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Comparing the Perceived Relevance of Informal and Formal Learning in Skill Acquisition in a Leadership Development Program

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Indiana State University

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William Kirk Smith

EDUCATION

2010   Indiana State University, Terre Haute, Indiana
Ph.D., Technology Management

2004   East Carolina University, Greenville, North Carolina
M.S., Industrial Technology

1974   Georgia Institute of Technology, Atlanta, Georgia
Bachelor of Engineering Economic Systems

PROFESSIONAL EXPERIENCE

2006-Present Kepner-Tregoe, Inc., Princeton, New Jersey
Senior Consultant, Independent Contractor

2005-2006   Time Warner Cable, Raleigh, North Carolina
Division Manager of Training

2000-2005   North Carolina Community College System, Raleigh, North Carolina
Regional Customized Training Director

COMPARING THE PERCEIVED RELEVANCE OF INFORMAL AND FORMAL

LEARNING IN SKILL ACQUISITION IN A LEADERSHIP

DEVELOPMENT PROGRAM

_____

A dissertation

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of the Requirements for the Degree

Doctor of Philosophy in Technology Management

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by

William Kirk Smith

December 2010

COMMITTEE MEMBERS

Committee Chair: Dr. George Maughan

      Professor and Director of Ph.D. Program

      Indiana State University

Committee Member: Dr. Tad Foster

      Professor

      Indiana State University

Committee Member: Dr. David Beach

      Professor

      Indiana State University

Committee Member: Dr. Charles Coddington

      Professor

      East Carolina University

Committee Member: Dr. Patti Phillips

      President and CEO

      The ROI Institute

ABSTRACT

Leadership development is at or near the top in importance to senior executives within organizations. In the criteria for the Malcolm Baldridge National Quality Award, leadership has the second highest weighting, behind only business results but ahead of customer focus, measurement, analysis, knowledge management, workforce focus, process management, and strategic planning. Corporations in the United States spend an estimated $20-30 billion per year in leadership training and there is a question of whether the learning that takes place outside the classroom, informal learning, is more relevant than formal learning.

Learning within organizations is vital to success. It is the lifeblood that grows and sustains human capital. Many methods for the measurement and evaluation of the impact of formal learning and performance improvement programs in organizations have been introduced in the past decade but measuring and evaluating the value of informal learning that filters through patterns of relationships in organizational networks has been elusive. Very few studies have attempted to address the effects of informal and formal learning in management or leadership training. The objective of this study was to compare the perceived relevance of informal learning and formal learning in acquiring leadership skills in a leadership development program. This study attempted to compare the perceived relevance of informal learning versus formal learning in skill acquisition in a specific leadership development program. This was done using data from McKesson Corporation's McKesson Center for Learning Lead the Way program. This study provides insights into the perceived relative importance and relevance of

informal and formal learning. Using paired-samples t-tests, the study analyzed the perceived

relevance and importance in a leadership development program.

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CHAPTER 1

Introduction

Learning within organizations is vital to success. It is the lifeblood that grows and

sustains human capital (Bassi & McMurrer, 2004; Noe, 2008; Senge, 1990) through human

resource development (HRD) and the management of technology which, according to Thamhain

(2001), is the key to competitiveness and wealth creation. Many methods for the measurement

and evaluation of the impact of formal learning and performance improvement programs in

organizations have been introduced in the past decade (Brinkerhoff, 2003; Cascio, 1999;

Dessinger & Mosely, 2004; Phillips, 2003; Swanson & Holton, 1999) but measuring and

evaluating the value of informal learning that filters through patterns of relationships in

organizational networks (Cross & Thomas, 2009) has been elusive. Very few studies have

attempted to address the effects of informal and formal learning in management or leadership

training (Collis & Margaryan, 2005; Terrion, 2006). This study attempted to compare the

perceived relevance of informal learning versus formal learning in skill acquisition in a

leadership development program (LDP). This was done using data from McKesson

Corporation's McKesson Center for Learning Lead the Way program.

Background

      Complex adaptive systems. From a HRD perspective, it is enlightening to conceptualize organizations as complex adaptive systems (Capra, 2002; Cilliers, 1998; Rummler & Brache, 1995; Wheatley & Kellner-Rogers, 1996). Systems have qualities that differentiate them from other forms of organization. They are holistic in that the parts interact with each other both in direct and more subtle ways and the whole is greater than the sum of the parts. According to Checkland (1981) the other two properties of holism are hierarchy and communication and control. "Holism implies that the system is in the relationships not in the parts" (Rowland, 2007, p. 9). Because the emphasis is on the whole and not the parts, they cannot be fully explained by Descartes' reductionism or the organization as machine concept (Wheatley, 2006). Complex adaptive systems (CAS) have even more characteristics that make them unique (Ackoff, 1999; Beinhocker, 2006; Capra, 2002; Cilliers, 1998; Csikszentmihalyi, 1993; Rowland, 2007; Senge, 1990). Their works relate a view of CAS to philosophy, management, and economics. McDaniel (2007), drawing from these authors, states "CAS are characterized by diverse agents that learn, that interact with each other in nonlinear ways, and therefore, self-organize, have emergent properties, and co-evolve with the environment" (pp. 22-23).

      CAS contains agents that process information and have the capacity to modify their behavior based upon the information input (Casti, 1997; Holland, 1998). Rowland (2007) even asserts that there is no central processing agent that is aware of what is happening to the entire system but each agent is cognitively connected to its local environment and interacts primarily with agents in its locality (Holland, 1998).

Nonlinearity refers to there not necessarily being a one-to-one relationship between cause and effect. "Small efforts to change systems can lead to big effects, while large efforts may result in little or no change" (McDaniel, 2007, p. 23). Another important characteristic, according to Capra (1996), is that prediction is often impossible.

Self-organization, spontaneous emergence of structures and behaviors (Capra, 1996) is founded upon the interactions among the agents of the system (as cited in McDaniel, 2007) as opposed to being dictated by a central command and control. Self-organization is more spontaneous and takes advantage of the white space (Rummler & Brache, 1995) on the organization chart. It happens in the *shadow systems* instead of the formal organization. The information used in self-organization passes informally through patterns of communication relationships.

Emergence is the unpredictability characteristic of CAS. Outcomes and patterns happen as a result of the attributes of the agents and the non-linear interactions between the relationships within the system (McDaniel, 2007) and are difficult to control or predict. Even though the behavior of an organization as a CAS is a result of the characteristics of the individuals and their interactions, according to Casti (1997) and Holland (1998) the characteristics of the CAS are not reducible to the attributes of the agents and relationship patterns.

"Real organizations constantly circle and chase each other in an infinitely complex dance of co-evolution" (Waldrop, 1992, p. 259). The interdependence of the parts of a CAS and their interactions change each other directly and indirectly. Co-evolution means everyone in the organization works within an environment that they change and that changes them.

Assuming that organizations are CAS, McDaniel's (2007) five characteristics of CAS can make it difficult for traditional measurement and evaluation of the learning that takes place. In

fact, the very attempt of measurement may change the learning outcomes. However, it is in these interdependent relationships and interactions in the white space in the organization chart that much of the informal learning takes place (Cross & Thomas, 2009; Senge, 1990; Wenger, McDermott, & Snyder, 2002).

Formal learning evaluation methods. Learning in a more formal setting has its share of measurement and evaluation methods and techniques. Kirkpatrick (1975) probably made the most significant early contribution to training evaluation. His Four Levels Framework has been the standard for several decades. It is shown below in Table 1.

Table 1

Kirkpatrick's Four Level Framework

Evaluation Level	Description
Reaction	How satisfied were the participants?
Learning	How much did they learn in the program?
Job Behavior	How did their behavior on the job change?
Results	How much did the program improve business results such as revenue, cost reduction, quality, productivity, etc?

Phillips (1983) built on Kirkpatrick's Four Level Framework by adding a fifth level of return on investment (ROI). He also developed a process model that builds causal links between Kirkpatrick's levels and includes incorporating comprehensive program cost data to compare with the monetary benefits from Kirkpatrick's Level 4 (Phillips, 2003). Although these frameworks have been criticized (Alliger & Janak, 1989; Holton & Naquin, 2004; Swanson & Holton, 1999), they have been largely accepted in the field of industrial/organizational

psychology (Cascio, 2000) and human resource development (Twitchell, Holton, & Trott, 2000).

The Phillips ROI Framework is reflected in Table 2.

Table 2

Phillips Fifth Level Framework

Evaluation Level	Description
Level 1. Reaction and Satisfaction	Participant and stakeholder satisfaction with the program and planned action
Level 2. Learning	Knowledge, skills, or attitude changes as a result of the program
Level 3. Application and Implementation	Behavior change on the job and specific application and implementation of the program
Level 4. Impact	Changes to the business metric objectives
Level 5. Return on Investment	Compares the monetary benefits of the business objectives with fully-loaded program costs.

Another commonly used technique is Brinkerhoff's (2003) Success Case Method. In this method, survey data are collected from program participants to find verifiable examples of application of the new knowledge, skills, and abilities gained in the program. Follow-up interviews are then conducted to obtain more details of the specific applications to convert the results into monetary value. By learning what the enablers are for those successful with application and the barriers for those who were not, improvements to the training transfer climate to improve future programs can be made and *unrealized value* can be redeemed.

The CIPP (context, input, process, product) Evaluation Model (Stufflebeam, 1983) is driven by the decision to make a change and evaluates the context to determine objectives, input to determine program design, process to control program operations, and product to judge and

react to program attainments. The CIPP Method is both formative and summative. The first three components—context, input, and process are formative and the product evaluation is summative. According to Stufflebeam (1983), his approach was designed to help determine if there has been a positive effect from the program on the organization.

Others include Kaufman's Five Levels of Evaluation (Kaufman & Keller, 1994), Cascio's (2000) Utility Analysis, and Kaplan and Norton's (1996) Balanced Scorecard. These were all designed to fill a need to measure and evaluate formal human resource development (HRD) initiatives such as classroom training and e-learning. According to the American Society for Training and Development's (ASTD) State of the Industry research report, the expenditures for training in U.S. organizations are estimated to be over $200 billion (ASTD, 2009) and have driven the need for the HRD function to show its value to the organization and to ensure its alignment with the organization's strategy. But what about the learning that takes place not in the classroom or at the computer, but in interactions that take place every moment in the social relationships and patterns of communication?

The complexity science scholars and practitioners contend that the complex, emergent properties of complex adaptive systems preclude meaningful measurement and evaluation (Capra, 2002; McDaniel, 2007; Stacey, 1996; Wheatley & Kellner-Rogers, 1999). However, given the potential amount of informal learning that flows through organizational networks (Cross & Thomas, 2009; Wenger, McDermott, & Snyder, 2002) in complex adaptive systems and the potential commensurate impact on business results, it might be very beneficial if we could. This study attempted to determine the perceived relevance and importance of informal learning in LDPs as a prior condition for further study in its measurement and evaluation.

Statement of the Problem

Leadership development is at or near the top in importance to senior executives within organizations (ASTD, 2009; McAlearney, 2006; Towers-Perrin, 2005). In the criteria for the Malcolm Baldridge National Quality Award, leadership has the second highest weighting, second only to business results but ahead of customer focus, measurement, analysis, knowledge management, workforce focus, process management, and strategic planning (Noe, 2008). It is estimated that between $20-30 billion was spent on leadership development programs (LDPs) in 2008 (ASTD, 2009). Studies show the impact of formal leadership training on the acquisition and development of leadership skills (Broad, 1992; Russ-Eft & Preskill, 2001). However, little is known about the perceived relevance informal learning has in the acquisition and development of such skills. With the growing interest in informal learning (Collis & Margaryan, 2005; Eraut, 2004; Terrion, 2006)) and the investment placed in leadership development, the question is: Does informal learning influence the acquisition of leadership skills to the same degree as formal learning? If so, leadership development training could become more economically efficient and effective. Therefore the problem of this study was to compare the perceived relevance of informal learning versus formal learning in the acquisition of skills in a leadership development program.

Research Questions

1. What is the perceived relevance of informal learning in skill acquisition in a leadership development program?

2. What is the perceived relevance of formal learning in skill acquisition in a leadership development program?

    3. What is the perceived relative importance of informal and formal learning in a

        leadership development program?

Statement of the Purpose/Need

As the need for accountability has grown in organizations, the need to measure what, in the past, may have been considered intangible assets grows as well. A larger percentage of a public company's stock value is intangible versus tangible assets (Echols, 2005; Huselid, 1995; Weatherly, 2003). Tangible assets include things like equipment, buildings, inventories, and cash. Data suggest that from 1982 to 1992 the percentage of market value of publicly traded companies represented by tangible balance sheet assets fell from 62% to 38% (Echols, 2005) and more recent studies suggest that the percentage of tangible assets may have dropped to as little as 15% (Weatherly, 2003). This intangible asset value has been called intellectual capital by Bassi and McMurrer (2004) and Holton and Naquin (2004). Weatherly (2003), Hatala & Lutta, (2009) and Huselid, Becker, and Beatty (2005) also identify social capital as a component of intangible asset value. Their definitions of social capital include informal learning, the informal networking systems within organizations as well as the learning that takes place in the more traditional, structured formal learning environment.

The two components of intellectual capital are human capital and structural capital. Structural capital includes information systems, operating procedures, patents, copyrights, intellectual property, and trade secrets (Noe, 2008). According to Bassi and McMurrer (2004) there are five human capital indicators:

    1. Leadership and managerial practices (i.e., communications, performance appraisal

        systems)

    2. Work-force optimization (i.e., processes for getting work done, good hiring decisions)

3. Learning capacity (i.e., a company's ability to learn, innovate, and improve)

4. Knowledge accessibility (i.e., ability to make knowledge and ideas available to employees)

5. Talent engagement (i.e., job design, how employee time is used) (as cited in Noe, 2008, p. 14)

All of these indicators rely upon or create opportunities for informal learning to some degree. Measuring and managing informal learning effectively, according to the data, would give an advantage in optimizing market value to those organizations willing and able to engage in this management practice (Noe, 2008)

Rationality may have worked when businesses were more financial capital intensive. Now that a larger portion of a company's value is intangible, where peoples' thoughts, ideas, and actions play a larger part, there is a higher level of uncertainty; too much to be left to chance. Increasing the certainty level of measuring all of the unseen communication and informal learning that go on in organizations would be a new paradigm in management. It is analogous to the breakthrough in physics when the full light spectrum was discovered and instruments were developed to measure the unseen portions of the light spectrum; radio, microwave, ultra-violet, infra-red, gamma, etc.

Statement of Assumptions

This study assumed that organizations are complex adaptive systems and are characterized by qualities that make it difficult to measure or predict in a traditional managerial sense. These qualities include having diverse agents that learn, interact with each other in non-linear ways, self-organize, have emergent properties, and co-evolve with the environment. These properties are also consistent with general system theory (Bertalanffy, 1950) which emphasized

the interrelatedness of all system components and soft systems theory (Checkland, 1981) which

statesd that the world may be systemic but we can only approximate it through our

interpretations. The assumption of CAS creates one side of the dichotomy that measurement is

difficult (or even meaningless) but is necessary to be able to manage something (informal

learning) that is too valuable to be totally left to chance. It also makes visible the relational

structures within organizations that make informal learning possible.

A second assumption was that informal learning is important to organizations creating a

competitive advantage in the marketplace. It helps improve performance, creativity, and

innovation; vital components in differentiating organizations as superior.

Statement of Limitations

This study looked at theory first and then attempted to compare and contrast the amalgam

of these various theories that suggest links to current praxis of evaluation. The examination of

theories came from integrating the natural sciences, the social sciences, and cognitive

philosophies much as Giddens (1996) and Habermas (1994) attempted in studying how people

draw upon social structures in their pursuit of strategic goals. This study attempted to apply that

concept to informal learning in the context of a LDP in an organizational setting. Even though

the theories that espouse organizations as complex adaptive systems often reject the limitations

of positivism, a connection was attempted to link any hint or suggestion of measurement and

evaluation possibilities in CAS to current traditional learning evaluation methods to find

common ground upon which to build a research agenda for new evaluation models. This

required a level of subjectivity by the researcher in suggesting what was acceptable to both

paradigms. This subjectivity required interpretation of language, context, content, and

semantics. The interpretative nature of the study precluded that the findings cannot be separated

from the researcher's background, history, contexts, and prior understandings. The researcher

does not declare absolutely that the common ground between CAS theories and currently

accepted positivistic evaluation methods allow for measurement and evaluation but suggests

areas for further study to test new theories in a grounded theory approach.

Because this study was designed was designed using a population with a one

organization, inferences and generalizations to larger populations are extremely limited. It is the

hope of the researcher that the study will generate hypotheses to be tested in larger, more diverse

populations. Finally, this study assumed that the responses of the participants are perceptions

and not necessarily a reflection of reality; given the limitations of self-reported survey research

(Fink, 2003).

