, personal communication, June 3, 2011)

The participant examples provided were typical responses to the PLN description question. Of particular note was the absence of a discussion of technology other than a conduit to learning opportunities and content.

Following the PLN description, questions participants described the value they placed on their PLN. All interview participants indicated that their personal learning networks had value.

Table 9

Interview Participants' Perceptions of the Value of Their Personal Learning Network.

Interview Participant Value Descriptions	Instances
50% of my success	1
it's worth six figures	1
of value	2
high very high	2
incredibly important	1
participant framed their answer as the reason why they work	1
the value of their PLN is in the relationships .	3
could not survive without it	1
part of the value to the university	1

Typical Interview Participant response to the question of PLN value:

- I think that that's, very valuable I would claim that its 50% of my success. (Participant 6CD, personal communication, June 1, 2011).

- Oh, it's a great deal, it's a huge value. It's a very important tool for me to be successful that is key and everything should fall in place, everything should then translate to division successes. (Participant 6AJ, personal communication, June 1, 2011)

- Wow. Well, it' would be at least six figures if you are talking in dollar -- US dollar denominated currency that sort of thing. (Participant AQR, personal communication, June 3, 2011)

Understanding barriers is as important as understanding willingness to contribute. In the case of willingness, how the organization works in concert with the PLN is explored further with the next research question. A workers perception of barriers explores potential

opportunities for the organization to improve on its investment in the workable balance between formal and informal (self-directed) workplace learning.

Q3 What are the barriers to workers contributing their knowledge to other PLNs? A workable balance between organizational support for formal learning and informal learning for personal learning networks would have on one side thriving PLNs and few organizational barriers on the other. Table E1 in Appendix E lists the interview question that map to each research question. The researcher has already explored many of these interview questions as part of previous research question analysis. Interview participants perspectives on collaboration, job role, and motivation as barriers is discussed here as barriers to their sharing knowledge with other PLNs. Asking how collaboration occurs in the workplace created the opportunity for the participant to describe the circumstances, challenges, processes and tools involved. The interview question concerning job role and reliance on others using technology helps to focus attention on the organizational support side of a workable balance. The discussion of individual work context and worker motivation helps to describe who is in control of the learning. Both are useful in understanding barriers to workers contributing their knowledge to others PLNs. The following questions were used to examine barriers to contribution of knowledge to other PLNs interview questions:

1. How does *collaboration* work in your workplace when working with others in required?
2. Describe your *job role* in terms of reliance on learning from others and the use of technology?
3. What *motivates you* to learn?

Interview participants played a dual role in the analysis of collaboration they were both enablers of collaboration with the mission to lower barriers that prevent others from collaborating and the same time they are susceptible to the same the same barriers such as geographic location. Three categories and one consistent theme surface from the review of the interview transcripts on collaboration. The consistent theme is the reliance on relationships with others to collaborate either faces to face or virtually. The three triggers of collaboration appear to be; Projects and problem solving, ongoing new requirements sensing and, technology pilots.

Examples of typical interview participant responses to how does collaboration work:

- Now as far as myself personally especially in collaborating with other people, it's once again meeting face to face, use ZIFOS a lot to collaborate on documents, I use email before it, email out. That's also part of the culture of Pepperdine is, Pepperdine is a very relationship oriented organization much more so that I can think anything else and some of it is Christian background, but the other one is fact that most of the administrative people are in this building… (Participant 6CD, personal communications, June 1, 2011).

Here are two examples of the hybrid use of technology, relationships a structure used in collaboration:

- In (name omitted) organization, full engagement from the onset is key, their needs to be clear understanding of roles and responsibility, objectives and goals, the benefits the values that we are doing and the values and benefits they will bring and deliver and there needs to be of very clear understanding, a crystal clear I cannot emphasis that anymore, and a definition of roles and responsibilities will come in, will come in, in terms of division of labor and then true collaboration. Things are progressing and everybody knows what their parts are to do. (Participant 6PT, personal communications, June 1, 2011)

- Kind of a broad question, but let's say that I'm asked to work on a project with a handful of people. Usually I'll be connecting with them probably first by email just to confirm because depending on where we physically are, if it's within my own team we're all within two seconds of turning our chair and talking to one

> another. But probably just getting on the same page, ideally then also if there isn't one then crafting a scope document regarding the project; and then figuring out what everybody's schedules are so that we can either meet electronically, phone calls, e-mail, figure out what those processes look like. But usually there is some kind of agreed scope of work, and then we figure out a division of labor and go from there. (Participant 6EQ, personal communications, June 1, 2011)

Interview participants provided responses rich in the mixture of formal structure and informal relationship building and maintenance approaches that leveraged available technology. All of the participants felt that their job role relied on others to learn and use technology. Others can range from professional contacts at conferences to bouncing ideas off colleagues within the department. The range of technologies used included those listed in Table 8 with several mentioning the internal Wiki and the use of listservs.

Motivation to learn can be an indirect indicator of the existence of barriers, impact and likely approaches to overcoming barriers that could influence worker willingness to share their expertise with other PLNs. Of the interview participants 7 of 13 indicated that they were intrinsic learners, 2 of 13 indicated that they were an equal combination intrinsic and extrinsic learners and 4 of 13 indicated that they were a combination of intrinsic and extrinsic learner leaning more towards extrinsic.

The researcher found that interview participants were motivated to learn and previous interview questions have determined that opportunities to assist others exist and participants were taking advantage of these opportunities. There did not appear to be barriers for self-directed learning for the participants PLN. From an organizational perspective, collaboration triggers the need to engage other PLNs to learn and to share knowledge. The researcher did not note in the interviews circumstances, challenges, processes and tools that created barriers Rather because of the centralized physical

location of the interview participants, extensive working relationships, culture and climate there did not appear to be any significant barriers to contributing to other PLNs.

Q4 What is the relationship between organizational support for workplace learning and the establishment nurturing and development of PLNs by its workers? External resources such as fee services, memberships in professional organizations, and conferences tend to be resources controlled by the organizations investment in professional development. Interview participants were also asked what would be a workable balance of organizational support and Personal Learning Networking look like? This interview question was closely aligned to the research question. What would the workable balance of organizational support and personal learning networking look like?

Other previous interview questions that dealt with collaboration, job role, job design, how learning and connectedness occur and were supported, resources used both internally and externally taken in total also provided a rich description of the relationship between organizational support for workplace learning and the establishment nurturing and development of PLNs by its workers. The question was a novel one in that, of all the questions asked in the interview, this question solicited a pause and reflection before any participant provided a response. The question was sequenced as the last question in anticipation of possible interview participant difficulty with it. Several participants had difficulty with the question struggling with the organization aspect of the balance but providing insights into how a person might better leverage available resources.

Excerpts of some of the participant responses:

- But we are getting ready to start a new emphasis on soft skills as well as hard skills, just because we think in the workplace now, those are just as needed as hard skills or, IT especially has been really unbalanced, because, you know, most of the issues we have are 80% people and 20% hardware,

and we're spending 80% on the hardware and 20% on the software, on the soft skills. So I think that right now it's not balance really well, but I think we're really looking towards doing that, and also because the change in the climate of IT, there is no longer enough for you to show up and just do your job, (Participant 6CD, personal communications, June 1, 2011).

- My philosophy is if you have a good balance between these two, if you have a good personal life per say than more than likely you will give your very best while you are here. …….We are very sensitive too things that may impact our staff, because we know if those things do happen, it is affecting the human being and when those things happen to a human being, there will be implications on other aspects of their lives including work wise. It's important to have that sensitivity in the culture. (Participant 6PT, personal communication, June 1, 2011).

