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Measuring the Impact of Workplace Design on Training Transfer Relative to Other Organizational Factors

A Dissertation
Presented for the
Doctor of Philosophy
Degree
The University of Tennessee, Knoxville

Terron L. Hillsman
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Dedication

This dissertation is dedicated to my mother, Sandra Jean Hillsman, who never got the opportunity to go to college, but always wanted to be a teacher. She taught me how to read before I began kindergarten and got me started on the road to academic success.

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I wish to thank all those who helped me complete my Doctor of Philosophy degree in Business Administration. I would like to thank Dr. Kupritz for serving as my committee chair and for guiding and mentoring me through my research. I would also like to thank Dr. Bartley, Dr. Collier, and Dr. Morris for serving on my committee and their valuable contributions to my academic development.

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Abstract

This ethnographic research extends the findings of an earlier study examining the impact of workplace design on training transfer. The study triangulates data and methods of inquiry through field observation, archival records, interviews, and a survey that was developed from the interview responses. Linking the earlier, more qualitative data and analysis with the latter, more quantitative data and analysis helped to extend several theoretical considerations. Purposeful sampling was used to identify participants who held nonacademic supervisory positions at a major land grant university. Participants had attended a performance review workshop and had been applying the learned skills for at least 6 months. The findings indicate that workplace design appears to play a vital role in facilitating as well as impeding transfer for supervisory skills in this study. The present study also offers a conceptual model that proposes where workplace design fits among other organizational factors perceived to impact training transfer.

The findings alert and direct organizations to where they should channel their finite resources to support training transfer and provide organizations with a better ability to differentiate critical design features from design features that are more marginal to training transfer. As a case study, organizations should not infer that these findings apply to all work settings as it may depend upon the relevancy to the particular work situation and circumstances.

Methods of analysis: Domain and Taxonomic analyses, descriptive statistics, Binomial distribution, ANOVA/post hoc procedures, and hierarchical clustering.

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INTRODUCTION

Thousands of U.S. companies operating domestically and internationally spend billions of dollars annually on training initiatives for their workforces (Hodgetts & Luthans, 2003). However, few organizations currently possess training programs that effectively transfer training received by employees to on-the-job performance (Broad & Newstrom, 1992; Foxon, 1993). Some researchers estimate that as much as 90 percent of the training provided by organizations to their employees does not transfer to improved performance in the workplace (Holton & Baldwin, 2000).

While much of the earlier human resource development (HRD) research focused primarily on formal training contextual factors, more recent studies have elevated the importance of organizational factors to the forefront of training transfer theory (Holton & Baldwin, 2000; Rouiller & Goldstein, 1993; Tracey, Tannebaum, & Kavanaugh, 1995). Understanding organizational factors such as management support, training relevance, transfer climate, and availability of resources and technology to support transfer is recognized as paramount to examining problems surrounding the transfer of training in today's organization (Holton & Baldwin, 2000).

The changing nature of work in today's global economy makes knowledge management one of the most salient issues facing human resource development researchers and practitioners. Technology-based industries such as health care and engineering have an expected half-life of knowledge of less than four years (Swanson & Holton, 2001). This means that a medical technician completing training today would only retain about fifty percent of the relevant knowledge gained in four years. Swanson

and Holton suggest that business and other professions are not immune to this erosion of knowledge. The constant turnover of knowledge in today's changing workplace compounded by some 90% of training that fails to transfer places training transfer at the forefront of HRD concerns (Kupritz, 2006).

Training transfer continues to be one of the most important issues facing U.S. companies primarily because of the billions of dollars they spend annually on training initiatives for their workforces (Hodgetts & Luthans, 2003). While Baldwin and Ford (1988) placed domestic organizations' training expenditures at as much as $100 billion annually, more recent estimates place these expenditures at nearly $200 billion per year (Facteau, Dobbins, Russell, Ladd, & Kudisch, 1995). Researchers have estimated that organizations with greater than 100 hundred employees spend in excess of $58 billion for the direct costs of formal training (Lakewood Research, 1997). More recently, Sugrue and Kim (2004) estimated the average U.S. company spends 2.5 percent of its average payroll budget on training and employee development.

Despite this significant increase in the level of organizational investment in employee development, empirical research continues to suggest that these expenditures may not result in tangible gains in employee performance for the organizations (Baldwin & Ford, 1988; Broad & Newstrom, 1992; Burke & Baldwin, 1999). In fact, Newstrom (1986) analyzed the perceptions of HR professionals on transfer of skills and techniques learned during management development courses and found that the participants believed that 60 per cent of the course content did not transfer back to the workplace immediately following the intervention, 75 percent was not being applied after 6 months, and 85 percent was not being applied a year later. Baldwin and Ford (1988) estimated that only

about 10 percent of organizational training expenditures actually result in newly acquired skills and knowledge transferring into the workplace. This finding is consistent with that of Georgenson (1982) and Hoffman (1983) who also estimated that 90 percent or more of the training expenditures of U.S. conglomerates are wasted due to the lack of transfer.