Statement of Methodology

The McKesson Corporation's McKesson Center for Learning in Alpharetta, Georgia

provides a LDP called Lead the Way (LTW) for managers and supervisors in all business units

and geographical locations. Virtually all of the training is formal, delivered through instructor-

led or computer-based classes. To gather data for this study, an online survey was developed to

capture data from employees who participated in LTW in late 2009 and early 2010. The

population size was 399. Well over 1000 managers have completed the program in the past two

years. This population was chosen because they were the most recent cohort in the program.

There were three questions and the survey was structured so that the skills targeted for the

program were listed on the left-hand side of the page for each question. The responses were in

the form of a five point response scale across the top of each question.

After the survey process was completed, the data were collected electronically for analysis. Statistical analyses were conducted to answer the research questions of the study. A more detailed description of the research methodology is provided in Chapter 3.

Terminology and Definitions

The following are terms that are used throughout the study. The definitions are chosen to help the reader better understand the study.

Autopoiesis is self-generation by living beings by undergoing continual structural changes within their environment while preserving their patterns of organization (Capra, 2002).

Complex adaptive systems (CAS) are self-organizing systems that are characterized by diverse agents that learn, that interact with each other in nonlinear ways, self-organize, have emergent properties, and co-evolve with the environment (McDaniel, 2007).

Formal learning is "structured learning that takes place in a classroom environment" (Enos, Kehrhahn, & Bell, 2003, p. 370) where " learners are removed from the day-to-day work to engage in lectures, discussions, simulations, role plays, and other instructional activities" (Enos et al, 2003, p. 370. It also includes structured computer and web-based training.

Informal learning is learning which takes place in the context of work, is related to an individual's job performance, and is not part of program or curriculum (Dale & Bell, 1999).

Perception is "The ability to organize a message from the environment so that it can be processed and acted upon" (Noe, 2008, p. 507).

Relationship is "a structure of constraint and opportunity negotiated and reinforced by two interacting individuals" (Kilduff & Tsai, 2003, p. 5).

Sensemaking is "a diagnostic process directed at constructing plausible interpretations of ambiguous cues that are sufficient to sustain action" (Weick, 2005, p. 57).

Skill is *"competency in performing a task"* (Noe, 2008, p. 509).

Social networks or networks or communication, are the human systems manifestation of network theory in which complex responsive processes and co-evolution of human systems occur. They are self-organizing, involve the use of language, cultural constraints, and relationships of power, and enable the negotiation of meaning and coordination of power (Barabasi, 2002; Capra, 2002; Strogatz, 1994).

Systems Thinking is a conceptual framework, a body of knowledge and tools that has been developed to help see the interdependence and relationships of components within systems to better see systems as a whole rather than as disparate parts (Senge, 1990).

CHAPTER 2

Literature Review

The research began with a theoretical perspective by reviewing the literature of CAS, focusing on the attributes of CAS that might facilitate informal learning. A brief review of the literature of the influence of organizational culture on perception and the role of perception in evaluation was also conducted. The review then focused on informal learning; where and how it happens, how it contributes to performance, the need to measure it, and how it differs from formal learning. Finally, the limited literature of informal learning as a component of LDP's was reviewed.

Because there were few scholarly studies on measuring and evaluating informal learning in LDP's (Collis & Margaryan, 2005; Terrion, 2006), the literature review was assembled to relate the present study to ongoing dialogue in the three areas of CAS, informal learning, and measurement and evaluation of training. The goal of the review was to discover potential for overlapping areas for CAS, informal learning, and measurement and evaluation as illustrated in Figure 1. The measurement and evaluation of formal learning has been well researched for decades (Phillips, 2003; Swanson & Holton, 1999), so this review focused on the informal learning literature with occasional comparisons to formal learning. References were also made to the roles of perception and relevance in measurement and evaluation
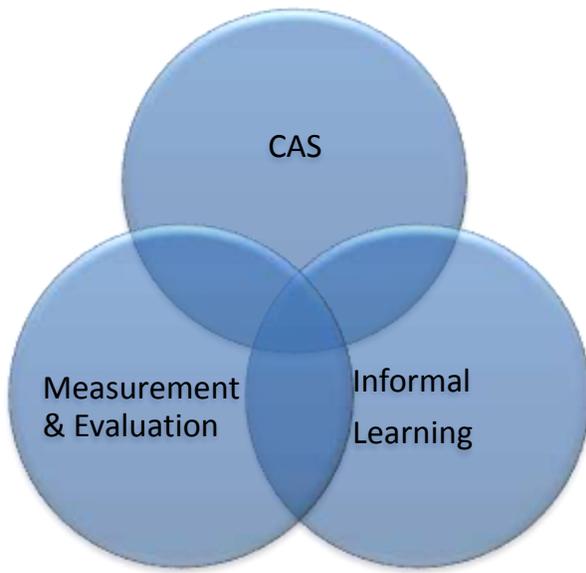
Figure 1. Overlap in primary areas of study

Complex Adaptive Systems and Learning

Since early in the 20th century organizations were thought of as machine-like and the

people within the organization as replaceable parts (Wheatley, 2006). This metaphor extended to

thinking that futures could be predicted and forecasted and still is an important characteristic of

organizations and their ability to thrive within a competitive marketplace. The idea that you

cannot manage it if you cannot measure it is still valid today (Rummler & Brache, 1995).

Measuring performance at the organizational, process, and individual levels of the organization

is still a necessary component of the recipe for success in the marketplace. But according to

Wheatley (2007), if "we think of organizations as machines, we remain blind to the power of

self-organized networks" (p. 63).

Self-organizing networks are a characteristic of living systems (Barabasi, 2002; Strogatz,

1994) and according to Capra (2002) we need to understand human organizations as living

systems in order for self-organizing networks to be accepted as a learning mechanism. "Self-

organization is the spontaneous emergence of new structures and new forms of behavior in open systems far from equilibrium, characterized by internal feedback loops and described mathematically by nonlinear equations" (Capra, 1996, p. 85). According to Stacey (1996) and Weick (2005), a new order and the learning taken from it can only happen when organizations form a tension between order and disorder that is characterized by a paradoxical creative tension between formal organizational systems, such as organizational charts, and shadow systems that work counter to them. Weick calls it the edge of chaos. An example of an informal shadow system is the "white space" in the organization chart described by Rummler and Brache (1995) where cross functional processes intersect with formal departmental boundaries. They suggest that the communication and learning that takes place in the white space is important to optimum performance. Their explanation of organizations as CAS is that organizations are systems; processing systems that constantly adapt.

An example of the new forms of behavior in Capra's definition of self-organization is Argyris' (1990) double loop learning. He suggests that we not only need to learn directly from the feedback from our actions but also by rethinking the assumptions of our learning. Constantly reflecting on our assumptions facilitates examination of our paradigms which can change our thinking, which can change our learning, which can change our actions. Senge (1990) seems to endorse the "far from equilibrium" stance by recommending that organizations experiment with new concepts and paradigms. The experimentation idea is also espoused by Davenport and Harris (2008) in their research on organizations that are successful with using business analytics as a competitive advantage.

Staying too close to equilibrium can dampen the creative dynamics that complexity science says is needed for survival (Rowland, 2007). The order that comes from the paradoxical

edge of chaos does not come from intentional command and control but from a complex spider web of sparsely connected elements (Kauffman, 1995). In living systems cognition, the process of knowing, is intertwined with the very process of life (Maturana & Varela, 1987). "The interactions of a living organism—plant, animal, or human—with its environment are cognitive interactions" (Capra, 2002, p. 34). Living and learning are always connected and help create the process of autopoiesis, the self-generation of living networks (Maturana & Varela, 1987). Autopoietic systems constantly undergo structural changes while maintaining their patterns of organization. Living systems couple themselves structurally to their environment which causes changes to both the organism and the environment. This dance of change is happening constantly and creates what Maturana and Varela (1987) call structural coupling.

> Structural coupling, as defined by Maturana and Varela, establishes a clear difference between the ways living and nonliving systems interact with their environments. For example, when you kick a stone, it will react to the kick according to a linear chain of cause and effect. Its behavior can be calculated by applying the basic laws of Newtonian mechanics. When you kick a dog, the situation is quite different. The dog will respond with structural changes according to its own nature and (nonlinear) pattern of organization. The resulting behavior is generally unpredictable. (Capra, 2002, p. 35)

Applying this concept to social organizations, Capra suggests that "organization networks are the intersection of designed change and the organization's living individuals and communities" (Capra, 2002, p. 35). A structurally coupled system, even a social system, is a learning system (Capra, 2002). The coupling produces each individual's context of meaning which contributes to their behavior.

Early work with self-organizing networks in nature was done by Strogatz (1994). He was

one of the founders of a new discipline; the science of networks. He later collaborated with

Watts (Watts, 1999; Watts & Strogatz, 1998). They were perplexed by the synchronicity of

fireflies flashing and crickets chirping; how thousands of insects can coordinate their luminous

flashing and chirping without a leader or conductor. Strogatz and Watts (1998) wanted to make

sense of the world with mathematics and focused on synchronicity; how insects organize to

produce order from chaos. Although it started with insects, it became apparent to them that self-

organizing networks had common patterns of connection and were everywhere; Hollywood, the

U.S. power grid, the World Wide Web, the human cell, and neurons. It also became apparent

that network science was a subset of complexity science/new science and that human knowledge

exists in relationships in detailed patterns of interaction among people (Rowland, 2007). More

specifically to learning and performance within organizations, McDaniel (2007) stated:

"The quality of relationships may be more important to systems performance than the quality of

the agents" (p. 35). Human knowledge is one phenomenon thought to be autopoietic (Juarrero,

1999).

> One implication here is that, assuming an intention to learn and perform, people left to
>
> their own devices will find ways to do so that may prove more effective than those
>
> contrived by someone else, for example a manager outside the group. (Rowland, 2007, p.
>
> 12)

Rowland (2007) further states that synchronicity is also autopoietic and not obtained by

command and control but by relationships. This suggests that how people self-organize and

behave in a group, may have implications for learning and network science may be one of the

links between CAS and measurement through patterns of relationships.

These patterns of relationships, social network structures, are mostly clustered into closed circles based upon the people we see and interact with most (Barabasi, 2002). Yet, according to Granovetter (1973) and Weick (2001), weak ties are needed within our network to learn more than parochially what is close to us. Weak ties are those that are outside of the clustering of relatives, friends, and co-workers and they reduce distortion in information flowing through social networks (Cross & Thomas, 2009). It is a paradox that the world is very small with everyone only a few steps from each other (Watts, 1999), yet much clustered. According to Barabasi (2002), just a single random link outside of our immediate clustering can have an enormous effect and can make a big difference in the amount of diverse information and learning we are exposed to. The key, according to Barabasi (2002), is hubs. In every network he studied—Hollywood actors, the U.S. power grid, the World Wide Web, the human cell, the nervous system—there were hundreds and sometimes thousands of connections but only a relative few hubs; central nodes that were connected to an enormous number of other nodes directly or indirectly. For example, links on the World Wide Web were not evenly spread, most websites had very few links but there were some where there were a huge and growing number of connections; hubs (Albert, Jeong, & Barabasi, 1999). The study also suggested that it is not a random world. It seemed to have a self-organizing principle based around hubs. In every network in which hubs were found—transportation networks, computer chips, the U.S. power grid, and the human cell—there were a very few number of hubs with many connections and many other nodes with very few connections. One of the implications of the self-organizing principle is that many nodes can be taken away and the network will still operate as long as the absent node is not a hub. Networks have strengths and weaknesses. In human organizations,

this implies that organizational networks have the possibility of being mapped and measured

(Cross & Thomas, 2009).

According to Goldstein (1999), the developmental result of self-organization in CAS is

unique patterns and characteristics that emerge. Emergence is the process of interconnected

behaviors that can lead to complex patterns of learning and behavior without any predetermined

or centrally controlled instructions or guidance (Rowland, 2007). These patterns emerge through

self-organization or autopoiesis (Maturana & Varela, 1987). Rowland (2007) suggests that this

autopoietic explanation of learning and performance is a bottom-up process. Social networks

and communities of practice are examples of emergent structures (Capra, 2002). The source of

knowledge happens from the daily dynamic interactions with the environment, including other

workers. This opposes the notion that learning and performance are more influenced by a central

command and control or striving to achieve pre-determined goals (Eoyang, 2007). Traditional

efforts tend to assume that interventions at one level in the organization will produce a

predictable, linear outcome at another level (Rowland, 2007). Rowland (2007) points to an

exception by Knuf and Lauer (2006) in implementing autopoietic "lean systems" (p. 718) that

"evolve in a process of self-determination that demands continuous reflection" (p. 718). Lean

strives for perfection knowing it can never be reached.

Unpredictability is a key characteristic of emergent systems in CAS and emergence

typifies novelty and surprise in CAS. Emergence is not a random construct but "is the result of

nonlinear dynamics generating new properties at the macro level of analysis" (McDaniel, 2007)

as cited in Goldstein, 1999, p. 24).

A social network, too, is a nonlinear pattern of organization, and concepts developed in

complexity theory, such as feedback or emergence, are likely to be relevant in a social

context as well. But the nodes and links of the network are not merely biochemical.

Social networks are first and foremost networks of communication involving symbolic

language, cultural constraints, relationships of power, and so on. To understand the

structures of such networks, we need to use insights from social theory, philosophy,

cognitive science, anthropology, and other disciplines. A unified systemic framework for

the understanding of biological and social phenomena will emerge only when the

concepts of nonlinear dynamics are combined with the insights from these fields of study.

(Capra, 2002, p. 82)

CAS and their environments interact in a nonlinear manner and affect each other in a

process of co-evolution (McDaniel, 2007). They influence the development of each other

(Kauffman, 1993, 1995). Co-evolution is a product of self-organization and is facilitated by

everyday conversations, rather than through external command and control (Rowland, 2007). It

is part of the unfolding that occurs in CAS.

If emergence and unpredictable unfolding are characteristics of CAS then learning on the

fly is necessary to make order out of chaos. People must learn as the world unfolds and learn

from disjointed bits of information (March, Sproull, & Tazmus, 1991). "The most important

learning we do flows from the trial-and-error actions we take in real time and especially from the

way we reflect on those actions as we take them" (Stacey, 1995, p. 17). "We must understand

that learning is concurrent with action. We act in order to learn" (McDaniel, Jordan, & Freeman,

2003, p. 273). This is consistent with Senge (1990), who suggests that experimenting within

organizations helps create the "learning organization". March, Sproull, and Tasmuz (1991) call

informal learning the critical skill of learning from samples of one. Finally, McDaniel (2007)

suggests that CAS require a deeper learning and must focus on developing exploitative—

learning that is close to or within the current body of knowledge—and explorative—learning that

expands into new areas with experimenting—strategies (Gupta, Smith, & Shalley, 2006).

Organizational Culture, Perception, and Evaluation

Schein defines the culture of a group as,

A pattern of shared basic assumptions that the group learned as it solved its problems of

external adaption and internal integration that has worked well enough to be considered

valid and, therefore, to be taught to new members as the correct way to perceive, think,

and feel in relation to those problems. (Schein, 1992, p.12)

During this study, the researcher could not possibly understand the McKesson culture as

if he lived it every day. This lack of understanding is important because the participants in the

study were asked to rate their perceived relevance of informal and formal learning and perceived

importance of the leadership skills in the survey and perceptions can be influenced by

organizational culture (Baek-Kyoo Joo, 2009; Lagerstrom, 2005; Monsen, 2005; Moxnes &

Eilertsen, 1991; Sambrook & Stewart, 2000; Schein, 1992; Stevens, 1999). This knowledge

limitation caused the researcher to be more cautious in developing conclusions.

Schein (1992) suggests that there are three levels of culture and they refer to the level of

visibility to an observer. First are artifacts; visible organizational structures and processes.

Secondly, espoused values are espoused justifications such as strategies, goals, and philosophies.

Lastly, and least visible, are basic underlying assumptions that are the main driver of behavior

although often subconscious and unknown. An observer can easily see, touch, and hear the

outward manifestations of a culture but they are difficult to interpret. Espoused values are

usually based upon a founder or other leader's values and can be learned throughout an

organization, but as Argyris and Schon (1978) suggest regarding espoused values, it is easier to predict what someone will say versus what someone will do.

Just as culture can influence perceptions, perceptions can influence evaluation results. Kirkpatrick's first two levels deal with learning. Although Level 2 is called learning, it is meant to be measured learning, not perceived learning that is self-reported according to Roszkowski & Soven (2010). They claim that the actual learning in Level 2 was meant by Kirkpatrick to be measured by testing, observation, etc. and that self-reported learning is a reaction that falls into Level 1. Ilian (2004) even asserts that self-reported learning should be an intermediate level between Levels 1 and 2. Even so, it can be an insightful measure when designed well and kept in perspective (Lee & Pershing, 1999; Pershing, 2006) even though research exists to show that measuring and asking (perception and reality) of this can be at odds (Dixon, 1990; Lake, 2001; LeRouzie, Oudi, & Zhou, 1999).