- I think the balance would be allowing setting a set time for you to have to engage those learning networks, to use those learning networks instead of me proactively doing it on my own, because I know there is a need and I have to set, I have to block out my calendar because if not nobody is going to do it for me. The organization enables me to do that but I have to take action. If I don't I let my day run away. (Participant 5XY, personal communication, June 2, 2011)

- A workable balance might be providing a list of available resources, so that if somebody is self-motivated to learn about something, they know, they are not just out there in a desert, you know, at the vim of the Google search, they might have, oh, these are recommended resources for learning about XYZ, and so having essentially a kind of an internal library of resources can be very helpful. ….. a threefold kind of every other week workshop….. customer service, pedagogy like or andragogy type of it. the third fold was just technology for technology sake, where we would have rotating speakers within the IT organization so that would allow people that may be want to learn more or they feel that they are good presenters to actually have that skill and practice, leverage the experts that we have internally to talk about these topics. (Participant 6EQ, personal communication, June 1, 2011).

- Well I think the balance comes back to making sure that expectations are set appropriately. So, when you look at setting realistic expectations and communicating those expectations appropriately then ultimately the university can provide plenty of resources to support that, but if the university set unrealistic expectations then you feel like that you may be put in the situation that you can't deliver and nobody likes to be in that situation…. I have learned over the years. If you are not communicating on the same page and those expectations are out of alignment then what happens is you have a trust issue, and if there is no trust then you are not

> going to get anything done. (Participant 5ET, personal communication, June 2, 2011).

Several participants indicated the individual needs to make sure that they were doing as much as possible to utilize available resources. Another participant felt that learning motivation influenced the workable balance:

- That's tough. The more the organization helps you maintain that, the better off the whole organization is going to be. But the more I work at maintaining that personal, learning network the better off I am individually, and so I don't know what the right balance is, but I would strive to make sure that I am doing everything I can…. (Participant 5BD, personal communication, June 2, 2011)

- You asked me about being intrinsic or not, I would say this institution there is a pretty good job with having common resources with the IT department anyway with encouraging this sort of cross pollination of ideas and training and support, and I think definitely with that professional development training council come as dollars and encourages, but it goes directly what you are saying about that balance of intrinsic versus extrinsic. (Participant 8BT, personal communication, June 2, 2011)

The following participant felt that time away from the project and problem solving work context provided balance.

- I guess it's probably pretty close toward is I think to me it's spending more time on retreats on time so that we can get away all of us get away together to brainstorm and get rid of the day to day…… My best work is when I am with Learner A Learner B and Learner C where we are away and we are just totally brain storming and just totally thinking blowing things up in to the same what is the best way to do this. How can we do this better? I think that's when I work the best and I think that's when I can be the creative, the most creative and I think that's where I can and I think that is as mentioned however but that is what I think, that is really where that aha moments come, (Participant 52L, personal communication, June 2, 2011)

One participant mentioned more formal learning as part of a workable balance.

- I think long term balance is that I am not sure that I will change the current balance. One thing that I would like is if we were encouraged more to take classes here at the university whatever they look like but we are not really encouraged to take classes and, not we are not discouraged but it is definitely not something that's talked about and its pretty rare to see people who are doing that other than to involving get some degree or something like that, that is definitely some people and staff we are working for a degree but just to take a class and to learn something might enhance our

jobs (Participant 8K4, personal communication, June 3, 2011)

Analysis of the workable balance required multiple iterations of reading interview responses and that of other coders. A pattern emerged, as all of the consolidated data and information is organized into a table of category instances. Interview participants provided responses that were personal perspective driven and on the surface had some difficulty with workable balance question. It was not until multiple iterations of analysis occurred that categories themes and patterns emerged resulting in the creation of the following table. The first entry in the table denotes that there were seven instances of discussion of soft skills and six instances of technical skills for this question.

Table 10

Workable Balance Interview Participants Responses

Workable Balance Question Categories and Themes Listing			
	Instances		Instances
Organizational investment in soft skills	8	Organizational investment in technical skills	7
Personal Learning Network development: Instances where PLN development is or needs to occur.	2	Opportunity to share what you have learned as evidence of growth and development	3
Day to Day Learning.: Instance where the demands to learn are day to day and vary	5	Strategic Learning, Retreats, Brainstorming sessions	1
Organization formally supports setting aside time to learn: Instances where participant perceives organization commitment for learning away from the work context	6	Worker makes time to learn	4

(continued)

Workable Balance Question Categories and Themes Listing			
	Instances		Instances
Organization in general should do more to support PLNs	1	Organizational Support for more workers to take University Classes	1
Leadership involvement: Promoting learning, supporting policies, practices that enable formal and informal learning	7	Workers are self-motivated to learn	2
Organization sponsors guest external speakers	1	Worker seizes the opportunities to grow by requesting training: and/or workers are committed to continuous learning	2
Organization sets expectations and makes workers aware of what resources are available.	2	Org Support for PLN development/Embedded into Reviews, coaching, processes	4

Table 10 suggests that interview participants want the organization to continue to make investments in enabling technology, learning activities, and foster a climate and culture of learning that presents the worker with learning and potential teaching opportunities. The researcher does not consider these results a referendum on current approaches and investments. Rather the participants were being asked to describe what a workable balance might look like. These categories represent a cross section of views categorized into themes.

The relationship between organizational support for workplace learning and the establishment nurturing and development of PLNs by its workers is one of enablement through the organizational, functional and individual factors already discussed. The

instances described in Table 10 provide insight into what the organization brings to the table as well as what the individual worker (learner) contributes to the workable balance.

Summary of Chapter 4

Chapter 4 began with a discussion of interview question to research question mapping in terms a useful framework of categorized factors. Discussion of the remaining three research questions building upon the categories that emerged from the review of the interview transcripts. However, learning is a two-way street in that opportunities to learn can often become opportunities to teach as PLNs interact. The researcher found that collaboration in this organization driven by formal processes and proactive sensing and probing of various university communities that rely on the Information Technology organization. Interview participants indicated that their job role requires that they rely on others to learn thereby growing their network of personal learning network resources. Their job roles and job design support their efforts to help others. Based on interview participant responses the culture and climate in the organization appears to be supportive of sharing of information and talent. Investments in technology and the implementation of these investments provides the interview participants with a wide array of tools to support their efforts to share information, problems solve and stay connected to each other.

Interview participants seem to focus on ongoing relationship building which assists them in navigating the organization to find learning resources in a timely fashion. As for personal learning networks, interview participants valued them and described them in terms of relationships and physical artifacts. When asked about what the workable balance might be for organizational support for formal learning and organizational support for personal learning networks (PLNs) a wide range of responses was provided suggesting

that when the individual views the workable balance in the absence of organizational barriers a wide range of perceptions would not be unusual. Here is a recap of the four research questions:

1. What characteristics (environmental factors) are present in an organization where PLNs thrive?

Because of the high value, interview participants placed on their networks the awareness and accessibility of available resources the culture and climate conducive to personal learning networking, the skill and motivation to develop and nurture their PLNs, the researcher concluded that the PLNs involved in the study are thriving to various degrees. The organizational, functional and individual factors categorized in Sambrook's (2005) framework and confirmed through the interviews appear to be those present in organizations where PLN's thrive. Table 6 provides a complete listing.

2. What are the reasons for workers willingness to contribute their knowledge to other PLNs?

Worker willingness to contribute their knowledge to other PLNs ranges from; a personal sense of satisfaction from helping others, the need to assist others as a normal job role requirement, the ease and speed at which assistance can be found and given, the need for reciprocity for a colleague that consistently provides assistance and finally the value workers place on their personal learning networks. In total, this represents the existence of a culture and climate conducive to sharing.