More recently, however, Holton and Baldwin (2000) suggested that while empirical evidence documents the low percentage of training interventions that actually transfer to the work environment, the 10 percent figure, often cited in the HRD literature, has not been empirically documented. In database searches for the current study, an exact figure for training transfer percentage could not be found. Even without an exact figure of transfer rates, the level of corporate investment in training interventions and the empirical evidence of a lack of training transfer to work environments suggests that a 'transfer problem' continues to be of paramount concern to HRD professionals and practitioners (Michalak, 1981). A vast amount of this concern has been focused on identifying variables that facilitate or inhibit transfer.

HRD research continues to seek solutions that improve transfer, but much of the research has focused on factors in the formal training context (Holton & Baldwin, 2000). Contemporary training transfer research has begun to focus on issues such as more broadly defining training transfer impacts to include the entire system of influences (i.e., training content, transfer climate, trainee characteristics) that affect the transfer of training in organizations (Holton, Bates, Seyler, & Carvalho, 1997). This more recent strand of research also seeks to develop and improve systems for accurately defining and measuring variables affecting transfer of training (Holton et al., 1997; Holton, Bates, & Ruona, 2000). Other contemporary research addresses prior criticisms of the extant

training transfer literature by examining the multidimensional nature of transfer constructs (Smith-Jentsch, Salas, & Brannick, 2001) and theory development for the support of new models of the training transfer process (Yamnill & McLean, 2001). Additionally, strong support continues in the contemporary HRD literature for at least two of the variables, managerial/supervisory support and collegial/peer support, that received extensive attention in the classic Baldwin and Ford (1988) and Ford and Weissbein (1997) studies of training transfer.

One organizational factor that has been largely overlooked as a potential contributor to training transfer theory is workplace design (Kupritz, 1999, 2000a). Workplace design was not examined in any of the fifty-eight studies that were a part of the most comprehensive reviews of the organizational-training literature (Baldwin & Ford, 1988; Ford & Weissbein, 1997). Yet elements of the physical environment have been a part of human resource development efforts for decades. Darlene Russ-Eft, past editor of *Human Resource Development Quarterly*, states:

"…Workplace design and redesign has been an integral part of TQM [Total Quality Management], Six Sigma, and reengineering processes that HRD professionals have been a part of over the past decade or more" (D. Russ-Eft, personal communication, 2002).

A search of the extant HRD/organizational development literature for the current study finds that HRD researchers and practitioners are beginning to recognize the physical environment as a salient issue in today's workplace. For example, recent HRD research explored the impact of office design on organizational culture and job performance (Im & Walker, 2007) as well as the role of the physical environment on

employee well being and commitment (McGuire & McLaren, 2007). Other HRD research examining the physical work environment has highlighted the importance of understanding spatial density and its effect on employee reactions to their work (Carlopio, 1996). Research findings have revealed that spatially dense workspaces are generally viewed unfavorably by employees (Oldham, Cummings, & Zhou, 1995). These findings have been linked to social interference theory, which attributes these negative employee reactions to perceived lack of control and difficulty performing regular work tasks (Evans, Johannson, & Carere, 1994; Oldham et al.). Omara (1999) considers physical facility and property planning to be some of the most visible, expensive, and confining decisions made by organizational leadership. Yet, HRD research examining the physical environment's role as a possible facilitator or inhibitor of training transfer has been minimal.

Kupritz (2002) identified workplace design as an organizational factor that may contribute to transfer. Workplace design includes building design, interior and exterior features, and surrounding landscapes. Sundstrom (1985, p. 174) describes workplace design as the "layout and appearance of buildings, the arrangement and properties of rooms, characteristics of equipment and furniture, and the associated ambient conditions (sound, light, temperature, air)." While Gans (1968) suggests that the design of workspaces can have a supportive or unsupportive effect on workplace behaviors, Becker (1981) proposes direct support of work tasks and facilitating organizational outcomes as two important ways workplace design contributes to organizational effectiveness.

Kupritz (2002) examined trainee perceptions of organizational factors impacting newly acquired supervisory skills. The study determined that office workers perceived

workplace design to be an important organizational factor affecting their ability and opportunity to perform newly acquired supervisory skills. Physical enclosure, layout, furniture, flexibility, ergonomic design, and acoustical privacy were some of the design features identified by study participants as impacting transfer. Workplace design perceived to impede transfer and workplace design perceived to facilitate transfer ranked first and second, respectively, in cumulative frequencies for elicited responses regarding organizational factors impacting transfer. The qualitative nature of this earlier ethnographic study, however, did not allow the investigator to measure the strength of relationships between workplace design features and acquired training skills, nor did it provide the opportunity for the investigator to compare the relative weighting of importance given to workplace design features to other organizational factors for training transfer (Kupritz, 2002).