In their study, Roszkowski and Soven (2010), looked at the relationship between the perceptions of amount learned, its perceived relevance or usefulness, and satisfaction. Their findings suggest a positive correlation between the subjects' self-reporting of how much they learned and how useful they found the topic of the training to be. "Perceptions of usefulness are almost equal to perceptions of how much was learned in being able to predict satisfaction with the training" (Roszkowski & Soven, 2010, p. 72).

Alliger, Tannenbaum, Bennet, Traver, & Shotland (1997) suggest that self-reported reaction criteria be divided into subcategories of *affect* and *utility*. Affective items are those related to emotional issues such as enjoyment and utility items deal with usefulness and relevance. Indeed Alliger et al. (1997) give examples such as "To what degree will this training influence your ability to perform your job?" "Was this training job relevant?" and "Was the

training of practical value?" (p. 344). However, Sitzman, Brown, Casper, Ely, and Zimmerman (2008) found that it makes no difference to separate reaction criteria into categories. However, data analysis in Brown (2005) and Harrison (1992) suggest high correlations between relevance-enjoyment and relevance-satisfaction. Finally, Giangreco, Sebastiani, and Peccei (2009) "found relevance to be the single strongest predictor of satisfaction" (as cited in Roszkowski & Soven, 2010, p. 74).

Informal Learning

There is a continuum of learning from formal to informal where formal learning is characterized by structured, planned activities such as a training course and informal learning is more unstructured learning on-the-job, mentoring, and coaching. Dale and Bell (1999) define informal learning as learning which takes place in the context of work, is related to an individual's job performance, and is not part of a program or curriculum. Despite the increased cache of *learning organizations* (Senge, 1990; Vaill, 1996), informal learning still does not receive the credit it deserves (Livingstone, 2000). Livingstone (2000) found that those in the workforce or expecting to be soon spent an average of about six hours per week in informal learning as opposed to about four hours per week in more organized education courses (Belanger & Valdivielso, 1997). Although this study focused on informal learning in the workplace, it is worth noting that when combined with household work-related and community volunteer work-related informal learning the average time spent per week in informal learning is fifteen hours (Livingstone, 2000). He uses an iceberg metaphor to describe the relative amount of time spent in informal learning versus formal learning, with the exposed tip of the iceberg being formal learning. Weick (2001)) considers informal learning as part of sensemaking in organizations. Informal learning can also be the application of formal knowledge acquisition to new situations

as part of the formal training transfer climate in the form of social networks (Hatala & Lutta, 2009). Social learning theory states that people learn from each other by observation, imitation, and modeling (Bandura, 1977).

According to Eraut (2004), some of the characteristics of the informal end of the continuum are that the learning is implicit, unintended, opportunistic, and unstructured and absent a teacher. The middle portion of the continuum includes activities such as mentoring with most coaching falling on the more formal side. Table 3 shows Eraut's (2000) typology of informal learning.

Table 3

A Typology of Informal Learning

Time of focus	Implicit learning	Reactive learning	Deliberative learning
Past episode(s)	Implicit linkage of past memories with current experience	Brief near-spontaneous *reflection* on past episodes, events, incidents, experiences	*Discussion* and *review* of past actions, communications, events, experiences
Current experience	A selection from experience enters episodic memory	*Noting* facts, ideas, opinions, impressions; *asking* questions; *observing* effects of actions	*Engagement* in decision making, problem solving, planned informal learning
Future behaviour	Unconscious expectations	*Recognition of* possible learning opportunities	*Planning* learning opportunities; *rehearsing* for future events

Note. (Eraut, 2000).

The columns in Table 3 display three levels of intention; implicit learning, reactive learning, and deliberative learning. These are similar to Schon's (1983) categories of "knowledge in use", "reflection on action", and "reflection in action" although Eraut (2004) argued that Schon's last category was problematic because of its reference to a metacognitive process which is not learning at all (as cited in Smith, 2006). Reber's (1993) research defined implicit learning as the acquisition of knowledge independently of deliberate intention and the absence of explicit knowledge about what was learned and demonstrates that prior learning episodes that are not recalled may still affect performance. Eraut (2004) argues though, that awareness of explicit knowledge does not preclude implicit learning from happening. Reactive learning occurs during action and is near-spontaneous, but is intentional (Eraut, 2004). Deliberative learning includes both *deliberate* learning (Tough, 1971),

> Where there is a definite learning goal and time is set aside for acquiring new knowledge, and engagement in deliberative activities such as planning and problem-solving, for which there is a clear work-based goal with learning as a probable by-product. (Eraut, 2004, p. 250)

Because activities like planning and problem-solving are commonplace in a work setting, people often do not consider them learning activities even though considerable learning often occurs (Eraut, 2004).

The three rows of Table 3 are time-based categories that represent the relationship between the occurrence and the experience that generated it. While the context of learning is always in the present, the focus can be in the past, present, or future. When can I use it or what past memories can link to the present experience; conscious or unconscious? Eraut (2004)

admits that his terminology is open to challenge because he had to create terms for aspects of

reactive learning which has scant mention in the literature.

Task Performance
Speed and fluency
Complexity of tasks and problems
Range of skills required
Communication with a wide range of people
Collaborative work

Awareness and Understanding
Other people, colleagues customers, managers, etc.
Contexts and situations
One's own organization
Problems and risks
Priorities and strategic issues
Value issues

Personal Development
Self evaluation
Self management
Handling emotions
Building and sustaining relationships
Disposition to attend to other perspectives
Disposition to consult and work with others
Disposition to learn and improve one's practice
Accessing relevant knowledge and expertise
Ability to learn from experience

Teamwork
Collaborative work
Facilitating social relations
Joint planning and problem solving
Ability to engage in and promote mutual
learning

Role Performance
Prioritisation
Range of responsibility
Supporting other people's learning
Leadership
Accountability
Supervisory role
Delegation
Handling ethical issues
Coping with unexpected problems
Crisis management
Keeping up-to-date

Academic Knowledge and Skills
Use of evidence and argument
Accessing formal knowledge
Research-based practice
Theoretical thinking
Knowing what you might need to know
Using knowledge resources (human, paper-based, electronic)
Learning how to use relevant theory (in a range of practical situations)

Decision Making and Problem Solving
When to seek expert help
Dealing with complexity
Group decision making
Problem analysis
Generating, formulating and evaluating options
Managing the process within an appropriate timeresponse scale
Decision making under pressurised conditions

Judgement
Quality of performance, output and outcomes
Priorities
Value issues
Levels of risk

Figure 2. What is being learned in the

workplace? (Eraut et al., 2004)

Building on this framework, Eraut (2004) identifies three types of knowledge; codified, cultural, and personal and all three contribute to performance especially if one looks at performance as a period of time and not just a snapshot in time. Codified knowledge is found in nearly all workplaces and is usually in the form of documents, manuals, correspondence, and records that are organization-specific. Cultural knowledge is acquired informally through social activities and is so often taken for granted that its influence on behavior is invisible to the participants. Personal knowledge is "what individuals bring to situations that enables them to think, interact, and perform" (Eraut, 2004, p. 263). Figure 2 shows Eraut's (2004) topology of what is being learned in the workplace. Eraut's hope was that people could use Figure 2 as a starting point for developing a typology for their own workplace. It also holds promise as an evaluation tool.

Another view is to look at informal learning as just implicit learning which results in tacit knowledge—what we know but cannot articulate (Polanyi, 1967). As Eraut (2000) notes, however, tacit knowledge can be made explicit and explicit learning can lead to tacit knowledge. Smith (2006) suggests that probably no knowledge is totally implicit or explicit.

Another way to look at informal learning is through the lens of situated learning (Smith, 1994). Because informal learning is social as well as an individual phenomenon, the context in which we learn helps shape our learning (Capra, 2002). Salomon (1993) was a leader in the research of distributed cognition which suggested that much of learning happens from tools and social networks outside of individual's heads. People's thinking is affected by relationships with others and different learning takes place in different situations. Smith (2006) suggests that situated learning can be examined by thinking in terms of involvement in communities of practice (COPs).

Learning involves the whole person; it implies not only a relation to specific activities,

but a relation to social communities—it implies becoming a full participant, a member, a

kind of person. In this view, learning only partly—and often incidentally—implies

becoming able to be involved in new activities, to perform new tasks and functions, to

master new understandings. Activities, tasks, functions, and understandings do not exist

in isolation; they are a part of broader systems of relations in which they have meaning.

(Lave & Wenger, 1991, p. 53)

Knowledge becomes situated in COPs and, according to Tennant (1997, p. 53) "it makes no

sense to talk of knowledge that is decontextualized, abstract or general". Four propositions come

under the umbrella of situated learning:

1. High-level or expert knowledge and skill can be gained from everyday experience at

    work, and in community or family.

2. Domain-specific knowledge is necessary for the development of expertise (i.e. much

    of expertise relies on detailed local knowledge of a workplace, locality, or industry.

3. Learning is a social process.

4. Knowledge is embedded in practice and transformed through goal-directed behaviour.

    (Tennant, 1999, p. 170)

Wenger (1996) characterized COPs as self-generating social networks that have a

common context of meaning. Wenger's three conditions for a community of practice are (a)

mutual engagement of its members, (b) joint enterprise, and (c) routines, rules of conduct, and

knowledge. Learning in context improves the quality of learning (Wenger et al., 2002). Capra

(2002) further states that empowered COPs help energize organizations through increased

flexibility, creativity, and learning potential. If the knowledge of experts is the residue of their

actions, thinking, and conversations, then the informal learning processes of storytelling, conversation, coaching and apprenticeship help facilitate informal learning. COPs provide these things and cultivation is the best way to foster them and to steward knowledge (Wenger et al, 2002). Wenger et al (2002) discuss measurement of the knowledge system and state "the best way to measure the value of knowledge is to see how it affects business processes—by solving a problem that saves costs, for example, or by producing information that closes a sale" (Wenger et al, 2002, p. 176).

Situated closer to the formal end of the learning continuum, COPs, along with mentoring and coaching, virtual knowledge sharing, and electronic performance support systems (EPSS) are four main categories of informal learning that are more intentional than unintentional. In a recent study, Knowledge Advisors Research (2009) found the following results (Table 4) for support of different types of informal learning in organizations.

Table 4

Support for Informal Learning

Type of informal learning	Percent of respondents who support type
Communities of Practice	73%
Mentoring and Coaching	56%
Virtual Knowledge Sharing	54%
Electronic Performance Support Systems	45%
Other	13%

For the study, COPs are defined as groups in organizations that form to share what they know, to learn from each other regarding some aspects of their work and to provide a

social context for that work. Mentoring refers to a developmental relationship between a

more experienced mentor and a less experienced partner. By contrast, coaching is

defined as a method of directing, instructing and training a person or group of people, to

achieve a goal or develop specific skills. Virtual knowledge sharing is an internal

learning mechanism that uses an electronic collaborative learning space. EPSS is defined

as an integrated web based environment that provides access to personalized information,

tools, and guidance to enable optimal job performance with minimum support and

intervention of others (Knowledge Advisors Research, 2009, pp. 2-3).

The study also sought to determine to what extent measurement of informal learning was

happening now, or expected to soon. Table 5 shows the results.

Table 5

Executives Requesting Measures of Informal Learning

Response	Percentage
Yes	21%
No, but expect to soon	41%
No, don't expect to	38%

The results show that 62% of respondents are either measuring informal learning now or expect

to soon. These data suggest that measuring informal learning is important to executives in

organizations.

Two studies were found that incorporate LDP's and informal learning (Collis &

Margaryan, 2005; Terrion, 2006). Collis and Margaryan (2005) studied the evaluation of formal

and informal learning as a way to improve learning design by embedding work-based learning

activities with a management training program for the Shell Corporation's Exploration and Production unit. The researchers expanded upon a set of design criteria, Merrill's First Principles of Instruction (Merrill, 2002), in an effort to iteratively improve the design of the Shell program. They evaluated the informal work-based activities to help in a continuous improvement program. However, one could argue that by *baking in* the informal work-based activities that the program was more formal than informal. It also could be considered inconsistent with the assumption of organizations characterized as complex adaptive systems which adheres to learning emerging naturally as a self-organizing interaction with the students' environments.

Terrion's (2006) research looked at a management leadership program for administrators at the University of Ottawa in Ottawa, Canada. The study's objectives were to evaluate the program's impact for the participants related to learning, behavioral change, and achievement of core competencies. Through semi-structured in-depth interviews the findings suggest that "informal learning strategies are the primary means by which University directors develop core competencies" (Terrion, 2006, p. 183). The strategies that were built into the program were "informal learning through greater self-awareness, the establishment and maintenance of social networks, or social capital, for discussion and problem solving by senior managers and for the development and reinforcement of skills" (Terrion, 2006, p. 183). These are informal learning strategies that are examples posited by Watkins and Marsick (1992) and suggest that formal learning can be designed for informal learning to take place. The study's conclusions also reinforce what was proposed by Enos et al. (2003) that "informal learning for managers is a social process" (p. 379).

CHAPTER 3

Methodology

The purpose of this research was to compare the perceived relevance of informal and

formal learning in the acquisition of skills in a leadership development program. The research

questions to be answered are:

1. What is the perceived relevance of informal learning in skill acquisition in a

    leadership development program?

2. What is the perceived relevance of formal learning in skill acquisition in a leadership

    development program?

3. What is the perceived relative importance of informal and formal learning in a

    leadership development program?

In order to answer these questions, an electronic survey was sent to the participants in a

leadership development program within the McKesson Corporation. A population of

participants who completed the program between January 2009 and April 2010 was selected.

This represented a population size of 399 participants.

Research Design

Surveys can be used in research for both descriptive and interpretive purposes and are a

common method to collect data from and about people (Fink, 2003). Surveys can also be

administered as a questionnaire, an in-person interview, or telephone/videoconference interview.

The data collection method to be used for this study was a web-based survey sent via email to the participants in the McKesson Center for Leadership's Lead the Way program and generalizations from the results to other organizations were very limited. However, because informal learning in corporate learning and development programs is a nascent field of study, it is expected that the results will add significantly to the body of knowledge and provide a basis from which to conduct further research and theory development.

All participants in this study have access to email so an electronic survey using an online service, Zoomerang, was used. Zoomerang is a service that the McKesson Center for Learning has been using to send surveys and multi-rater feedback instruments for the Lead the Way Program for two years. It was anticipated that this method would provide a high level of familiarity for the participants and thus a high response rate.

Population

The McKesson Center for Learning (MCL) provides most of the training for the McKesson Corporation's thirteen business units in North America. The Lead the Way program targets mid-level managers and supervisors and all managers with these titles or responsibilities are expected to participate in Lead the Way while those who are preparing for future leadership roles, as well as team and project leaders, are encouraged to participate. The program is built on nine instructional modules along with a few e-learning sessions that help provide a well-rounded leadership curriculum. Courses can be taken in any sequence and should be completed within a span of two years. Upon successful completion of this curriculum, participants will earn the McKesson Leadership Certification. This designation sets them apart as key associates who are capable and committed to leading McKesson toward future growth and success. The specific population for this study included participants in McKesson Pharmaceutical business units who

attended a program between November 2009 and April 2010. This comprised 399 participants from many geographical locations within the United States.

Instrumentation

The survey design is a simple questionnaire (Appendix A) consisting of three questions asked about the nine core skills targeted by the Lead the Way. The core skills targeted by MCL are consistent with the scholarly leadership skill literature (Bass, 1985; Bennis, 1989; Bono & Judge, 2003; Gardner, 1990; House, 1977; House & Shamir, 1993; Kouzes & Posner, 1995). The questionnaire provides instructions and an explanation of the five point response scale as well as definitions of informal and formal learning. In question 1, the participants were asked to rate their perceived relevance of informal learning in acquiring each of the nine core skills. In question 2, they were asked to rate their perceived relevance of formal learning in acquiring each of the nine core skills. And in question 3 they were asked to rate their perceived importance of each of the core skills in their development as a leader.

MCL uses questionnaires with a five point response scale in which one is the highest score and five is the lowest. Because of this preference by MCL, the response scale for this study's questionnaire was the same for the sake of consistency and to reduce confusion for the respondents. To improve the validity of the questionnaire prior to use, it was tested by sending it to the five performance consultants within the MCL for their review and comments. The performance consultants are involved in all aspects of the Lead the Way program from conducting needs analyses within the business units to designing, developing, implementing, and evaluating the program. They are an important interface between MCL and the business units for which they are responsible. Three of the performance consultants responded to the request.

Some of the language in the survey was changed based upon the performance consultants'
suggestions.

A post hoc validity analysis for predictive validity was also conducted. Five doctoral
level HRD and/or leadership scholars were presented a summary of the data and asked to give
their conclusions. Their conclusions were unanimously identical to the researcher's in content
and scope.