3. What are the barriers to workers contributing their knowledge to other PLNs?

A worker's perception of barriers explores potential opportunities for the organization to improve on its investment in the workable balance between formal and

informal (self-directed) workplace learning. The researcher did not note in the interviews circumstances, challenges, processes and tools that created barriers rather because of the centralized physical location of the interview participants, extensive working relationships, culture and climate there did not appear to be any significant barriers to contributing to other PLNs.

4. What is the relationship between organizational support for workplace learning and the establishment nurturing and development of PLNs by its workers?

As described in Chapter 2 the workplace environment or work context defines the need for formal or informal learning or both. Workplace context affects motivation to learn through the establishment of goals, creation and enforcement of policies, constraints, cohesion, relationships within and between work groups leadership and communications practices. Organizations define the relationship through context PLNs and organizations have a symbiotic relationship. Research findings indicate that interview participants want the organization to continue to make investments in enabling technology, learning activities, and foster a climate and culture of learning that presents the worker with learning and potentially teaching opportunities. Formal learning is not dead. It continues to be a training option for specialized organizational driven learning such as certification, regulatory compliance and where clear consistent instructional messaging must be delivered to a defined audience. PLNs in total represent the explicit and tacit intellectual capital of the organization. Interview Participant responses to the culture and climate, job aids and tools, collaboration and workable balance questions enabled the researcher to explore the relationship between organizational support for workplace learning and the establishment nurturing and development of PLNs by its workers.

Chapter 5: Conclusions and Recommendations for Future Research

Introduction

The conclusions, observations, and recommended further research in this chapter represent the next step towards providing complete answers for each of the four research questions. These four research questions and the 16 interview questions emerged from a review of the literature as being key to the understanding of how organizations affect the workable balance of formal and informal training in support of the personal learning networks of workers. The researcher organized and sequenced the research questions and mapped them to specific interview question. Interviews often yielded multiple answers as can be expected by the nature of semi structured open-ended questions. For research questions, 1-3 the study results validate the continued usefulness of the theory and frameworks discussed in literature review in Chapter 2. The research question and findings for research question 4 add to the literature by providing the insights of workers (learners) who engage in PLN activity daily as part of their job role.

This chapter begins with recommendations for future research followed by the researcher's observations and inferences, which include a holistic framework discussion and a discussion of strategies for obtaining a workable balance of support for formal and informal learning. The discussion of strategy will be a one of technology support, culture and climate, professional development, and motivation to learn.

Recommendations for Future Research

There were three areas upon which the researcher was unable to expand in this study: (a) the impact of leadership on how an organization chooses to allocate resources in support of personal learning networks as an antecedent to study of climate and culture; (b) the impact of the organizational mission and design on the operation of personal learning

networks; upon reflection, the researcher felt that both (a) and (b) had influenced the culture and climate of the organization in ways that created opportunities for PLNs to thrive; (c) the analysis of patterns of technology used to uncover breakthrough opportunities in having the user tool experience mirror the way in which a particular personal network operates relieving the aggregator of information role of the worker (Severance, Hardin, & Whyte, 2008; Wilson, 2008).

Researcher Observations and Inferences

From the literature review, the researcher concluded that the workplace is an environment where a significant amount of informal and formal learning takes place. The study proposed in Chapter 3 and the results provided in Chapter 4 provide the backdrop for the subsequent conclusions. The midsized university in this study has implemented an Information Technology infrastructure that provides the workers (learners) with adequate technological support. Interview participants did not need to supplement the available technological support with devices and network capabilities beyond those provided by the university. The IT department studied had also implemented a process that allowed interview participants to thoughtfully seek out and propose their own professional development. These professional development activities often-involved formal training outside of the organization. However as the interviews confirmed these formal training activities tended to be conduits for informal relationship building, problem solving, brainstorming and opportunities to present ideas and projects to peer universities. Relationship building and maintenance is the most difficult aspect of personal learning Networks to isolate for learning investment decisions. Yet it is the strength of these relationships that influences the value of a personal learning network

The workable balance appears to be influenced by the work context, the organizational support and the worker or learners competence in managing a personal learning network. The workable balance is not a fixed percentage but rather a dynamic set of capabilities. The factors and work context of Sambrook's (2005) model continue to be useful to the researcher in conceptualizing the interplay of the organization and individual in workplace learning. There is interplay between formal and (self-directed) informal learning in that interview participants commented that they use conference attendance as a means to expand their personal learning networks. These conferences follow the traditional instructor (lecturer) led delivery modality discussed in Chapter 2 yet they also provide informal learning opportunities through breakout sessions, poster presentations and special interest group meetings. This is an example of how formal and informal learning dynamically blend in a way to provide a workable balance. It would be strategically desirable to have a workable balance that enables formal and informal learning to supplement and complement each other efficiently and effectively.

From the literature review in Chapter 2, the work done by Tynjälä (2008) found that workers learn in the workplace by: "(a) by doing the work itself, (b) through co-operating and interacting with colleagues, (c) through working with clients, (d) by tackling challenging and new tasks, (e) by reflecting on and evaluating one's work experiences, (f) through formal education, and (g) through extra work contexts"
(Tynjälä, 2008). The study confirmed that these are in fact the same ways in which these workers learn in the workplace as evidenced in their personal accounts and examples shared. No single tool emerged as a rival explanation for PLNs. An example would be a social networking tool or product that that contained an all-encompassing feature set that

workers (learners) refer to as their PLN. As mentioned in Chapter 4 the researchers found a wide variety of tools and products in use by interview participants.

A Holistic Framework of Context and Process Factors

In order to achieve a workable balance the organization and the PLN must be able to influence both the contextual and procedural factors that can inhibit or enhance workplace learning (Sambrook, 2005). In Chapter 2 the review of the literature focused the researchers attention on work context but after conducting the interviews the researcher was able to better understand the impact of job design, work flow and process on learning. Several participants indicated that it was formal processes like projects that triggered collaborative opportunities to learn formally and informally. The examination of a holistic framework that includes both context and process factors confirms that PLNs operate in a highly dynamic environment requiring varying levels and types of organizational support.

From the study the researcher, found that developing and maintaining relationships became one of the contextual individual factors. Interview participants time and again mentioned that relationships developed before they needed them and after they were engaged to accomplished work were vital components of their respective personal

Strategies for Obtaining a Workable Balance of Support for Formal Learning and Support for Informal Personal Learning

The following discussion provides considerations for individuals and organizations exploring ways to achieve a workable balance between organizational support for formal and informal learning used by personal learning networks. The discussion will include a

discussion of technological support, culture and climate, professional development, and motivation to learn

Technological support. The researcher began with the recognition that organizations already support informal learning used by personal learning networks through existing infrastructure and architecture investments in things like email, phone, reference materials and other physical artifacts. It is unlikely that organizations attribute these investments to the support of personal learning networks. It is more likely that these investments support the accomplishment of specific work tasks so the work itself masks the learning as denoted in Sambrook's (2005) model as learning in work. Organizations will need to make the use of backbone technical infrastructure for learning more visible with things like social network analysis (SNA).

The baseline of technological support that includes things like e-mail, voice communications, virtual meeting capability, and collaborative tools such as wikis and blogs that enable the amplification of network resources beyond the geographical workspace that each interview participant works in. The workable balance appears to be the availability of these resources, infrastructure capabilities and the skills (literacy) in how and when to use these resources to learn and assist others in personal learning networking. There was no single tool or technology that provided an all-encompassing feature set, to meet the diverse needs of the interview participants. Pilots will continue to be one strategy to stress functional capabilities and workflow integration capabilities as these tools continue to evolve.

The literature review and subsequent analysis of the research data suggest that investments in future tools and technology as part of a workable balance be influenced in

part by studies into tools and capabilities useful in lifelong learning beyond the workplace. Vavoula and Sharples (2009) proposed, lifelong learning organisers (LLOs), in their diary based study of working adults into episodic and semantic learning. They defined LLOs as:

> systems that assist learners in organizing learning activities, episodes and projects, the knowledge they learn, and the resources they use, over a range of learning topics, at different times and places, in ways that integrate their learning experiences to create personal, meaningful records of their learning over a lifetime. (p. 82)

The set of functional capabilities that they developed would be useful in examining personal learning environment tools and in categorizing learning investments into useful categories. It is expected that the formal and informal virtual learning environment for the near future will continue to evolve creating opportunities for organizations to eliminate duplicate functions in tools while enabling workers to have a learner centric experience when they engage technology (Severance et al., 2008)

Culture and climate. The culture and climate of the larger university create an environment where personal learning networks thrive or wither. Technological capability alone is not enough to support personal learning networks since individuals could conceivably bring their own devices and supporting infrastructure to the workplace to enable their personal learning networks. Most of the interview participants mentioned the importance of relationships with a wide variety of working colleagues as an enabler of getting work accomplished. The university as a whole and the IT organization, in particular, are to be commended for fostering a culture and climate that is supportive of formal and informal (self-directed) learning. The IT organizational culture and climate encourage workers (learners) to assume responsibility for their own professional development. Organizational support for learning is accessible through a formal structure

used to select and fund requests for training and provide workers with ongoing opportunities to utilize a wide array of tools. This appears to be an effective strategy for supporting Personal Learning Networks.

Professional development. The organizational construct mentioned earlier has embedded in it processes and provisions for professional development in a wide range of areas from specialized technical subject areas to personal communications. Professional Development training can be delivered on campuses via e-learning modality or by attending formal face-to-face classes, seminars and conferences. Several interview participants indicated that these face-to-face sessions acted as conduits to informal connectivity with others to share ideas and problem solve.

Motivation to learn. A significant number of interview participants, seven out of thirteen, indicated that they were intrinsic and six were combination of intrinsic and extrinsic learners. Self-directed learning appears to be a part of the subculture within the department. The interview data mirrored the findings of Marsick (2011) in that the situations described by the interview participants reflected workplace learning as described by Marsick.

Marsick (2011) writes:

> Informal learning is a valuable complement to formal learning. It enables highly motivated workers in learning intensive jobs to develop explicit and tacit personal knowledge and skills that directly impact immediate performance — their own and that of others. The often tacit, individually driven nature of much informal learning is at the same time nurtured by social learning and interaction. Informal learning is embedded in work practices and in the situated context in which work happens. Much learning happens organically through immersive technologies, work groups, peer interaction, managerial coaching, work with clients, and others engaged in the production system. (p. 11)

Organizations need to help workers improve their learning literacy skills as part of their investment in informal learning (Peason, 2007). Strategic investments options might range from formal training in learning styles to make workers aware of their learning motivations to suggesting internal computerized common interest connections as organizations like IBM and services like Linkedin do today (Baker, 2009). There are emerging knowledge management measurement models that may prove useful in assisting organizations with understanding the range of options available to them to harness an focus PLNs to address business challenges (Aaron, 2009) . In order to support relationship maintenance organizations will need to ensure that job role design provides the worker (learner) with time to develop and nurture relationships.

Final Observations

The workable balance will be more like a learning ecology supported by the organization but utilized by a skilled workforce able to align itself with the mission goals and objectives organization, adapt to a constantly changing learning landscape, using both internal and external resources of all types and modalities. The mosaic of PLN, learning activities and delivery modalities will likely be in a permanent state of rebalance adapting to both the work context and PLN capabilities. Organizations are stewards of the ecosystem. Management as agents of the organization will need to deploy sensors into the work environment to ensure that workers are aware of available resources and can access them. Leaders will need to influence the culture and climate aspects of the eco system to foster a high performance-learning environment.

REFERENCES

Aaron, B. (2009). Determining the business impact of knowledge management. Performance Improvement, *48*(4), 35. Retrieved from http://dx.doi.org/10.1002/pfi.2006

Athey, R. (2008). It's 2008: Do you know where your talent is? Connecting people to what matters. *Journal of Business Strategy, 29*(4), 4-14. Retrieved from http://www.emeraldinsight.com.lib.pepperdine.edu/journals.htm?issn=0275-6668&volume=29&issue=4&articleid=1733253&show=abstract

Attwell, G. (2007). Personal learning environments - the future of e-learning? *E-Learning Papers, 2*(1). Retrieved from http://scholar.google.com/scholar?q=personal+learning+environments+the+future+of+e+learning&hl=en&btnG=Search&as_sdt=10000000000001&as_sdtp=on

Baber, A., & Waymon, L. (2010). The connected employee: The 8 networking competencies for organizational success. *Training and Development*, *64*(2), 50-53. Retrieved from https://lib.pepperdine.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=afh&AN=47875716&site=ehost-live

Baker, S. (2009). What's a friend worth? *Business Week*, *4133*, 32. Retrieved from https://lib.pepperdine.edu/login?url=http://proquest.umi.com/pqdweb?did=1731791641&Fmt=7&clientId=1686&RQT=309&VName=PQD

Baltatzis, G. O., George, D., & Grainger, N. (2008). *Social networking tools for internal communication in large organizations: benefits and barriers*. Paper presented at the19th Australian Conference on Information Systems Social Networking Tools in Organizations. Christchurch, New Zealand. Retrieved from http://www.bsec.canterbury.ac.nz/acis2008/Papers/acis-0113-2008.pdf

Bear, D. J. (2008). *Tapping the potential of informal learning*. An American Society for Training and Development research study. Retrieved from http://www.books24x7.com/marc.asp?bookid=31136

Bellman, G. M. (2000). *The beauty of the beast: Breathing new life into organizations*. San Francisco, CA: Bernett-Koehler. Retrieved from http://www.books24x7.com/marc.asp?bookid=1918

Berings, M. G. M. C., Doornbos, A. J., & Simons, P. J. (2006). Methodological practices in on-the-job learning research. *Human Resource Development International*, *9*(3), 333-363. doi:10.1080/13678860600893557

Bersin, J. (2009). *Formalize informal learning* (Research Report). Retrieved from http://www.saba.com/resources/webcasts/documents/Saba-Bersin-Associates-Formalize-Informal-Learning-Webcast-5-09.pdf?mtcCampaign=8075&mtcEmail=12987692

Billett, S. (2001). Learning throughout working life: Interdependencies at work. *Studies in Continuing Education*, *23*(1), 19-35. Retrieved from http://www98.griffith.edu.au/dspace/bitstream/10072/3844/1/SICE_3pap.pdf

Billett, S. (2002). Critiquing workplace learning discourses: Participation and continuity at work. *Studies in the Education of Adults*, *34*(1), 56. Retrieved from https://lib.pepperdine.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&AuthType=ip,url,uid,cookie&db=afh&AN=7048337&loginpage=login.asp?custid=s8480238&site=ehost-live&scope=site

Bingham, T., & Conner, M. L. (2010). *The new social learning: A guide to transforming organizations through social media*. Alexandria, VA: American Society for Training and Development Press.

Bogdan, R., & Biklen, S. K. (1982). *Qualitative research for education : An introduction to theory and methods.* Boston, MA: Allyn and Bacon.