Variables for the Study

The independent variables for the study are the nine core skills targeted by the MCL in
their design of the program; 1) Adaptability, 2) Communication, 3) Initiative, 4) Innovation, 5)
Job Knowledge, 6) Problem Solving and Decision Making, 7) Reliability, 8) Teamwork, and 9)
Time Management. Definitions are contained in Appendix C. These core skills were determined
by rigorous needs analyses conducted by the MCL performance consultants and are consistent
with the leadership literature.

The dependent variables of the study are based upon the self-reporting of the participants
in the questionnaire. They are listed below.

1. Perceived relevance of informal learning in acquiring the core skills (measured in a
   five point response scale)

2. Perceived relevance of formal learning in acquiring the cores skills (measured in a
   five point response scale)

3. Perceived importance of each core skill in the development of the participant as a
   leader (measured in a five point response scale)

Data Analysis Procedures

Data analysis was performed using SPSS's PASW Statistics GradPack 18 Student Version. The primary statistical procedures used included descriptive statistics and paired-samples *t*-tests. Paired-samples t-tests compare the means of two variables for each case and determine whether the mean of the differences between the two variables is significantly different from zero. These procedures were used to determine the relative relevance of informal learning versus formal learning in acquiring the targeted core skills of the Lead the Way program, differences in the perceived importance of acquiring the core skills, and the correlation of informal learning and formal learning to the most important skills as reported by the respondents to the questionnaire.

Due to the nascent nature of this field of study, there were no hypotheses for the study. Conclusions were drawn by the researcher based upon the data analysis and extant literature. As a quantitative survey study with little generalization value, the conclusions and recommendations were cautiously developed and will be used as a foundation for questions and hypotheses for future research.

CHAPTER 4

Results

Survey Sample

The population for the survey was developed from a list of supervisors and managers, who attended at least one module of the McKesson LTW program between November, 2009 and April, 2010. The size of the sample was 399. The survey was sent via email using Zoomerang on May 28, 2010 and remained open until June 14, 2010. No advance notice was given to the respondents before the survey was first sent and after the first week there were 71 responses representing a response rate of 17.7%. Before a reminder email was sent during the second week, an email was sent by one of the McKesson performance consultants urging the participants to complete the survey. By the time the survey closed the response rate had improved to 37%, or 149 responses. While this limited the generalization of the study, statistical inference to a larger population was not considered necessary to answer the research questions of the study. Missing values were taken into account by either the analysis by analysis or listwise methods depending on the statistical test used.

Relevance of Informal Learning

The first item of the questionnaire asked the respondents to rate, on a response scale of one to five with one being the highest score, the relevance of informal learning in acquiring each of the nine leadership skills. Informal learning was defined on the questionnaire as learning

which takes place in the context of work, is related to an individual's job performance, and is not

part of program or curriculum; including mentoring.

The descriptive statistics, in ascending order of their means, are shown below in Table 6.

The skills related to informal learning are coded as follows:

- Adaptability = ADAP

- Communication = COMM

- Initiative = INIT

- Innovation = INNO

- Job Knowledge = KNOW

- Problem Solving and Decision Making = PSDM

- Reliability = RELI

- Teamwork = TEAM

- Time Management = TIME

The table contains the nine skills, n counts, the range of scores listed as the minimum and

maximum, the means and standard deviations of each. The n counts vary due to missing values

in the responses and the valid count is 140 because of the listwise method of handling the

missing values. If a value was missing for any variable for any case, it was not used.

The standard at McKesson is for surveys to be response scaled so that "1" is the highest

score and "5" is the lowest score. The analysis for this study remained consistent with that

convention. Job Knowledge (KNOW) was reported as having the most relevance for informal

learning and Innovation (INNO) was reported as being the least relevance for informal learning.

Because relevance within informal and formal learning was not necessary to answering the

research questions, mean differences were not tested for statistical significance. Table 6 does,

however, provide a visual cue for the hierarchy of relevance of informal learning for acquiring

the nine leadership skills as reported by the respondents as well as the dispersion of scores

around the mean. The listwise method of accounting for missing values was used for this

analysis and the valid sample was 140.

Table 6

Informal Learning Descriptive Statistics

	N	Mean
KNOW	147	1.82
PSDM	149	1.94
ADAP	149	2.01
TEAM	148	2.03
COMM	147	2.05
INIT	147	2.11
TIME	145	2.28
RELI	149	2.30
INNO	149	2.35
Valid *N*	140	

*Note. R*esponse scale 1-5; 1 is highest and 5 is lowest.

Relevance of Formal Learning

The second item of the questionnaire asked the respondents to rate, on a response scale of

one to five with one being the highest score, the relevance of formal learning in acquiring each of

the nine leadership skills. Formal learning was defined on the questionnaire as structured

learning that takes place in a classroom environment where learners are removed from the day-to-day work to engage in lectures, discussions, simulations, role plays, and other instructional activities. This includes computer and web-based courses. The descriptive statistics, in ascending order of their means, are shown below in Table 7. The skills related to formal learning are coded as follows:

- Adaptability = ADAPF

- Communication = COMMF

- Initiative = INITF

- Innovation = INNOF

- Job Knowledge = KNOWF

- Problem Solving and Decision Making = PSDMF

- Reliability = RELIF

- Teamwork = TEAMF

- Time Management = TIMEF

The self-reported, perceived relevance of formal learning in acquiring the nine leadership skills is somewhat different than that reported for informal learning. Communication (COMMF) was reported as having the most perceived relevance and Reliability (RELIF) the least. As was the case with informal learning, statistical significance with formal learning relevance was not necessary to answer the research questions of the study. Tables 6 and 7 may, however, provide an impetus for other problems and questions for further research. Using the listwise method for missing values, the number of valid cases for the ranked descriptive statistics was 136.

Table 7

Formal Learning Descriptive Statistics

	N	Mean
COMMF	147	2.14
TIMEF	147	2.35
PSDMF	147	2.43
KNOWF	145	2.48
TEAMF	147	2.53
INNOF	145	2.77
INITF	143	2.82
ADAPF	147	2.88
RELIF	146	3.05
Valid *N*	136	

Note. R=Response scale 1-5; 1 is highest and 5 is lowest.

Leadership Skill Importance

The third item on the questionnaire asked the respondents to rate the importance of the

nine leadership skills in their leadership development. The purpose of obtaining these data was

to be able to answer research question 3; what is the relative importance of informal learning and

formal learning in a leadership development program? The skills are ranked in ascending

numerical order (descending importance) in Table 8. The skills related to importance are coded

as follows (note that the "I" at the end of each code relates to importance, not informal):

- Adaptability = ADAPI

- Communication = COMMI

- Initiative = INITI

- Innovation = INNOI

- Job Knowledge = KNOWI

- Problem Solving and Decision Making = PSDMI

- Reliability = RELII

- Teamwork = TEAMI

Table 8

Skill Importance Descriptive Statistics

	N	Mean
PSDMI	144	1.31
COMMI	148	1.32
TEAMI	146	1.46
RELII	147	1.46
ADAPI	146	1.53
INITI	145	1.58
TIMEI	147	1.60
KNOWI	145	1.60
INNOI	146	1.84
Valid *N*	139	

(response scale 1-5; 1 is highest and 5 is lowest)

Because the skill importance ranking is necessary to combine with the results of the paired-sample *t*-test results of perceived informal and formal learning relevance to answer research question 3 the statistical significance of each mean difference was calculated. The paired-samples *t*-test procedure compares the means of two variables for a single group. The procedure computes the differences between values of the two variables for each case and tests whether the average differs from zero. Each skill was paired with every other skill to determine whether each difference was statistically significant. Each analysis used a 95% confidence level (α=.05). Problem Solving and Decision Making (PSDMI) was ranked the most important so it

Table 9

Problem Solving and Decision Making T-test

	Matched Pairs	Mean Diff.	*SD*	*t*-test	*df*	Sig. (2-tailed)
Pair 1	PSDMI - COMMI	-0.007	0.466	0.179	143	0.858
Pair 2	PSDMI - TEAMI	-0.154	0.561	-3.282	142	0.001
Pair 3	PSDMI - RELII	-0.146	0.579	-3.023	143	0.003
Pair 4	PSDMI - ADAPI	-0.218	0.547	-4.753	141	0.000
Pair 5	PSDMI – INITI	-0.259	0.578	-5.354	142	0.000
Pair 6	PSDMI - TIMEI	-0.285	0.644	-5.305	143	0.000
Pair 7	PSDMI - KNOWI	-0.287	0.657	-5.221	142	0.000
Pair 8	PSDMI - INNOI	-0.524	0.670	-9.367	142	0.000

was matched with the other eight skills. Table 9 shows the results. The importance of PSDMI was statistically significantly than every other skill except Communication (COMMI). PSDMI

and COMMI are statistically tied for the number one spot in importance in respondents'

leadership development.

Table10 shows the results of pairing COMMI with the remaining seven skills. The mean

difference of COMMI is statistically significant than each of the seven that were rated less in

importance. The test was conducted with a 95% confidence level and each *p*-value was well

within the acceptable range, in fact five of the seven would have been acceptable at a 99% level.

Table 10

Communication T-test

Matched Pairs	Mean Diff.	SD	*t*-test	*df*	Sig. (2-tailed)
Pair 1 COMMI - TEAMI	-0.151	0.579	-3.142	145	0.002
Pair 2 COMMI - RELII	-0.156	0.558	-3.402	146	0.001
Pair 3 COMMI - ADAPI	-0.219	0.532	-4.981	145	0.000
Pair 4 COMMI - INITI	-0.276	0.559	-5.945	144	0.000
Pair 5 COMMI - TIMEI	-0.293	0.664	-5.339	146	0.000
Pair 6 COMMI - KNOWI	-0.290	0.666	-5.239	144	0.000
Pair 7 COMMI - INNOI	-0.534	0.696	-9.269	145	0.000

Table 11 shows the results of comparing the mean of Teamwork (TEAMI) with the

remaining six skills. The mean difference of TEAMI is statistically significant with all of the

remaining skills except Reliability (RELII) and Adaptability (ADAPI). These results are not

surprising given that the means of TEAMI and RELII were virtually identical and the difference

with ADAPI was 0.07. TEAMI AND INNOI would have been significant at a 99% confidence

level.

Table 11

Teamwork T-test

	Matched Pairs	Mean Diff.	*SD*	*t*-test	*df*	Sig. (2-tailed)
Pair 1	TEAMI - RELII	-0.007	0.557	-0.149	145	0.882
Pair 2	TEAMI - ADAPI	-0.076	0.659	-1.390	143	0.167
Pair 3	TEAMI - INITI	-0.125	0.624	-2.402	143	0.018
Pair 4	TEAMI - TIMEI	-0.144	0.643	-2.702	145	0.008
Pair 5	TEAMI - KNOWI	-0.138	0.723	-2.298	144	0.023
Pair 6	TEAMI - INNOI	-0.386	0.738	-6.304	144	0.000

Table 12

Reliability T-test

	Matched Pairs	Mean Diff.	*SD*	*t-test*	*df*	Sig. (2-tailed)
Pair 1	RELII - ADAPI	-0.083	0.583	-1.708	144	0.090
Pair 2	RELII - INITI	-0.110	0.591	-2.250	144	0.026
Pair 3	RELII - TIMEI	-0.136	0.637	-2.589	146	0.011
Pair 4	RELII - KNOWI	-0.138	0.561	-2.963	144	0.004
Pair 5	RELII - INNOI	-0.377	0.706	-6.447	145	0.000

Table 12 shows the results of comparing RELII with the remaining five skills. The mean difference of RELII is statistically significant from all except Adaptability (ADAPI). Again, this was not surprising because their mean difference was 0.083. The mean difference between RELII and INNOI would have been significant at a 99% confidence level.

Table 13 shows the results of comparing ADAPI with the remaining four skills. The mean difference of ADAPI is only statistically significant with Innovation (INNOI). This is explained by the close bunching of the means of the first three pairs and a much greater difference of 0.313 for the ADAPI-INNOI pair.

Table 13

Adaptability T-test

	Matched Pairs	Mean Diff.	*SD*	*t*-test	*df*	Sig. (2-tailed)
Pair 1	ADAPI - INITI	-0.056	0.579	-1.156	142	0.250
Pair 2	ADAPI - TIMEI	-0.048	0.627	-0.927	144	0.356
Pair 3	ADAPI - KNOWI	-0.049	0.695	-0.842	142	0.401
Pair 4	ADAPI - INNOI	-0.313	0.642	-5.841	143	0.000

Table 14 shows the results of comparing Initiative (INITI) with the remaining three skills. The INITI mean is only statistically significant with INNOI. The mean differences for the pairs of INITI-TIMEI and INITI-KNOWI were 0.021 and 0.028 respectively. The mean difference for INITI-INNOI was relatively much greater at 0.264.

Table 14

Initiative T-test

	Matched Pairs	Mean Diff.	*SD*	*t*-test	*df*	Sig. (2-tailed)
Pair 1	INITI - TIMEI	-0.021	0.618	-0.403	144	0.687
Pair 2	INITI - KNOWI	-0.028	0.721	-0.464	142	0.644
Pair 3	INITI - INNOI	-0.264	0.614	-5.154	143	0.000

Table 15 shows the results of comparing Time Management (TIMEI) with the remaining two skills. The TIMEI mean is only statistically significant with INNOI. The means of TIMEI and KNOWI were virtually identical. The TIMEI-INNOI pair would have been significant at a 99% confidence level.

Table 15

Time Management T-test

	Matched Pairs	Mean Diff.	*SD*	*t*-test	*df*	Sig. (2-tailed)
Pair 1	TIMEI - KNOWI	0.000	0.726	0.000	144	1.000
Pair 2	TIMEI - INNOI	-0.240	0.727	-3.985	145	0.000

Table 16 shows the results of comparing Job Knowledge with Innovation. The difference in their means is statistically significant. INNOI was significantly different at a 99% confidence level as it was for each of nine skills suggesting that INNOI could almost be considered an outlier in importance relative to the other eight skills.

Table 16

Job Knowledge T-test

Matched Pairs	Mean Diff.	*SD*	*t*-test	df	Sig. (2-tailed)
Pair 1 KNOWI - INNOI	-0.236	0.719	-3.939	143	0.000

Comparing Perceived Informal and Formal Learning Relevance

To answer the research questions, the researcher first ranked the means within both informal learning and formal learning perceived relevance then used a paired-samples *t*-test for each pair of the skills using informal and formal learning. For example, a *t*-test was conducted for ADAP and ADAPF, COMM and COMMF, and the remaining seven similar pairs. Figure 3, a graphical representation of Table 6, more clearly shows from highest to lowest, the ranking of the informal learning relevance mean of each skill and Figure 4, a graphical representation of Table 7, shows the ranking of the formal learning relevance mean of each skill. Figure 3 shows that Job Knowledge was rated the most relevant for informal learning in acquiring the nine leadership skills followed by Problem Solving and Decision Making, Adaptability, Teamwork, Communication, Initiative, Time Management, Reliability, and Innovation.