Brinkerhoff, R. O., & Gill, S. J. (1994). *The learning alliance: Systems thinking in human resource development* (1st ed.).San Francisco, CA: Jossey-Bass, Inc.

Bronstein, J., & Newman, A. (2006). I'm 4 Learning. *Training and Development, 60*(2), 47-49. Retrieved from https://lib.pepperdine.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=afh&AN=19957788&site=ehost-live

Bruner, J. S. (1960). *The process of education*. Cambridge, MA: Harvard University Press.

Bryan, L. L. (2007). The new metrics of corporate performance: Profit per employee. *McKinsey Quarterly*, *1*, 56-65. Retrieved from https://lib.pepperdine.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=buh&AN=24215980&site=ehost-live

Bryman, A. B. E. (2003). *Business research methods*. New York, NY: Oxford University Press.

Candy, P. C, & Crebert, R. G. (1991). Ivory tower to concrete jungle: The difficult transition from the academy to the workplace as learning environments. *The Journal of Higher Education, 62*(5), 570. Retrieved from Research Library Core. (Document ID: 1866185)

Cofer, D. A. (2000). *Informal workplace learning. Practice application brief number* (10th ed.). Columbus, OH: Eric Clearinghouse on Adult, Career Vocational Education.

Collin, K. (2008). Development engineers' work and learning as shared practice. *International Journal of Lifelong Education, 27*(4), 379-397. Retrieved from http://www.informaworld.com/10.1080/0158037022000020956

Collin, K., & Valleala, U. M. (2005). Interaction among employees: How does learning take place in the social communities of the workplace and how might such learning be supervised? *Journal of Education and Work, 18*(4), 401-420. Retrieved from http://www.scopus.com/inward/record.url?eid=2-s2.0-29244471299&partnerID=40&md5=a1f002e16b2bb956854902853b1b505a

Commission of the European Communities. (2006). *Adult learning: It is never too late to learn*. Brussels: Belgium. Retrieved from http://eur-lex.europa.eu/LexUriServ/site/en/com/2006/com2006_0614en01.pdf

Conner, M. L. (2009). *Informal learning* [Monograph]. Retrieved from http://www.marciaconner.com/intros/informal.html

Cornell, P. (2008). *The growth of informal learning environments*. Steelcase. Retrieved from http://www.steelcase.com/na/knowledgedesign.aspx?f=10253&c=10258

Creswell, J. W. (2003). *Research design: Qualitative, quantitative, and mixed methods approaches*. Thousand Oaks, CA: Sage.

Cross, J. (2006). Not without purpose. *Training and Development*, *60*(6), 42-45. Retrieved from https://lib.pepperdine.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=afh&AN=21042633&login.asp?custid=s8480238&site=ehost-live&scope=site

Cross, J. (2007). *Informal learning: Rediscovering the natural pathways that inspire innovation and performance.* San Francisco, CA: Pfeiffer/Wiley.

Cross, R. L., & Parker, A. (2004). *The hidden power of social networks: Understanding how work really gets done in organizations.* Boston, MA: Harvard Business School Press.

De Janasz, S. C., & Forret, M. L. (2008). Learning the art of networking: A critical skill for enhancing social capital and career success. *Journal of Management Education*, *32*(5), 629-650. Retrieved from http://jme.sagepub.com/content/32/5/629.abstract

De Long, D. W., & Fahey, L. (2000). Diagnosing cultural barriers to knowledge management. *Academy of Management Executive*, *14*(4), 113-127. Retrieved from https://lib.pepperdine.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=buh&AN=3979820&site=ehost-live

DiMicco, J., Millen, D. R., Geyer, W., Dugan, C., Brownholtz, B., & Muller, M. (2008). *Motivations for social networking at work.* Paper presented at the ACM Conference on Computer Supported Cooperative Work, CSCW. New York, NY: Academy of Computing Machinery.

Dobbs, K. (2000). Simple moments of learning. *Training, 37*(1), 52. Retrieved from https://lib.pepperdine.edu/login?url=http://proquest.umi.com/pqdweb?did=48164232&Fmt=7&clientId=1686&RQT=309&VName=PQD

Eraut, M. (2004). Informal learning in the workplace. *Studies in Continuing Education, 26***,** 247-273. Retrieved from http://search.ebscohost.com/login.aspx?direct=true&AuthType=ip,url,cookie,uid&an=13713850&db=afh&scope=site&site=ehost

Eraut, M., Maillardet, F. J., Miller, C., Steadman, S., Ali, S., Blackman, C., & Furner, J. (2004) *Learning in the professional workplace: relationships between learning factors and contextual factors*. American Educational Research Association 2004 Conference, San Diego, CA. Retrieved from http://eprints.brighton.ac.uk/227/01/Blackman,_C_-_San_Diego_Conference_(2004).pdf

Galagan, P. (2009). Letting go: Some examples of social media used successfully for informal learning do not come out of learning departments. *Training and Development*, *63*(9), 26-29. Retrieved from https://lib.pepperdine.edu/login?url=http://proquest.umi.com/pqdweb?did=1864321071&Fmt=7&clientId=1686&RQT=309&VName=PQD

Galagan, P. (2010). Bridging the skills gap: New factors compound the growing skills shortage. *Training and Development, 64*(2), 44-49. Retrieved from https://lib.pepperdine.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=afh&AN=47875715&site=ehost-live

Gall, M. D., Gall, J. P., & Borg, W. R. (2003). *Educational research: An introduction*. Boston, MA: Allyn and Bacon.

Hager, P., & Halliday, J. (2006). *Recovering informal learning.* New York, NY: Springer.

Hanley, M. (2008, February 2). Introduction to Non Formal Learning [Web log post], Retrieved from http://michaelhanley.ie/elearningcurve/introduction-to-non-formal-learning-2/2008/01/28/

Hartman, H. J. (2001). *Metacognition in learning and instruction: Theory, research, and practice.* Boston, MA: Kluwer Academic.

Higgins, M. C., & Kram, K. E. (2001). Reconceptualizing mentoring at work: A developmental network perspective. *Academy of Management Review,26*(2), 264-288. Retrieved from https://lib.pepperdine.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&AuthType=ip,url,uid,cookie&db=bah&AN=4378023&loginpage=login.asp?custid=s8480238&site=ehost-live&scope=site

Ibarra, H. (1993). Personal networks of women and minorities in management: A conceptual framework. *Academy of Management Review*, *18*(1), 56-87. Retrieved from https://lib.pepperdine.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&AuthType=ip,url,uid,cookie&db=buh&AN=3997507&loginpage=login.asp?custid=s8480238&site=ehost-live&scope=site

Johnson, M., & Liber, O. (2008). The personal learning environment and the human condition: From theory to teaching practice. *Interactive Learning Environments, 16*(1), 3-15. Retrieved from https://lib.pepperdine.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&AuthType=ip,url,uid,cookie&db=afh&AN=27901558&loginpage=login.asp?custid=s8480238&site=ehost-live&scope=site

Keeling, D., Jones, E., Botterill, D., & Gray, C. (1998). Work-based learning, motivation and employer-employee interaction: Implications for lifelong learning. *Innovations in Education and Training International, 35*(4), 282-291. Retrieved from https://lib.pepperdine.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=eric&AN=EJ580172&login.asp?custid=s8480238&site=ehost-live&scope=site

Kilpatrick, S., Field, J., & Falk, I. (2001). *Social capital: An analytical tool for exploring lifelong learning and community development.* Discussion Paper: Tasmania University, Launceston Centre for Learning Research in Regional Australia. Retrieved from https://lib.pepperdine.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=eric&AN=ED463426&login.asp?custid=s8480238&site=ehost-live&scope=site

Kirby, R. J., Knapper, K., Evans, C., Carty, J. C., Allen, E., & Gadula, C. (2003). Approaches to learning at work and workplace climate. *International Journal of Training and Development, 7*(1), 31-52. Retrieved from https://lib.pepperdine.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=buh&AN=9353287&site=ehost-live

Kirkpatrick, D. L., & Kirkpatrick, J. D. (2006). *Evaluating training programs: The four levels*. San Francisco, CA: Berrett-Koehler.