Informal Learning Relevance Rankings
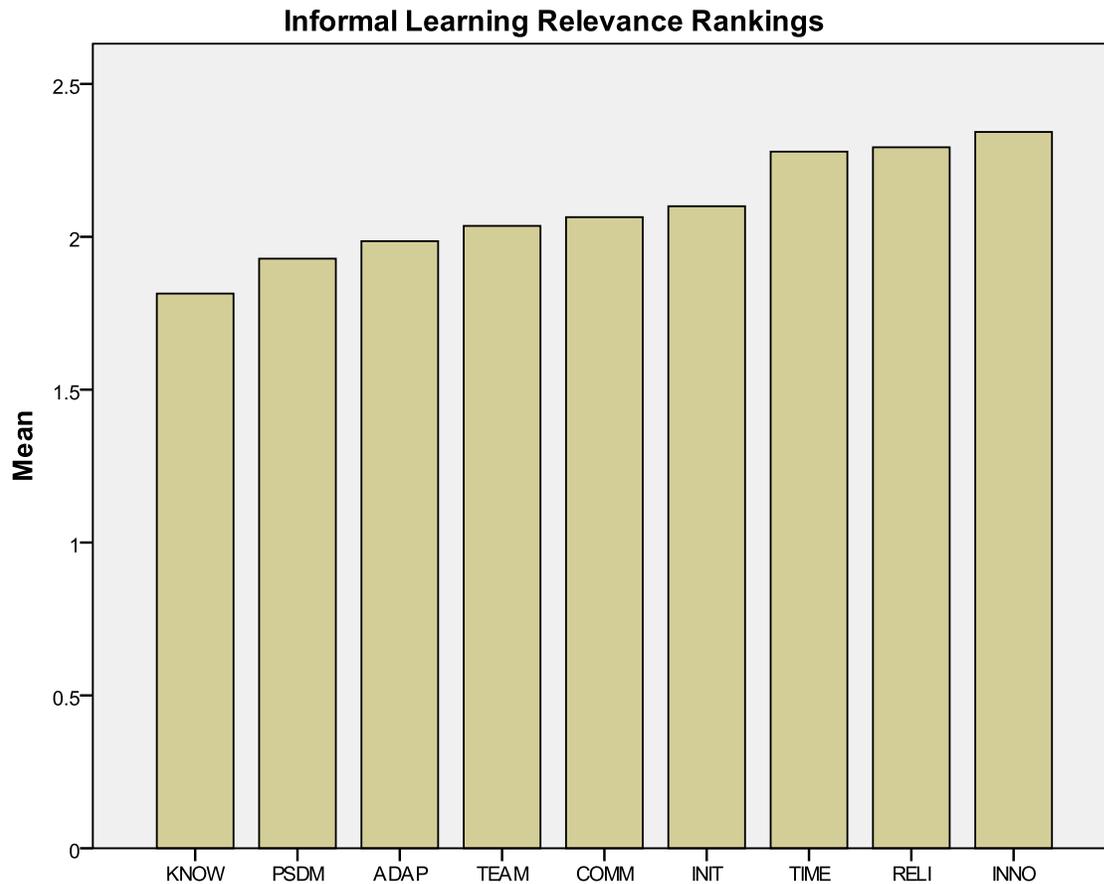
Figure 3. Ranking of informal learning relevance (1 is highest score and 5 is lowest)

As shown in Figure 4, formal learning was ranked most relevant for Communication followed by Time Management, Problem Solving and Decision Making, Job Knowledge, Teamwork, Innovation, Initiative, Adaptability, and Reliability. It was not necessary to check for statistic significance of the mean differences within informal and formal learning to answer the questions in this study.
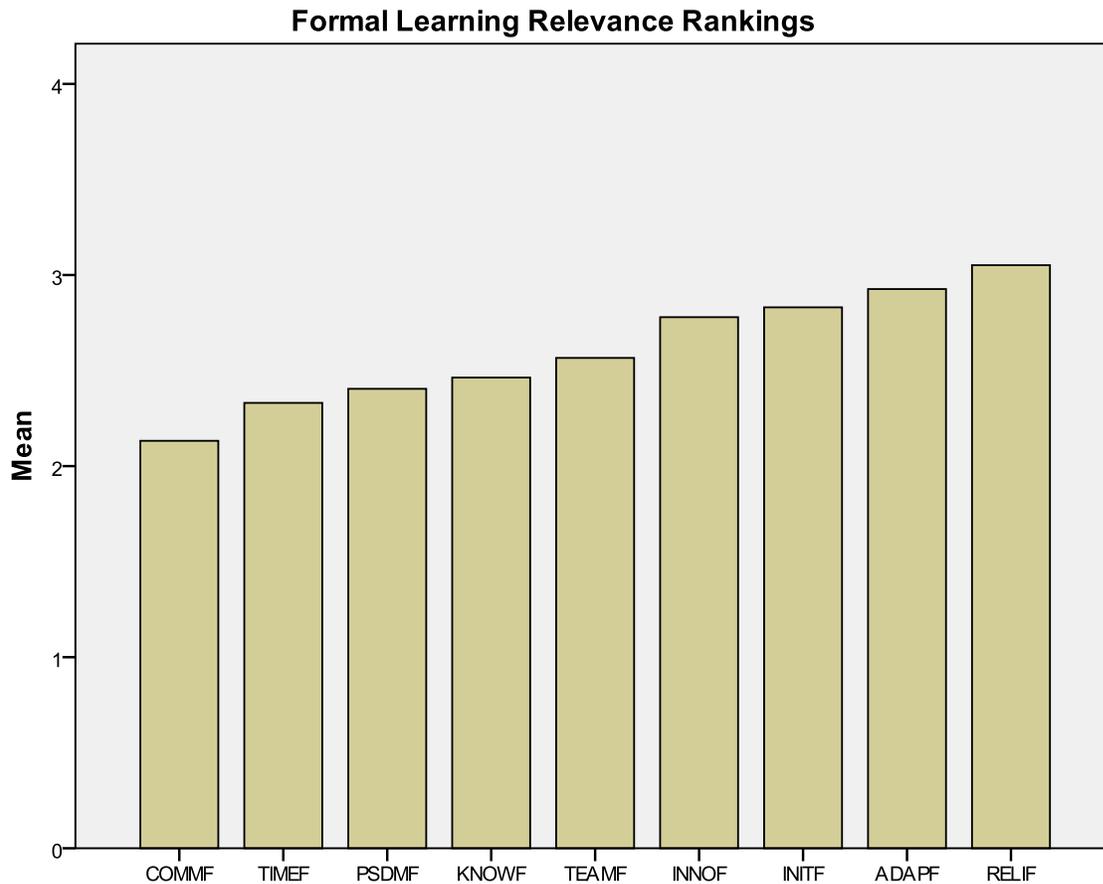
Figure 4. Ranking of formal learning relevance (1 is highest score and 5 is lowest)

Table 17 visually shows the comparison of the level of perceived relevance for informal and formal learning for each leadership skill. In all nine paired-samples, the mean for informal learning showed more relevance than formal learning and in all paired-samples but two, the difference was statistically significant to a 95% confidence level ($\alpha = .05$) except Communication and Time Management. In every sample in which the mean differences were statistically significant, they would have been so even at a 99% level of confidence ($\alpha = .01$).

Table 17

Informal – Formal Learning T-test

Matched Pairs	Mean Diff.	SD	t-test	df	Sig. (2-tailed)
Pair 1 ADAP - ADAPF	-0.878	1.419	-7.500	146	0.000
Pair 2 COMM - COMMF	-0.090	1.111	-0.971	144	0.333
Pair 3 INIT - INITF	-0.730	1.330	-6.520	140	0.000
Pair 4 INNO - INNOF	-0.434	1.306	-4.006	144	0.000
Pair 5 KNOW - KNOWF	0-.664	1.283	-6.190	142	0.000
Pair 6 PSDM - PSDMF	-0.483	1.201	-4.875	146	0.000
Pair 7 RELI - RELIF	-0.760	1.440	-6.380	145	0.000
Pair 8 TEAM - TEAMF	-0.486	1.330	-4.418	145	0.000
Pair 9 TIME - TIMEF	-0.077	1.311	-0.702	142	0.484

Sometimes, in addition to comparing means, graphs can be useful in viewing the data from a different perspective or dimension (Trochim, 2001). Boxplot graphs show the median, interquartile range (IQR), the overall range, and outliers. The IQR is the range between the 25th and 75th percentiles. By seeing each skill pair's boxplot, one can see the overlap of the two distributions. Figures 5-13 are the boxplot graphs for each matched pair in the t-test for informal versus formal learning relevance. The numbers above and below the range are the outliers and their corresponding case number. In the boxplot graphs, also called box and whiskers, the bold line is the median; the shaded box is the IQR, and the "whiskers" above and below the box are the upper and lower range of the data and are represented as vertical lines ending in a small

horizontal line. In SPSS statistical software package, a provision is made to show extreme

values or outliers. The range of values within the upper and lower limits is equal to about five

standard deviations and that means that about two percent of the data would be considered

extreme. These are shown in the appropriate boxplots as small circles identified by the

corresponding case number.

Figure 5 is the boxplot for the ADAP-ADAPF pair. The median for ADAP was 2.0 and

the median for ADAPF was 3.0. The boxplot range for ADAP was between 1.0 and 3.0 with

five outliers and the range for ADAPF was between 1.0 and 5.0. The IQR for ADAP was

between 1.0 and 2.0. The IQR for ADAPF was between 2.0 and 4.0. Another statistic that

complements the tabular and graph data is that 77% of respondents rated ADAP as very or

vitally relevant. Only 38% rated ADAPF as very or vitally relevant.
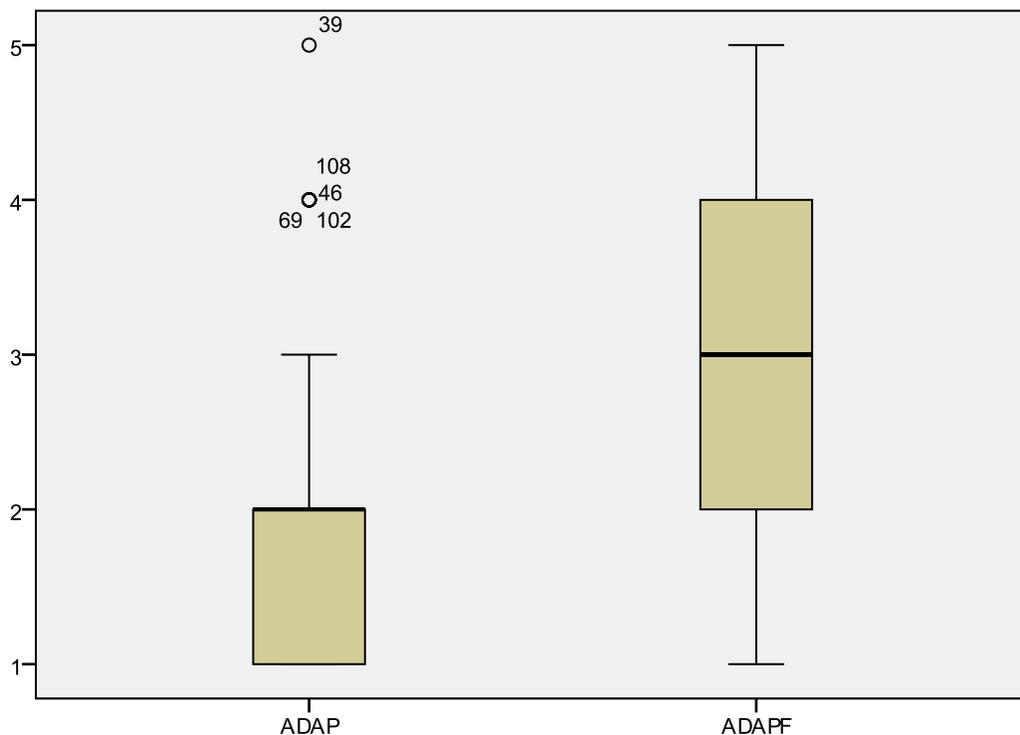
Figure 5. Adaptability pair boxplot (1 is highest score and 5 is lowest).

Figure 6 is the boxplot for COMM-COMMF. This is one of the two pairs where the difference in the means was not statistically significant. The COMM data were more tightly bunched with outliers at both extremes. The median for each variable was 2.0. The ranges were between 2.0 and 3.0 for COMM and 1.0 and 5.0 for COMMF. The IQR for COMM was between 2.0 and 2.5. The IQR for COMMF was between 2.0 and 3.0. COMM and COMMF were rated by 75 and 72% of the respondents respectively as very or vitally relevant.
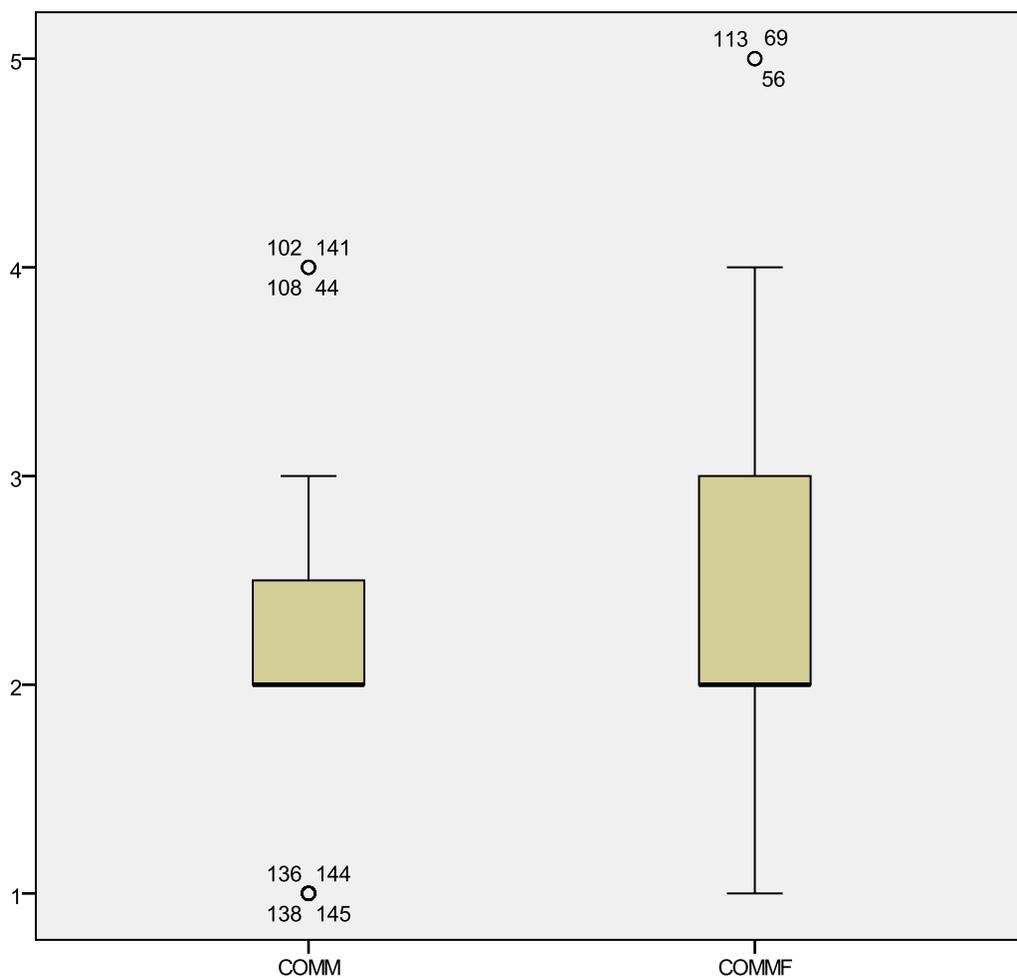
Figure 6. Communication pair boxplot (1 is highest score and 5 is lowest).

Figure 7 is the boxplot graph for INIT-INITF. The median for INIT was 2.0 and the median for INITF was 3.0. The IQR for INIT was between 2.0 and 3.0 and the IQR for INITF was between 2.0 and 4.0. The range was 1.0-4.0 for INIT and 1.0-5.0 for INITF. The scores for COMM were more tightly dispersed around the mean but with a few outliers. Overall, 73% of respondents rated INIT very or vitally relevant as opposed to 40% rated the same for INITF.
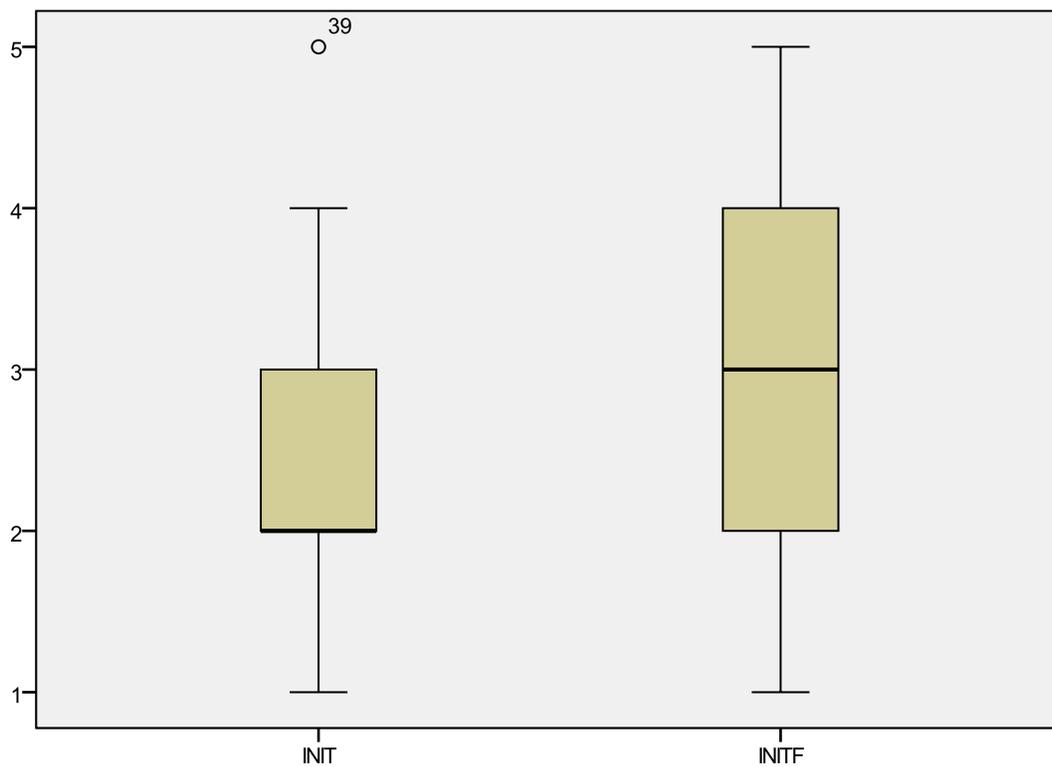
Figure 7. Initiative pair boxplot (1 is highest score and 5 is lowest).