Krug, S. (2005). *Don't make me think: A common sense approach to web usability.* Berkeley, CA: New Riders.

Lankau, M. J., & Scandura, T. A. (2002). An investigation of personal learning in mentoring relationships: Content, antecedents, and consequences. *Academy of Management Journal*, *45*(4), 779. Retrieved from https://lib.pepperdine.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&AuthType=ip,url,uid,cookie&db=buh&AN=7245938&loginpage=login.asp?custid=s8480238&site=ehost-live&scope=site

Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation.* New York, NY: Cambridge University Press.

Leslie, B., Aring, M., & Brand, B. (1997). Informal Learning: The New Frontier of Employee & Organizational Development. *Economic Development Review, 15*(4), 12.

Li, C., & Bernoff, J. (2008). *Groundswell : Winning in a world transformed by social technologies*. Boston, MA: Harvard Business Press.

Libert, B., & Spector, J. (2008). *We are smarter than me: How to unleash the power of crowds in your business*. Upper Saddle River, NJ: Wharton School.

Littlejohn, M. (2006). Embedded learning: Is it 'learning' or is it 'work'? *Training and Development Magazine*, *American Society for Training and Development*, *60***,** 36-39. Retrieved from http://search.ebscohost.com/login.aspx?direct=true&AuthType=ip,url,cookie,uid&an=19957786&db=afh&scope=site&site=ehost

Lohman, C. M. (2005). A survey of factors influencing the engagement of two professional groups in informal workplace learning activities. *Human Resource Development Quarterly, 16*(4), 501-527. Retrieved from http://dx.doi.org/10.1002/hrdq.1153

Marshall, C., & Rossman, G. B. (1989). *Designing qualitative research*. Newbury Park, CA: Sage.

Marsick, V. (2011). *Informal learning: Research based answers to whether and how it works.* Paper presented at the Training 2011 Conference & Exposition, San Diego:CA.

Matthews, P. (1999). Workplace learning: Developing an holistic model. *The Learning Organization, 6*(7), 52-52. Retrieved from http://www.emeraldinsight.com.lib.pepperdine.edu/journals.htm?issn=0969-6474&volume=6&issue=1&articleid=882562&show=abstract

McKinsey and Company. (2007). Global survey. *McKinsey Quarterly*, 3-8. Retrieved from http://download.mckinseyquarterly.com/organizational_challenges.pdf

McStravick, P. (2006). Informally speaking: Is there support for informal learning? *Chief Learning Officer, 5*(5), 60-62. Retrieved from https://lib.pepperdine.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=buh&AN=20751559&site=ehost-live

Merhotz, P. (1999, July 12). *Peterme.Com*. [Web log post]. Retrieved from http://web.archive.org/web/19991013021124/http://peterme.com/index.html

Merriam, S. B. (1998). *Qualitative research and case study applications in education*. San Francisco, CA: Jossey-Bass.

Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis: An expanded sourcebook.* Thousand Oaks, CA: Sage.

Moore, C., Janet (2005). *The Sloan Consortium Quality Framework And the Five Pillars* Retrieved from http://sloanconsortium.org/publications/books/qualityframework.pdf

Nathan, E. (2009). Determining the ROI of an online English as a second language program. *Performance Improvement, 48*(6), 39. Retrieved from https://lib.pepperdine.edu/login?url=http://proquest.umi.com/pqdweb?did=1810094731&Fmt=7&clientId=1686&RQT=309&VName=PQD

Olmstead, J. A. (1975). *Managing the context of work*. Professional Paper No. 1-75. Alexandria, VA: Human Resources Research Organization. Retrieved from https://lib.pepperdine.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&AuthType=ip,url,uid,cookie&db=eric&AN=ED110686&loginpage=login.asp?custid=s8480238&site=ehost-live&scope=site

Paradise, A. (2008). Informal learning: Overlooked or overhyped? *Training and Development, 62*(7), 52-53. Retrieved from https://lib.pepperdine.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=afh&AN=32926944&site=ehost-live

Patton, M. Q. (1980). *Qualitative evaluation methods*. Beverly Hills, CA: Sage.

Patton, M. Q. (1990). *Qualitative evaluation and research methods.* Newbury Park, CA:Sage.

Patton, M. Q. (2002). *Qualitative research and evaluation methods*. Thousand Oaks, CA: Sage.

Peason, R. (2007). *The case for integrating informal methods into your training strategy*. American Society for Training and Development 2007 International Conference and Exposition. Atlanta, GA.

Phillips, J. J. Y. (1997). *Return on investment in training and performance improvement programs.* Houston, TX: Gulf.

Preece, J. (2000). *Online communities: Designing usability and supporting sociability*. West Sussex, Australia: John Wiley and Sons.

Raelin, J. A. (2008). *Work-based learning: Bridging knowledge and action in the workplace*. San Francisco, CA: Jossey-Bass.

Rismark, M., & Sitter, S. (2003). Workplaces as learning environments: Interaction between newcomer and work community. *Scandinavian Journal of Educational Research*, *47*(5), 495. Retrieved from https://lib.pepperdine.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=afh&AN=10917408&site=ehost-live

Sambrook, S. (2005). Factors influencing the context and process of work-related learning: Synthesizing findings from two research projects. *Human Resource Development International, 8*(1), 101-119. Retrieved from http://pepperdine.worldcat.org/title/factors-influencing-the-context-and-process-of-work-related-learning-synthesizing-findings-from-two-research-projects/oclc/362817485&referer=brief_results

Severance, C., Hardin, J., & Whyte, A. (2008). The coming functionality mash-up in Personal Learning Environments. *Interactive Learning Environments, 16*(1), 47-62. Retrieved from 10.1080/10494820701772694 https://lib.pepperdine.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&AuthType=ip,url,uid,cookie&db=afh&AN=27901555&loginpage=login.asp?custid=s8480238&site=ehost-live&scope=site

Siemens, G. (2005). Connectivism: Learning as network creation. *Learning Circuits*. Retrieved from http://www.astd.org/LC/2005/1105_seimens.htm

Skule, S. (2004). Learning conditions at work: A framework to understand and assess informal learning in the workplace. *International Journal of Training and Development*, *8*(1), 8-20. Retrieved from http://www.blackwell-synergy.com/doi/abs/10.1111/j.1360-3736.2004.00192.x

Tapscott, D., & Williams, A. D. (2008). *Wikinomics: How mass collaboration changes everything*. Strand, England: Penguin Group Incorporated.

Tobin, D. R. (1998). *Building your personal learning network* [Monograph]. Retrieved from http://www.tobincls.com/learningnetwork.htm

Tynjälä, P. (2008). Perspectives into learning at the workplace. *Educational Research Review*, *3*(2), 130-154. Retrieved from http://www.sciencedirect.com/science/article/B7XNV-4RHP9FT-1/2/bf641ddeb4d25bb5af509150c6523717

Tynjälä, P., Määttä, V., Räisänen, A. (2008). *Evaluation of workplace learning in Finnish VET system*. American Educational Research Association National Conference. New York, NY.