Figure 8 is the boxplot for INNO-INNOF. The IQR is the same for both variables; 1.0-4.0. The median, however, is 2.0 for INNO and 3.0 for INNOF. This suggest that, although the medians were the same, the scores for INIT were more tightly dispersed around 2.0 and the scores for INNOF were more tightly dispersed around 3.0. The range was 1.0-4.0 for both.

INNO was rated by 60% as very or vitally relevant. INNOF was rated by 41% in the same two categories.
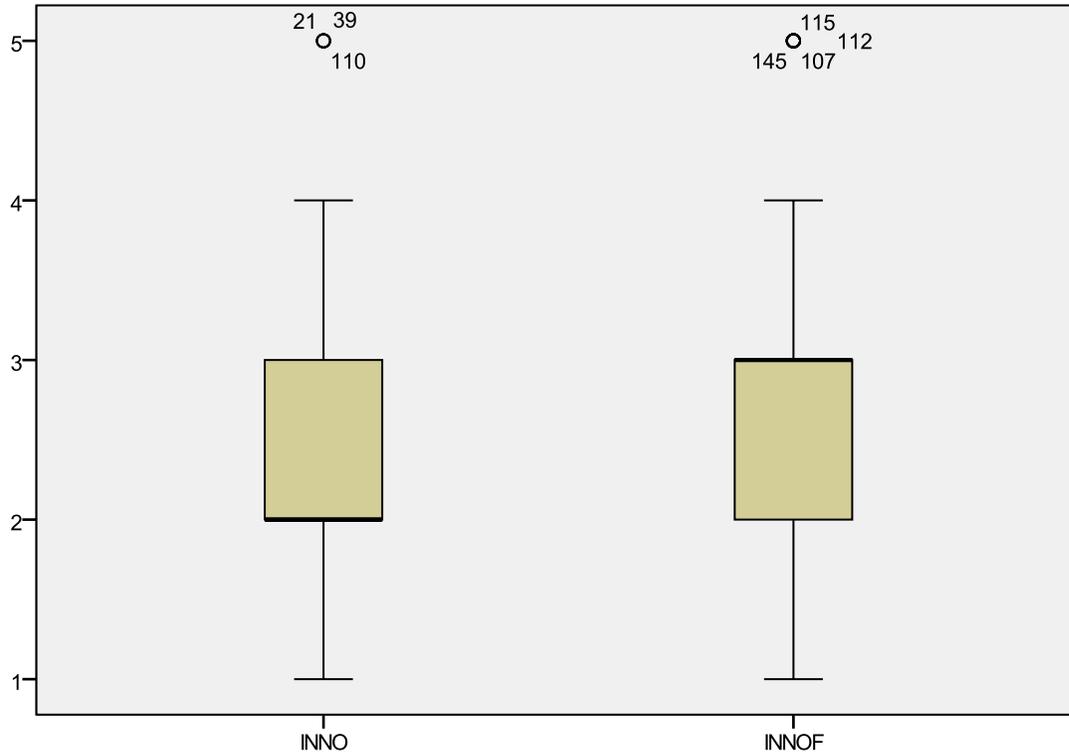
Figure 8. Innovation pair boxplot (1 is highest score and 5 is lowest).

The distributions for KNOW-KNOWF are represented in Figure 9. The medians for both were 2.0 but the IQR was 1.0-2.0 for KNOW and 2.0-3.0 for KNOWF. KNOW had a range between 1.0 and 3.0 with the range of KNOWF being between 1.0 and 4.0. KNOW and KNOWF were rated by 80% and 53% respectively as being either very or vitally relevant.
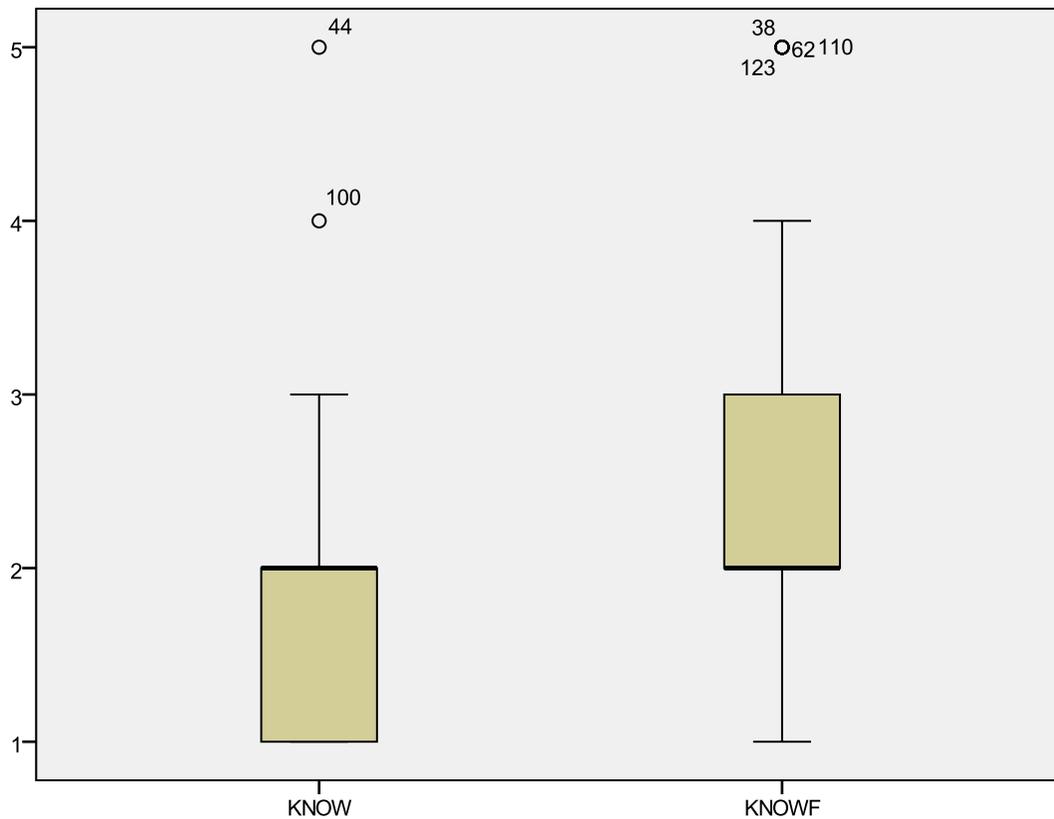
Figure 9. Job Knowledge pair boxplot (1 is highest score and 5 is lowest).

Figure 10 shows the boxplot for PSDM-PSDMF. The medians are equal (2.0) for each variable but the visual nature of the graph indicates that the individual scores for PSDM are more bunched toward a score of 1.0 and PSDMF is bunched toward a score of 3.0 as evidenced by an IQR between 1.0 and 2.0 for PSDM and 2.0 and 3.0 for PSDMF. The range was 1.0-3.0 for PSDM and 1.0-4.0 for PSDMF. PSDM and PSDMF were rated 76% and 58% respectively as being very or vitally relevant.
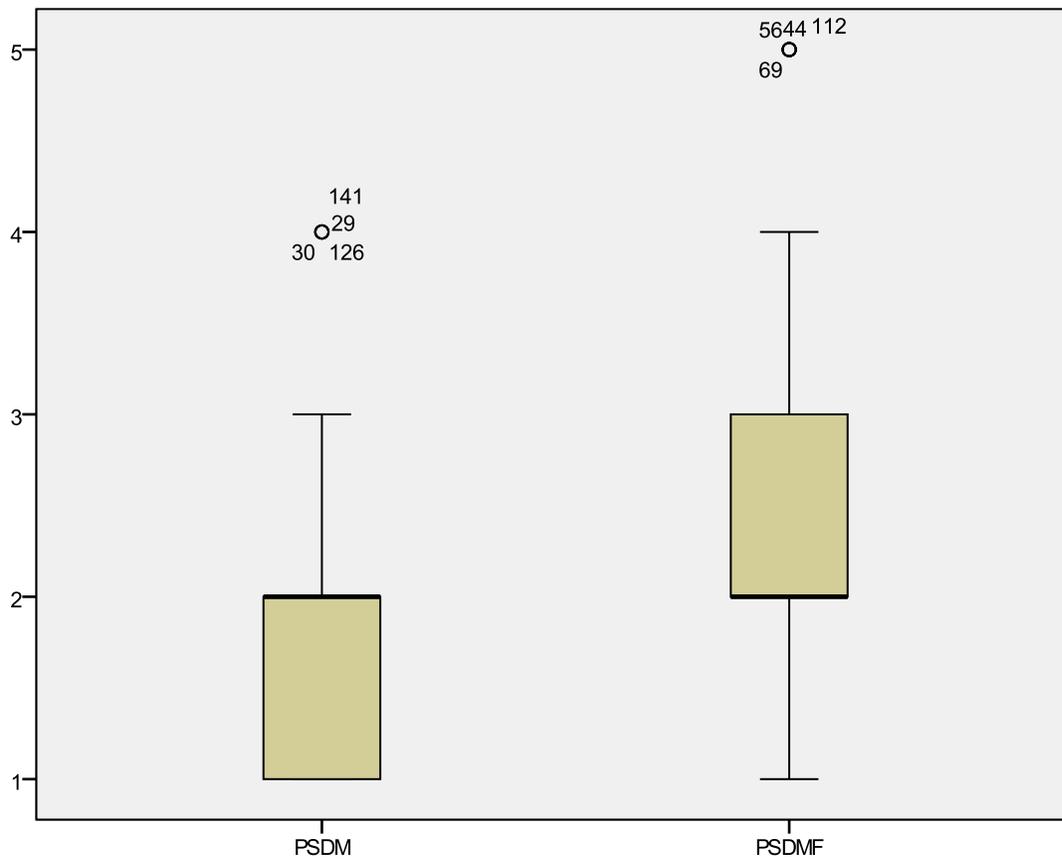
Figure 10. Problem Solving and Decision Making pair boxplot (1 is highest score and 5 is lowest) .

Figure 11 represents the data distribution for RELI-RELIF. The median was 2.0 for RELI and 3.0 for RELIF. The IQR was 2.0-3.0 for RELI and 2.0-4.0 for RELIF with ranges of 1.0-4.0 and 1.0-5.0 respectively. This suggests that the scores for RELIF were more evenly dispersed between 2.0 and 4.0. Respondents rated RELI and RELIF as 68% and 53% respectively as being either very or vitally relevant.
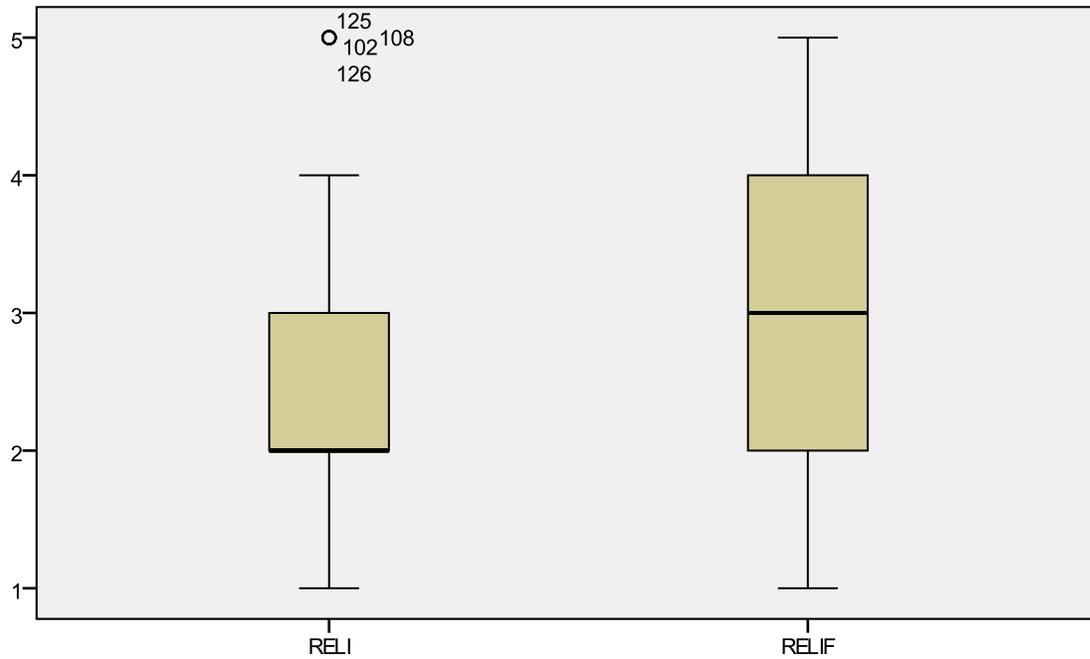
Figure 11. Reliability pair boxplot (1 is highest score and 5 is lowest) .

The TEAM-TEAMF distributions are represented in Figure 12. The medians were equal at 2.0. The IQR for TEAM was 1.0-3.0. The IQR for TEAMF was 2.0-3.0. TEAM had a wider range of 1.0-5.0 versus 1.0-4.0 for TEAMF. TEAM received a rating of 72% of very or vitally relevant as compared to 53% for TEAMF.
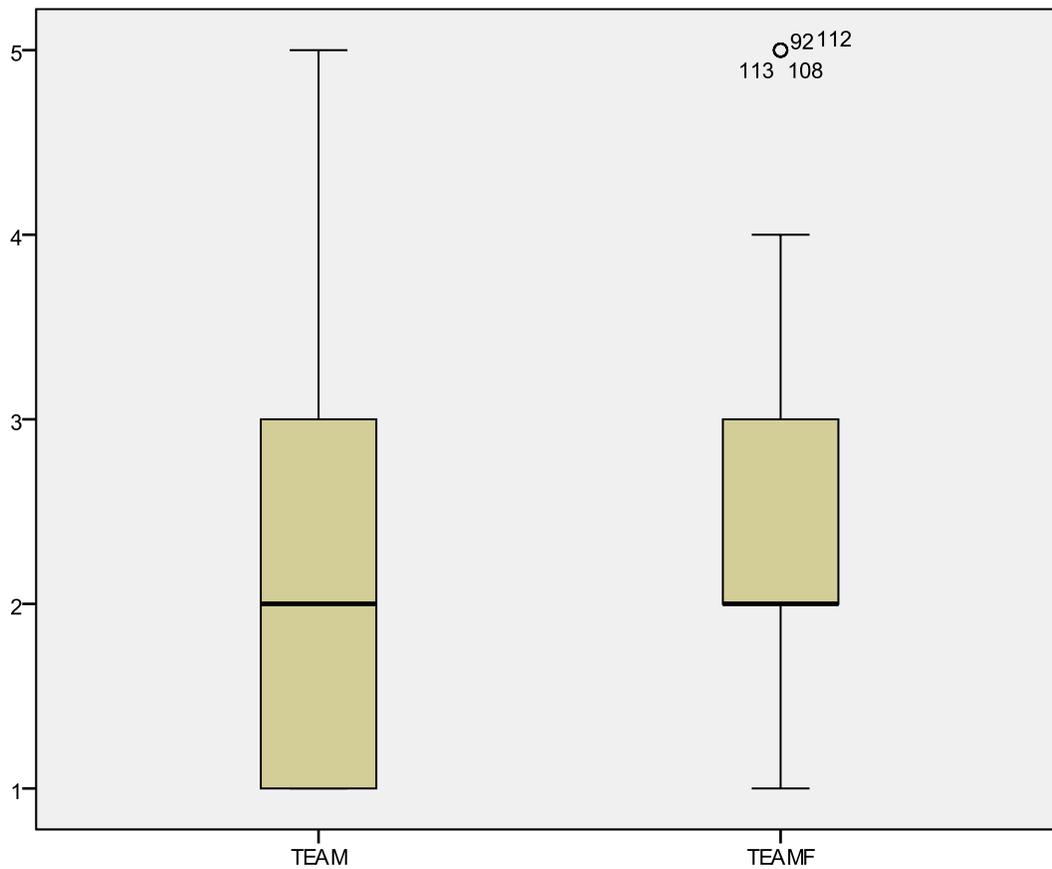
Figure 12. Teamwork pair boxplot (1 is highest score and 5 is lowest).