Tzatha, A. (2009). The Limitations of Social Network Analysis. *Journal of Network Theory*, *4*(2), 1-3. Retrieved from http://www.networktheory.nl/2009/limitations-of-sna/47/the-limitations-of-social-network-analysis.html

Van Harmelen, M. (2008). Design trajectories: Four experiments in PLE implementation. *Interactive Learning Environments, 16*(1), 35-46. Retrieved from http://www.informaworld.com/openurl?genre=article&id=doi:10.1080/10494820701772686

Vaughan, K. (2008). *Workplace learning: A literature review*. Aukland, New Zealand: Competenz New Zealand Council for Educational Research. Retrieved from http://akoaotearoa.ac.nz/download/ng/file/group-189/n1575-workplace-learning-a-literature-review.pdf

Vavoula, G., & Sharples, M. (2009). Lifelong learning organisers: Requirements for tools for supporting episodic and semantic learning. *Journal of Educational Technology and Society, 12*(3), 82-97. Retrieved from https://lib.pepperdine.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&AuthType=ip,url,uid,cookie&db=afh&AN=44110949&loginpage=login.asp?custid=s8480238&site=ehost-live&scope=site

Warlick, D. (2009). Grow your personal learning network: New technologies can keep you connected and help you manage information overload. *Learning and Leading with Technology*, *36*(6), 12-16. Retrieved from http://www.iste.org/Content/NavigationMenu/Publications/LL/Current_Issue/L_L_March_April.htm

Wellman, B., Salaff, J., Dimitrova, D., Garton, L.,Gulia, M., & Haythornthwaite, C., (2000). Computer networks as social networks: Collaborative work, telework, and virtual community. *Knowledge and Communities*. *Annual Review of Sociology,22*(1), 213-238. Retrieved from http://www.jstor.org/stable/2083430

Wenger, E., McDermott, R. A., Snyder, W. (2002). *Cultivating communities of practice: A guide to managing knowledge*. Boston, MA: Harvard Business School Press.

Wilson, S. (2008). Patterns of personal learning environments. *Interactive Learning Environments, 16*(1), 17-34. Retrieved from 10.1080/10494820701772660 https://lib.pepperdine.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&AuthType=ip,url,uid,cookie&db=afh&AN=27901557&loginpage=login.asp?custid=s8480238&site=ehost-live&scope=site

Wright, B. (2004). The role of work context in work motivation: A public sector application of goal and social cognitive theories. *Journal of Public Administration Research and Theory, 14*(1), 59. Retrieved from https://lib.pepperdine.edu/login?url=http://proquest.umi.com/pqdweb?did=600063231&Fmt=7&clientId=1686&RQT=309&VName=PQD

APPENDIX A

Invitation to Participate

<<TITLE>><<FIRST>><<LAST>>
<<ORGANIZATION>>
<<DEPARTMENT >>
<<ADDRESS>>
<<CITY>>, <<STATE>><<ZIP>>
Dear <<TITLE>>. <<LAST>>,

A Personal Learning Network (PLN) is a way of describing a collection of resources that a worker (learner) can go to learn something. PLN resources can be family, friends, coworkers and managers or documents, methods, procedures, or job aids. PLNs leverage technology, organizational culture and climate and individual competencies to develop and thrive.

While there has been significant research in the area of workplace learning, there are few studies that have explored the relationship between organizational support for workplace learning and the establishment nurturing and development of Personal Learning Networks (PLNs) by workers in the workplace.

Because of this lack of research examining the relationships of PLNs and organizational support for workplace learning little investment guidance can be given to organizations on how to allocate resources in support of PLNs to maximize employee job role performance.

I would like to invite you to participate in a study I am conducting for the completion of my doctoral dissertation at Pepperdine University. The purpose of the study is to conduct a qualitative research study of members of the university's Information Technology organization.

You are eligible to participate in the study if:

1. You are currently a member of this organization available for interview during **(times TBD).**

This study will rely on qualitative data collection methods. The methods include reviewing pertinent literature, documents, logs, operational data, and interview analysis. This research is not the development, defense or refutation of an existing theory. Instead it is a qualitative study designed to identify themes, and uncover emergent themes regarding organizational support for Personal Learning Networks. This research involves your being interviewed as part of the effort to capture your insights and your perceptions of how the organization supports your engagement of your Personal Learning Network.

It is anticipated that each individual **interview** will require no more than 30–45 minutes of your time. The anticipated timeframe for this study is to begin interviews in (TBD). **All interviews will be completed by (TBD)**. All research participants will receive a copy of the completed study.

If you meet the eligibility requirements and are willing to participate in the study, you will be asked to complete the Interview - Informed Consent Form, you will be asked to indicate your approval with your initials and signature as appropriate.

Your participation is completely voluntary. The identity of participant response to specific questions will not be shared.

Thank you in advance for your participation,
Don Gladney
Doctoral Student, Pepperdine University

APPENDIX B

Informed Consent: Sample Document used in research

Participant: _____

Principal Investigator: Don Gladney

Title of Project: Exploring strategies for obtaining a workable balance between formal training and Personal Learning Networks at a Midsized University

1._____ I , agree to participate in the research study being conducted by Don Gladney under the direction of Dr. Dr Jack McManus. **This study is being conducted in partial fulfillment of the requirements for the degree of Doctor of Education in Educational Technology at Pepperdine University**

2. The overall purpose of this research is: The purpose of this study will be to analyze one organization that has varying levels of organizational support for worker PLNs. Simultaneously the study will look at workers who adapt their PLNs to leverage available organizational support. The study proposes to define for a given workplace context what a workable balance of organizational support and personal networking competency should be. This study aims to identify personal and workplace characteristics that represent definable, repeatable practices useful for organizations and individuals. Specifically, this study will through qualitative research examine the feedback and input of knowledge workers in a midsized university.

3. My participation will involve the following: Responding to interview questions that will enable the researcher to satisfy the purpose of the research. Interview sessions will be audio taped and transcribed.

4. My participation in the study will be during scheduled sessions during **May and June** of 2011. The study shall be conducted on the campus of Pepperdine University.

5. I understand that the possible benefits to myself or society from this research are:

Organizations engaged in the development of their workforce will benefit from a deeper understanding of how their workplace environments can be analyzed and leveraged to support efforts to support a culture of learning that will enable the organization to address current and future business challenges. These organizational benefits impact individual career advancement by the development of insights into the optimization of the environment that Personal Learning Networks operate in,

6. I understand that there are **no more than minimal risks** or discomfort as associated with my time and that my answers will be maintained in confidence as a result of participating in this study. The potential risks to me with participating in this research study are Invasion of Privacy, Breach of Confidentiality, and Study Procedures.

As a precaution to the possible disclosure of your responses as a source of potential harm to you, the researcher will be collecting data in confidence to provide you with protection. Since the design of this study, an examinative case study, the collection of identifiers is necessary, safeguarding the data from unauthorized access will be accomplished in following ways as discussed including:

1. Remove all direct identifiers as soon as possible.
2. Substitute codes for identifiers.
3. Maintain code lists and data files in separate secure locations.
4. Use accepted methods to protect against indirect identification, such as aggregate reporting.
5. Use and protect computer passwords.
6. Access and store data on computers without Internet connections.

Furthermore, as the researcher, I will insure confidentiality of the participant report results only in aggregate form. Only the researcher will have access to the raw interview data. **Transcriptions, data** and notes will be kept in a locked file cabinet in the researcher's home, and all electronic data will be maintained in a password protected electronic file. All identifying interview response information will be unavailable to anyone other than the researcher, and all data will be destroyed after a period of three years from the completion of the study.

7. I understand that I may choose not to participate in this research.

8. I understand that my participation is voluntary and that I may refuse to participate and/or withdraw my consent and discontinue participation in the project or activity at any time without penalty or loss of benefits to which I am otherwise entitled.