Figure 13 is the boxplot for TIME-TIMEF. The two graphs are identical, including the number of outliers, as are the percentage of respondents who rated them either very or vitally relevant. The graphic data do suggest, however, that TEAM received more scores of 1.0 (vitally relevant). This pair was one of two where the mean difference was not statistically significant.
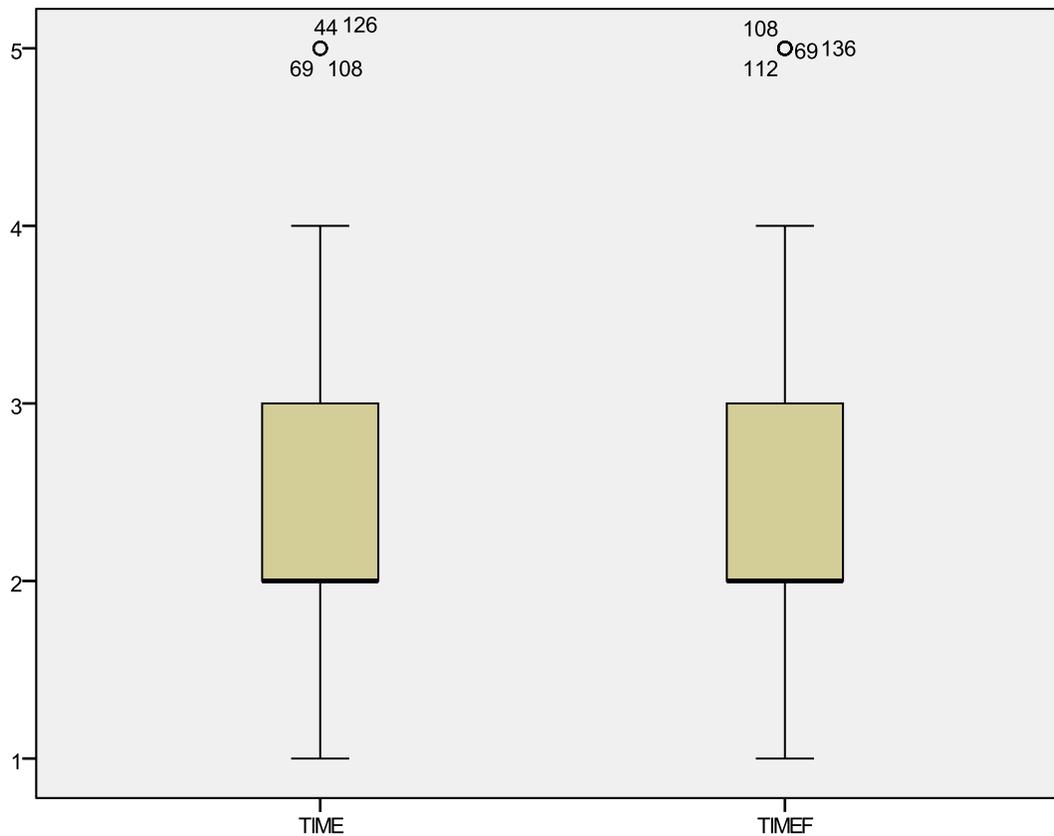
Figure 13. Time Management pair boxplot (1 is highest score and 5 is lowest).

Summary of Findings

From a population of 399, 149 (37% response rate) McKesson supervisors and managers

participated in this study. The respondents represented several discrete business units with the

corporation within the United States. Their estimates of the perceived relevance of informal and

formal learning in acquiring nine leadership skills suggests that informal learning is perceived as

being more relevant, within this population, than formal learning. The means of informal

learning relevance were higher for all nine skills although two differences—Communication and

Time Management—were not statistically significant. The other seven skills were statistically

significant to at least a confidence level of 95% (α = .05). The analysis was sufficient to answer research questions one and two.

The skills were also rated for their perceived importance in the leadership development of the respondents. The mean differences of importance were not significant for several pairs but there was a clear delineation between the top and bottom. Because of the overwhelming perceived relevance of informal versus formal learning, this ranking was considered sufficient to answer research question 3. Because Communication and Time Management, ranked second and seventh respectively in perceived importance, were the only skills in which perceived relevance was not significant between informal and formal learning, the data suggest that informal learning is higher in perceived importance than formal learning for the skills and participants in this study.

These data suggest, at a high level of confidence for this population, that the perceived relevance of informal learning is greater than the perceived relevance of formal learning in the acquisition of the leadership skills Adaptability, Initiative, Innovation, Job Knowledge, Problem Solving and Decision Making, Reliability, and Teamwork. In addition the data suggest for the population that the perceived relevance of formal learning in acquiring the leadership skills is greater for Communication and Time Management.

CHAPTER 5

Summary, Conclusions, and Recommendations

Informal learning, leadership development, and measurement are currently important trends in HRD. Informal learning is a topic at most conferences although the scholarly interest is in its early stages. An estimated $20-30 billion was spent on leadership development in the United States organizations in 2008 (ASTD, 2009). Measurement and evaluation continue to grow as an accountability tool within HRD (Phillips & Phillips, 2007). Senge's (1990) elusive *learning organization* is still being chased. Recognizing organizations as complex adaptive systems is gaining more support (Rowland, 2007). Intellectual and social capital continue to grow as a part of the market value of organizations (Bassi & McMurrer, 2004; Echols, 2005). This organizational scaffolding would seem to suggest that optimizing learning could advance the discipline of HRD as a tool to improve business results. This study attempted to measure the perceived relevance and importance of informal and formal learning within the context of a leadership development program. This chapter presents a summary of the study and the results as they relate to the research questions, the conclusions drawn from the research, and recommendations for future research.

Results of data analysis presented in this chapter suggest a statistically significant perceived difference in most means of the relevance within and between informal and formal learning in acquiring skills in a leadership development program. The analysis also provides

evidence of the perceived difference in importance in the selected skills of the leadership development program with which to match the informal/formal relevance. The results were analyzed using descriptive statistics and paired-samples t-tests.

Summary

This quantitative survey study attempted to compare the perceived relevance of informal and formal learning in acquiring skills in a leadership development program within the McKesson Corporation. A questionnaire was sent to a population of 399 participants in the McKesson Center for Learning Lead the Way program. These participants were enrolled in the Lead the Way program from November 2009 to April 2010. Total responses of 149, a 37% response rate, were received over a two and one half week period in May and June of 2010. Generalization of the results to a larger population was not a goal of this study and no hypotheses were tested. The data analysis suggests that, for this population, informal learning is perceived as more relevant for all nine leadership skills. The mean differences for seven of the nine skills were statistically significant at a 95% confidence level ($\alpha = .05$) and most were significant at a 99% confidence level ($\alpha = .01$).

Research Questions

What is the perceived relevance of informal learning in skill acquisition in a leadership development program? The analyses suggest a high level of perceived relevance within the population for the nine leadership skills used as the independent variables. The number of respondents rating informal learning as very or vitally relevant for the nine skills ranged from 60-80% with most at the high end of the range. The mean of the informal learning relevance, compared to formal learning, was higher for every skill variable and the difference was statistically significant for seven of the nine.

What is the perceived relevance of formal learning in skill acquisition in a leadership development program? The data suggest a level of perceived relevance less than that of informal learning but still at least a level that could be considered high for at least most of the nine skills. The number of respondents rating formal learning as very or vitally relevant ranged from 28-77% with most in the middle of the range. As stated above, the means of formal relevance did not fare as well as informal relevance.

What is the perceived relative importance of informal and formal learning in a leadership development program? By comparing the respondents' importance ratings for the nine skills with the relative relevance of informal and formal learning for each, the data suggest that informal learning has a higher perceived relative importance than formal learning for the nine skills in the sample analyzed.

Conclusions

Under the assumption that organizations are complex adaptive systems as described in Chapters 1 and 2, learning takes place as part of the daily co-evolution of its agents with the organizational environment. This learning environment varies on an informality continuum from no structure at all to mentoring and communities of practice where some planning has taken place. Based upon the results of this study, this assumption appears to be valid for this population within McKesson's leadership development program.

Caution should be exercised in the application of the findings of the study. Although the results of this study suggest high perceived relevance and importance for informal learning in leadership development, economic factors could be a consideration that could impact the use of the findings. If practitioners think informal learning is more relevant and important than formal learning, they may unwisely decide to slash funding for formal learning. Jumping to this kind of

conclusion could have very unfavorable consequences such as a reduction in knowledge, skills, and possibly performance across organizations. Formal learning programs are still very much needed for technical as well as *soft* skills. Allowing the pendulum to swing too much towards informal learning could have a detrimental effect on overall organizational learning by ignoring formal learning.

Related to cost, time factors might persuade senior management to think they can save opportunity costs by not *wasting time* sending people to formal learning programs, hoping they will learn everything they need while productively doing their jobs and interacting with others. Others may see this as an opportunity to rely too heavily on social networking media as a complete learning solution.

Conclusion 1. Informal learning is perceived by the participants to play a major role in leadership development. This is especially true for Job Knowledge. This is consistent with Weick's (1995) assertion that people learn informally what they need to do their work. Besides the data from the study supporting this conclusion, intuitively it also makes sense because of the experiential nature of understanding the nuance of an individual's job. The technical aspects of a job can be taught in class but the contextual application requires a significant amount of informal learning gained from experience (Weick, 1995)). In addition to Job Knowledge (1), Problem Solving and Decision Making (2), Adaptability (3), Teamwork (4), Communication (5), and Initiative (6) also scored high relative to the final three; Time Management (7), Reliability (8), and Innovation (9).

Conclusion 2. Formal learning is also perceived to play a large in leadership development for the nine skills selected as independent variables for this population. Although important, for this population, formal learning relative to informal learning is perceived as less

relevant. In addition to the quantitative evidence in the study, again intuition as well as theory (Noe, 2008) would seem to support that for some of the skills. For example, it may be difficult to design and successfully deliver skills constructs such as Adaptability, Initiative, Reliability, or Innovation because of their abstract nature.

Conclusion 3. Informal learning is perceived as more important than formal learning in this study. Importance is distinct from relevance here because the ranked importance of the nine skills is matched with whether informal or formal learning is perceived as more relevant for each. For seven of nine skills, the difference in the perceived relevance of informal and formal learning was statistically significant. It should be noted that formal learning is still an important part of organizational learning as evidenced by the over $200 billion spent annually.

Implications

While statistical inferences to a larger population cannot be made from this study, the researcher asserts that practical implications from the results and extant literature can be discussed with some confidence.

Informal learning is a *hot topic* in the HRD press and conferences and informal learning is probably a natural phase of the evolution of HRD. Magazine articles, webcasts, blogs, and conference presentations about informal learning can be found almost every week. They ask questions like:

- What is it?
- Why is it important?
- How do I get it?
- How do I measure it?
- What is its business impact?

However, the popularity of social networking media has led many to equate informal learning with these information technology tools (Cross & Thomas, 2009). The researcher suggests that this is corporate laziness; throwing software at a problem and hoping that is all it takes to create informal learning. It seems naïve to ignore informal social networks through which information and knowledge flow. Some network structures may be better than others in facilitating this flow. Rich, multi-directional networks of interaction have greater influence on the probability of future events than more formal lines of communication (Axelrod & Cohen, 2000). Social networking media can, however, play a role in a holistic view of nurturing informal learning in CAS. At the very least, they can become a synthetic hub (Barabasi, 2002) in a larger, more informal network.

Understanding the co-evolutionary, self-organizing (autopoietic) traits of CAS can be very helpful to those interested in optimizing informal learning. Human knowledge is one phenomenon thought to be autopoietic (Juarrero, 1999).

> One implication here is that, assuming an intention to learn and perform, people left to their own devices will find ways to do so that may prove more effective than those contrived by someone else, for example a manager outside the group. (Rowland, 2007, p. 12)

Informal learning happens in the *shadow systems* as well as mentoring, coaching, and communities of practice. The information used in self-organization passes through patterns of communication relationships informally. Leaders must continuously *figure things out* by being attentive to what is going on around them. One challenge to this is that there are many interpretations of what is going around them; phenomenology. They do not lack information. They have plenty of information, but need time to be attentive to context and reflect (Argyris,

1990; Senge, 1990). How can leaders in organizations assist the processes of self-organization to enhance informal learning, always being mindful that equilibrium and complacency could lead to the Second Law of Thermodynamics—entropy—the tendency of all matter and energy to decay into an inert state.

In the past decade, accountability in the form of measurement and evaluation has become important for HRD to prove its contribution to business results. If HRD is to take ownership of informal learning, HRD professionals must find ways to measure and evaluate it. Even complexity scholars Wheatley and Kellner-Rogers (1996), state that numbers make visible what is real. This researcher hopes to challenge HRD to find ways to measure informal learning and its effects on results.

Focusing on processes is a way to link the concept of CAS with measurement. Whether organizations are CAS or not, processes are still where the work gets done and it is possible to measure inputs, outputs, and customer satisfaction (Rummler & Brache, 1995). One big challenge in making this a reality is the ability to isolate the effects of informal learning from other factors that could have caused the improvement.

Given the perceived relevance and importance of informal learning, at least in this population, stakeholders at all levels should be involved in understanding the implications of informal learning and its interdependence with formal learning. Buy-in at the highest levels should not be underestimated as a catalyst for organizational learning, especially for problem solving and decision making, communication, and teamwork; the top three skills ranked in importance in the study.

This study has provided a start in understanding the perceived relevance and importance of informal learning in acquiring nine specific leadership skills. With so much emphasis placed

in organizations on leadership development and succession planning, this study can be an impetus to learn more about how informal and formal learning impact organizations and what, if any, competitive advantage it provides for those committed to optimizing all modes of learning. Informal learning is going to happen anyway whether it is acknowledged or not by organizations or not. It seems prudent to continue research in this area so that organizations can learn more about how to design and structure a cultural environment to best facilitate informal learning as a complement to formal learning in leadership development as well as other training programs (Collis & Margaryan, 2005; Terrion, 2006).

Recommendations

This research was intended to compare the perceived relevance of informal and formal learning for a specific set of leadership skills in a specific organization. Future research is needed with a design in which the results can be generalized to larger population. The population for this study was one of convenience to start a foundation from which to build studies with greater inferential possibilities.

Future research can also be used to build theories of informal learning from hypothesis testing as they relate to other aspects of organizational life. Some potential research questions could be:

- What organizational structures best facilitate informal learning?
- Which components of the organizational environment can best predict and enhance informal learning?
- How does social network analysis affect informal learning?
- How do EPSS and job aids affect informal learning?
- How can the business impact of informal learning be measured?

- What role does information technology play in enhancing/facilitating informal learning?

- What is the return on investment of the effect of informal learning?

- What other areas of HRD benefit from informal learning?

This research was an attempt to incrementally add to the body of knowledge of the role of informal learning in organizations and how it relates to CAS and measurement and evaluation. The research questions were answered, but only for a specific population within the boundaries of leadership development. More research is needed to move this nascent field of study forward. As more is learned about the structures and mechanisms that proliferate informal learning, organizations can become more economically efficient and effective. The concept of the learning organization can become a reality.

Future research should also learn from the data collection design limitations from doing this project. A survey limits one's data to self-reported perceptions. There is built-in error in perceptions influenced by many variables such as the state of mind of the respondents at the moment the questionnaire is completed that is subject to distractions in both their professional and personal lives. An experimental or quasi-experimental design that is based upon observation or hard data such as assessments would yield more valid and reliable data. Finally, a broader, more diverse population would allow the results to be more generalizable and provide more criterion validity.

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z o o m e r a n g

McKesson Center for Learning-Leadership Development

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McKesson Center for Learning-Leadership Development

You are being invited to participate in a study about informal and formal learning in leadership development within McKesson by Kirk Smith at Indiana State University as part of a Ph.D. dissertation.

There are no known risks if you decide to participate in this research study. There are no costs to you for participating in the study. The information you provide will help McKesson optimize the opportunities for developing leaders. The questionnaire will take about 5-7 minutes to complete. The survey is anonymous and IP addresses will not be collected when you submit the survey. No one will be able to identify you or your answers, and no one will know whether or not you participated in the study. Individuals from Indiana State University's Institutional Review Board may inspect these records. Should the data be published, no individual information will be disclosed.

Your participation in this study is voluntary. By completing and submitting your responses, you are voluntarily agreeing to participate. You are free to decline to answer any particular question you do not wish to answer for any reason.

If you have any questions about the study, please contact Kirk Smith, 10 Durey Court, Cartersville, GA, 404.210.4060, wksmith99@comcast.net

If you have any questions about your rights as a research subject or if you feel you've been placed at risk, you may contact the Indiana State University Institutional Review Board (IRB) by mail at Indiana State University, Office of Sponsored Programs, Terre Haute, IN, 47809, by phone at (812) 237-8217, or by e-mail at irb@indstate.edu.

Instructions: Using the definitions below, please answer the following questions about the skills acquired before, during, or after your participation in a McKesson Center for Learning leadership development program.

Informal learning-learning which takes place in the context of work, is related to an individual's job performance, and is not part of a program or curriculum.
Formal learning-structured learning that takes place in a classroom environment where learners are removed from the day-to-day work to engage in lectures, discussions, simulations, role plays, and other instructional activities. This includes computer and web-based courses.
How relevant was informal learning in the acquisition of the following core skills?

Page 1 – Question 1 – Rating Scale – One Answer (Horizontal)
Adaptability

Vitally Relevant	Very Relevant	Moderately Relevant	Slightly Relevant	Not Relevant at All
○	○	○	○	○

Page 1 - Question 2 - Rating Scale - One Answer (Horizontal)
Communication Skills

Vitally Relevant	Very Relevant	Moderately Relevant	Slightly Relevant	Not Relevant at All
○	○	○	○	○

Page 1 - Question 3 - Rating Scale - One Answer (Horizontal)
Initiative

Vitally Relevant	Very Relevant	Moderately Relevant	Slightly Relevant	Not Relevant at All
○	○	○	○	○

Page 1 - Question 4 - Rating Scale - One Answer (Horizontal)
Innovation

Vitally Relevant	Very Relevant	Moderately Relevant	Slightly Relevant	Not Relevant at All
○	○	○	○	○

Page 1 - Question 5 - Rating Scale - One Answer (Horizontal)
Job Knowledge

Vitally Relevant	Very Relevant	Moderately Relevant	Slightly Relevant	Not Relevant at All
○	○	○	○	○

Page 1 - Question 6 - Rating Scale - One Answer (Horizontal)
Problem Solving and Decision Making

Vitally Relevant	Very Relevant	Moderately Relevant	Slightly Relevant	Not Relevant at All
○	○	○	○	○

Page 1 - Question 7 - Rating Scale - One Answer (Horizontal)
Reliability

Vitally Relevant	Very Relevant	Moderately Relevant	Slightly Relevant	Not Relevant at All
○	○	○	○	○

Page 1 - Question 8 - Rating Scale - One Answer (Horizontal)
Teamwork

Vitally Relevant	Very Relevant	Moderately Relevant	Slightly Relevant	Not Relevant at All
○	○	○	○	○

Page 1 - Question 9 - Rating Scale - One Answer (Horizontal)
Time Management

Vitally Relevant	Very Relevant	Moderately Relevant	Slightly Relevant	Not Relevant at All
○	○	○	○	○

Page 1 - Heading
How relevant was formal learning in the acquisition of the following core skills?

Page 1 - Question 10 - Rating Scale - One Answer (Horizontal)
Adaptability

Vitally Relevant	Very Relevant	Moderately Relevant	Slightly Relevant	Not Relevant at All
○	○	○	○	○

Page 1 - Question 11 - Rating Scale - One Answer (Horizontal)
Communication Skills

Vitally Relevant	Very Relevant	Moderately Relevant	Slightly Relevant	Not Relevant at All
○	○	○	○	○

Page 1 - Question 12 - Rating Scale - One Answer (Horizontal)
Initiative

Vitally Relevant	Very Relevant	Moderately Relevant	Slightly Relevant	Not Relevant at All
○	○	○	○	○

Page 1 - Question 13 - Rating Scale - One Answer (Horizontal)
Innovation

Vitally Relevant	Very Relevant	Moderately Relevant	Slightly Relevant	Not Relevant at All
○	○	○	○	○

Page 1 - Question 14 - Rating Scale - One Answer (Horizontal)
Job Knowledge

Vitally Relevant	Very Relevant	Moderately Relevant	Slightly Relevant	Not Relevant at All
○	○	○	○	○

Page 1 - Question 15 - Rating Scale - One Answer (Horizontal)
Problem Solving and Decision Making

Vitally Relevant	Very Relevant	Moderately Relevant	Slightly Relevant	Not Relevant at All
○	○	○	○	○

Page 1 - Question 16 - Rating Scale - One Answer (Horizontal)
Reliability

Vitally Relevant	Very Relevant	Moderately Relevant	Slightly Relevant	Not Relevant at All
○	○	○	○	○

Page 1 - Question 17 - Rating Scale - One Answer (Horizontal)
Teamwork

Vitally Relevant	Very Relevant	Moderately Relevant	Slightly Relevant	Not Relevant at All
○	○	○	○	○

Page 1 - Question 18 - Rating Scale - One Answer (Horizontal)
Time Management

Vitally Relevant	Very Relevant	Moderately Relevant	Slightly Relevant	Not Relevant at All
○	○	○	○	○

Page 1 - Heading
How important are the following core skills in your development as a leader?

Page 1 - Question 19 - Rating Scale - One Answer (Horizontal)
Adaptability

Vitally Relevant	Very Relevant	Moderately Relevant	Slightly Relevant	Not Relevant at All
○	○	○	○	○

Page 1 - Question 20 - Rating Scale - One Answer (Horizontal)
Communication Skills

Vitally Relevant	Very Relevant	Moderately Relevant	Slightly Relevant	Not Relevant at All
○	○	○	○	○

Page 1 - Question 21 - Rating Scale - One Answer (Horizontal)
Initiative

Vitally Relevant	Very Relevant	Moderately Relevant	Slightly Relevant	Not Relevant at All
○	○	○	○	○

Page 1 - Question 22 - Rating Scale - One Answer (Horizontal)
Innovation

Vitally Relevant	Very Relevant	Moderately Relevant	Slightly Relevant	Not Relevant at All
○	○	○	○	○

Page 1 - Question 23 - Rating Scale - One Answer (Horizontal)
Job Knowledge

Vitally Relevant	Very Relevant	Moderately Relevant	Slightly Relevant	Not Relevant at All
○	○	○	○	○

Page 1 - Question 24 - Rating Scale - One Answer (Horizontal)
Problem Solving and Decision Making

Vitally Relevant	Very Relevant	Moderately Relevant	Slightly Relevant	Not Relevant at All
○	○	○	○	○

Page 1 - Question 25 - Rating Scale - One Answer (Horizontal)
Reliability

Vitally Relevant	Very Relevant	Moderately Relevant	Slightly Relevant	Not Relevant at All
○	○	○	○	○

Page 1 - Question 26 - Rating Scale - One Answer (Horizontal)
Teamwork

Vitally Relevant	Very Relevant	Moderately Relevant	Slightly Relevant	Not Relevant at All
○	○	○	○	○

Page 1 - Question 27 - Rating Scale - One Answer (Horizontal)
Time Management

Vitally Relevant	Very Relevant	Moderately Relevant	Slightly Relevant	Not Relevant at All
○	○	○	○	○

Thank You Page
Thank you for completing the questionnaire.

Screen Out Page
(Standard - Zoomerang branding)

Over Quota Page
(Standard - Zoomerang branding)

Survey Closed Page
The survey is now closed, thanks again for your participation.

APPENDIX B: SURVEY RESULTS

Zoomerang Survey Results

McKesson Center for Learning-Leadership Development

Response Status: Completes

Filter: No filter applied

Jun 26, 2010 4:18 AM PST

> **You are being invited to participate in a study about informal and formal learning in leadership development within McKesson by Kirk Smith at Indiana State University as part of a Ph.D. dissertation. There are no known risks if you decide to participate in this research study. There are no costs to you for participating in the study. The information you provide will help McKesson optimize the opportunities for developing leaders. The questionnaire will take about 5-7 minutes to complete. The survey is anonymous and IP addresses will not be collected when you submit the survey. No one will be able to identify you or your answers, and no one will know whether or not you participated in the study. Individuals from Indiana State University's Institutional Review Board may inspect these records. Should the data be published, no individual information will be disclosed. Your participation in this study is voluntary. By completing and submitting your responses, you are voluntarily agreeing to participate. You are free to decline to answer any particular question you do not wish to answer for any reason. If you have any questions about the study, please contact Kirk Smith, 10 Durey Court, Cartersville, GA, 404.210.4060, wksmith99@comcast.net If you have any questions about your rights as a research subject or if you feel you've been placed at risk, you may contact the Indiana State University Institutional Review Board (IRB) by mail at Indiana State University, Office of Sponsored Programs, Terre Haute, IN, 47809, by phone at (812) 237-8217, or by e-mail at irb@indstate.edu.**

Instructions: Using the definitions below, please answer the following questions about the skills acquired before, during, or after your participation in a McKesson Center for Learning leadership development program. Informal learning-learning which takes place in the context of work, is related to an individual's job performance, and is not part of a program or curriculum. Formal learning-structured learning that takes place in a classroom environment where learners are removed from the day-to-day work to engage in lectures, discussions, simulations, role plays, and other instructional activities. This includes computer and web-based courses.

How relevant was informal learning in the acquisition of the following core skills?

1. Adaptability

Vitally Relevant	42	28%
Very Relevant	73	49%
Moderately Relevant	25	17%
Slightly Relevant	8	5%
Not Relevant at All	1	1%
Total	149	100%

2. Communication Skills

Vitally Relevant	34	23%
Very Relevant	76	52%
Moderately Relevant	32	22%
Slightly Relevant	5	3%
Not Relevant at All	0	0%
Total	147	100%

3. Initiative

Vitally Relevant	31	21%
Very Relevant	76	52%
Moderately Relevant	34	23%
Slightly Relevant	5	3%
Not Relevant at All	1	1%
Total	**147**	**100%**

4. Innovation

Vitally Relevant	23	15%
Very Relevant	67	45%
Moderately Relevant	46	31%
Slightly Relevant	10	7%
Not Relevant at All	3	2%
Total	**149**	**100%**

5. Job Knowledge

Vitally Relevant	60	41%
Very Relevant	57	39%
Moderately Relevant	28	19%
Slightly Relevant	1	1%
Not Relevant at All	1	1%
Total	**147**	**100%**

6. Problem Solving and Decision Making

Vitally Relevant	49	33%

Very Relevant	64	43%
Moderately Relevant	32	21%
Slightly Relevant	4	3%
Not Relevant at All	0	0%
Total	149	100%

7. Reliability

Vitally Relevant	31	21%
Very Relevant	65	44%
Moderately Relevant	38	26%
Slightly Relevant	8	5%
Not Relevant at All	7	5%
Total	149	100%

8. Teamwork

Vitally Relevant	49	33%
Very Relevant	57	39%
Moderately Relevant	32	22%
Slightly Relevant	9	6%
Not Relevant at All	1	1%
Total	148	100%

9. Time Management

Vitally Relevant	30	21%
Very Relevant	60	41%
Moderately Relevant	43	30%
Slightly Relevant	8	6%
Not Relevant at All	4	3%
Total	145	100%

How relevant was formal learning in the acquisition of the following core skills?

10. Adaptability

Vitally Relevant	14	10%
Very Relevant	41	28%
Moderately Relevant	50	34%
Slightly Relevant	32	22%
Not Relevant at All	10	7%
Total	147	100%

11. Communication Skills

Vitally Relevant	32	22%
Very Relevant	73	50%
Moderately Relevant	34	23%
Slightly Relevant	5	3%
Not Relevant at All	3	2%
Total	147	100%

12. Initiative

Vitally Relevant	16	11%
Very Relevant	41	29%
Moderately Relevant	49	34%
Slightly Relevant	27	19%
Not Relevant at All	10	7%

Total	143	100%

13. Innovation

Vitally Relevant	16	11%
Very Relevant	44	30%
Moderately Relevant	51	35%
Slightly Relevant	26	18%
Not Relevant at All	8	6%
Total	145	100%

14. Job Knowledge

Vitally Relevant	31	21%
Very Relevant	47	32%
Moderately Relevant	40	28%
Slightly Relevant	21	14%
Not Relevant at All	6	4%
Total	145	100%

15. Problem Solving and Decision Making

Vitally Relevant	22	15%
Very Relevant	63	43%
Moderately Relevant	43	29%
Slightly Relevant	15	10%
Not Relevant at All	4	3%
Total	147	100%

16. Reliability

Vitally Relevant	15	10%
Very Relevant	38	26%
Moderately Relevant	41	28%
Slightly Relevant	28	19%
Not Relevant at All	24	16%
Total	146	100%

17. Teamwork

Vitally Relevant	23	16%
Very Relevant	55	37%
Moderately Relevant	43	29%
Slightly Relevant	20	14%
Not Relevant at All	6	4%
Total	147	100%

18. Time Management

Vitally Relevant	33	22%
Very Relevant	59	40%
Moderately Relevant	34	23%
Slightly Relevant	13	9%
Not Relevant at All	8	5%
Total	147	100%

How important are the following core skills in your development as a leader?

19. Adaptability

Vitally Important	77	53%
Very Important	60	41%
Moderately Important	9	6%
Slightly Important	0	0%
Not Important at All	0	0%
Total	146	100%

20. Communication Skills

Vitally Important	106	72%
Very Important	37	25%
Moderately Important	5	3%
Slightly Important	0	0%
Not Important at All	0	0%
Total	148	100%

21. Initiative

Vitally Important	71	49%
Very Important	64	44%
Moderately Important	10	7%
Slightly Important	0	0%
Not Important at All	0	0%
Total	145	100%

22. Innovation

Vitally Important	51	35%
Very Important	68	47%
Moderately Important	26	18%
Slightly Important	1	1%
Not Important at All	0	0%
Total	**146**	**100%**

23. Job Knowledge

Vitally Important	73	50%
Very Important	59	41%
Moderately Important	12	8%
Slightly Important	0	0%
Not Important at All	1	1%
Total	**145**	**100%**

24. Problem Solving and Decision Making

Vitally Important	105	73%
Very Important	34	24%
Moderately Important	5	3%
Slightly Important	0	0%
Not Important at All	0	0%
Total	**144**	**100%**

25. Reliability

Vitally Important	90	61%
Very Important	48	33%
Moderately Important	8	5%
Slightly Important	0	0%
Not Important at All	1	1%

Total	147	100%

26. Teamwork

Vitally Important	90	62%
Very Important	46	32%
Moderately Important	9	6%
Slightly Important	1	1%
Not Important at All	0	0%
Total	**146**	**100%**

27. Time Management

Vitally Important	76	52%
Very Important	57	39%
Moderately Important	12	8%
Slightly Important	1	1%
Not Important at All	1	1%
Total	**147**	**100%**

APPENDIX C: LEADERSHIP SKILL DEFINITIONS

Core Competencies and Core Skills

McKesson Lead the Way Program

Adaptability

The ability to learn quickly and adjust to changes in the work situation, assignments, and procedures.

Key Actions:

Accepts change as positive opportunity for learning / growth

Seeks to understand why change is needed / impact on own role
Adapts readily to change
Abandons ineffective behaviors

Communication Skills

Effectively expresses ideas, opportunities and concerns verbally and in writing; listens and communicates effectively with others, one-on-one and in groups.

Key Actions:

Organizes thoughts and ideas before communicating

Keeps communications short, to the point, relevant to the audience
Seeks to understand as well as be understood
Uses appropriate syntax, grammar and media
Comprehends communications from others
Responds in a timely, positive manner to others

Problem Solving and Decision Making

Demonstrates logical approach to problem-solving and decision making; demonstrates sound judgment and common sense; takes initiative to address problems and make decisions in a timely manner.

Key Actions:

Recognizes issues, problems and opportunities as they arise

Recognizes when change / action is needed
Involves others
Gathers and analyzes information needed for the best solutions
Chooses appropriate action / offers solution choices and recommendations
Acts quickly after decisions are made

Initiative

Takes initiative in handling assignments, seeks additional responsibilities, and provides constructive input on business issues and or concerns.

Key Actions:

Takes appropriate action without prompting

Takes quick action on assignments / problem solving
Goes above and beyond job requirements to achieve objectives

Innovation

The ability to think and work creatively; to help identify solutions and provide unique insights.

Key Actions:

Challenges "the way things are"in favor of "the way they could be"

Leverages the ideas, talents and skills of others
Thinks beyond the expected or ordinary
Examines an opportunity / problem from many angles
Offers solutions / insights for meaningful business results

Job Knowledge

The understanding and knowledge of job duties, procedures and methods necessary to perform job responsibilities.

Key Actions:

Demonstrates job mastery

Seeks out and participates actively in opportunities to enhance job knowledge
Applies new job skills / knowledge quickly
Shares job knowledge readily with others

Reliability

Can be relied upon to consistently complete tasks in a timely manner and follow through on commitments.

Key Actions:

Demonstrates a high, ongoing level of quality, productivity or service

Does "whatever it takes" to complete work assignments
Works to overcome obstacles to business success
Accepts responsibility for outcomes of one's work
Encourages others to take responsibility for their work

Team Work

The ability to interact with others in accomplishing work and meeting business objectives; demonstrates a willingness to work collaboratively towards the goals of the group or organization.

Key Actions:

Participates actively in achieving goals / overcoming obstacles

Values individual talents and differences
Shares important and relevant information

Time Management

Plans, organizes and prioritizes work activities to meet deadlines. Uses time efficiently.

Key Actions:

Prioritizes activities and tasks

Prepares equipment and materials for effective work
Allocates time needed to complete tasks
Coordinates own and others' schedules to avoid conflicts
Leverages available resources to complete work efficiently