9. I understand that the investigator(s) will take all reasonable measures to protect the confidentiality of my records and my identity will not be revealed in any publication that may result from this project. The confidentiality of my records will be maintained in accordance with applicable state and federal laws. Under California law, there are exceptions to confidentiality, including suspicion that a child, elder, or dependent adult is being abused, or if an individual discloses an intent to harm him/herself or others.

10. I understand that the investigator is willing to answer any inquiries I may have concerning the research herein described. I understand that I may contact Dr Jack McManus if I have other questions or concerns about this research. If I have questions about my rights as a research participant, I understand that I can contact

Graduate and Professional School IRB
Jean Kang, GPS IRB Manager
Graduate School of Education & Psychology
Pepperdine University
6100 Center Drive 5th Floor
Los Angeles, CA

Dr Jack McManus
Graduate School of Education & Psychology
Pepperdine University
6100 Center Drive 5th Floor
Los Angeles, CA

11. I understand to my satisfaction the information regarding participation in the research project. All my questions have been answered to my satisfaction. I have received a copy of this informed consent form which I have read and understand. I hereby consent to participate in the research described above.

_____
Participant's Signature

_____
Date

_____
Witness

_____
Date

I have explained and defined in detail the research procedure in which the subject has consented to participate. Having explained this and answered any questions, I am cosigning this form and accepting this person's consent.

Don Gladney

APPENDIX C

IRB Exemption Letter

PEPPERDINE UNIVERSITY

Graduate & Professional Schools Institutional Review Board

May 11, 2011

Donald Gladney

Protocol #: E0111D15
Project Title: *Exploring strategies for obtaining a workable balance between formal training and Personal Learning Networks at a Midsized University*

Dear Mr. Gladney:

Thank you for submitting the revisions requested by Pepperdine University's Graduate and Professional Schools IRB (GPS IRB) for your study, *Exploring strategies for obtaining a workable balance between formal training and Personal Learning Networks at a Midsized University*. The IRB has reviewed your revisions and found them acceptable. You may proceed with your study. The IRB has determined that the above entitled project meets the requirements for exemption under the federal regulations 45 CFR 46 - http://www.nihtraining.com/ohsrsite/guidelines/45cfr46.html that govern the protections of human subjects. Specifically, section 45 CFR 46.101(b) (2) states

> (b) Unless otherwise required by Department or Agency heads, research activities in which the only involvement of human subjects will be in one or more of the following categories are exempt from this policy:
>
> **Category (2) of 45 CFR 46.101**, research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless: a) Information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; and b) any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation.

Your research must be conducted according to the proposal that was submitted to the IRB. If changes to the approved protocol occur, a revised protocol must be reviewed and approved by the IRB before implementation. For any proposed changes in your research protocol, please submit a **Request for Modification Form** to the GPS IRB. Because your study falls under exemption, there is no requirement for continuing IRB review of your project. Please be aware that changes to your protocol may prevent the research from qualifying for exemption from 45 CFR 46.101 and require submission of a new IRB application or other materials to the GPS IRB.

A goal of the IRB is to prevent negative occurrences during any research study. However, despite our best intent, unforeseen circumstances or events may arise during the research. If an unexpected situation or adverse event happens during your investigation, please notify the GPS IRB as soon as possible. We will ask for a complete explanation of the event and your response. Other actions also may be required depending on the nature of the event. Details regarding the timeframe in which adverse events must be reported to the GPS IRB and the appropriate form to be used to report this information can be found in the *Pepperdine University Protection of Human Participants in Research: Policies and Procedures Manual* (see link to "policy material" at http://www.pepperdine.edu/irb/graduate/).

Please refer to the protocol number denoted above in all further communication or correspondence related to this approval. Should you have additional questions, please contact me. On behalf of the GPS IRB, I wish you success in this scholarly pursuit.

Sincerely,

Jean Kang, CIP
Manager, GPS IRB & Dissertation Support
Pepperdine University
Graduate School of Education & Psychology
6100 Center Dr. 5th Floor
Los Angeles, CA 90045
jean.kang@pepperdine.edu
W: 310-568-5753
F: 310-568-5755

cc: Dr. Lee Kats, Associate Provost for Research & Assistant Dean of Research, Seaver College
Ms. Alexandra Roosa, Director Research and Sponsored Programs
Dr. Yuying Tsong, Interim Chair, Graduate and Professional Schools IRB
Ms. Jean Kang, Manager, Graduate and Professional Schools IRB
Dr. Jack McManus
Ms. Christie Dailo

APPENDIX D

Interview Setting and Procedures

The setting for the interviews will be an office with comfortable seating. Interviews will take place at the University (convenient campus locations will be determined to limit travel for participants). Participants will be invited to participate. An interview orientation will consist of:

- Introduction to the research

Thank you for taking the time to participate in this study. Your participation is voluntary and you may stop at any time and you do not have to answer all of the questions. The purpose of this study will be to analyze an organization that has varying levels of organizational support for worker Personal Learning Networks. A Personal Learning Network (PLN) is a way of describing a collection of resources that a worker (learner) can access to learn something. PLN resources can be family, friends, coworkers and managers or documents, methods, procedures, or job aids. Personal Learning Networks provide workers (learners) with resources that can answer questions, assess performance, coach, and reinforce previous formal and informal learning.

- Quick overview of the purpose and objectives of the interview (Definition of a Personal Learning Network)

The interviews that I will be conducting will gather input that will be used to define for a given workplace what a workable balance of organizational support and personal networking competency should be. This study aims to identify personal and workplace characteristics that represent definable, repeatable practices useful for organizations and individuals.

- Explanation of what a personal learning network is. Participants will be provided a copy of the written definition and sample diagram to refer to during the interview.

Here is a copy of the definition of a Personal Learning Network you may refer to it as we go through the questions.

- Advisement of the use of tape recording and signing of any releases and consent documentation.

I will be recording our conversation today and I would now like to take you through the consent documentation. Participants will be thanked upon conclusion of the interview.

APPENDIX E

Research Question Interview Question Mapping

Table E1

Research Questions Mapped to Interview Questions

Interview Questions	Research Questions			
	What characteristics (environmental factors) are present in a organization where PLNs thrive?	What are the reasons for workers willingness to contribute their knowledge to other PLNs?	What are the barriers to workers contributing their knowledge to other PLN's?	What is the relationship between organizational support for workplace learning and the establishment, nurturing and development of PLNs by its workers?
1. How does collaboration work in your workplace when working with others is required?			X	X
2. Describe your job role in terms of reliance on learning from others and the use of technology?			X	X
3. How would you describe ways in which workplace culture and climate impact your ability to learn?	X		X	
4. How often do you assist others in learning?	X	X	X	
5. Describe how you typically learn from others?	X		X	X

(continued)

Interview Questions	Research Questions			
6. What internal job aids, tools, technologies and reference materials do you find most useful when learning formally and informally?	X		X	
7. What tools do you use to connect to or stay connected with others to learn?	X		X	X
8. When working with others how long does it typically take to engage obtain the needed learning and disengage?	X	X		
9. Is there a person or persons you connect with the most to get your job done?		X	X	
10. How does the organization help you get connected or stay connected to critical resources in your network?	X			X
11. Describe your Personal Learning Network?	X			

(continued)

Interview Questions	Research Questions			
12. Describe the value you place on your personal learning network?		X	X	
13. What external resources do you use to do your job?	X			X
14. What motivates you to learn?	X		X	
15. How does the design of your job impact how you learn?	X			X
16. What would the workable balance of organizational support and Personal learning networking look like in your job?				X