The present study extends the work of the Kupritz (2002) study by utilizing the Heuristic Elicitation Methodology (HEM) to determine the importance of workplace design as an organizational factor impacting transfer. Dr. Virginia Kupritz developed the HEM instrument for the present study. The HEM will allow participants to prioritize the importance given to workplace design as an organizational factor impacting training transfer and to determine the strength of relationships between workplace design features and acquired training skills. The present study also offers a conceptual model that proposes where workplace design fits among other organizational factors perceived to impact training transfer. The conceptual model of the training transfer process proposed in the present study is based in large part on the Baldwin and Ford Model of the Transfer

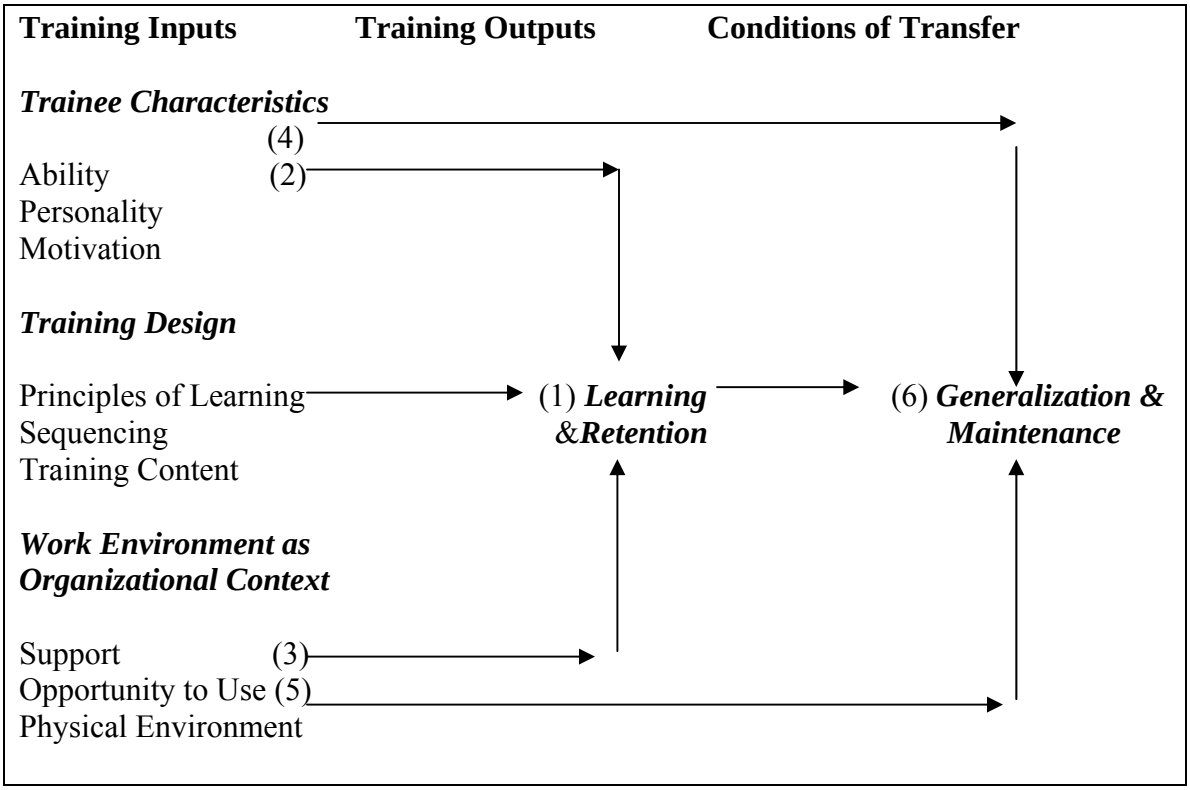


Figure 1. Model of the training transfer process proposed for the current study

Process (1988). Figure 1 depicts the model of the training transfer process proposed by the landmark Baldwin and Ford (1988) study which is modified for the present study to include the physical environment as an emerging work environment factor impacting transfer. The Baldwin and Ford model posits that training outcomes and training-input factors have both a direct and indirect effect on conditions of transfer.

Six linkages are critical to understanding the transfer process. Working backwards through the model, these linkages are as follows: (6) Training Outcomes of Learning and Retention has a direct effect on the Conditions of Transfer; (5&4) Trainee Characteristics and Work-Environment Characteristics are hypothesized to have direct effects on transfer

regardless of initial learning during the training program or retention of the training material; (3, 2, & 1) Training Outcomes (Learning and Retention) are viewed as directly affected by the three training inputs of training design, trainee characteristics, and work environment characteristics. The physical environment is proposed in the current study to be a part of the work environment as organizational context impacting training transfer. Sundstrom, De Meuse, and Futrell (1990) describe the organizational context as "relevant features of the organization external to individual work teams or units" (p. 121), and identifies the physical environment as one of eight aspects of organizational context impacting work team effectiveness. The model for the present study also posits the physical environment as an aspect of organizational context, but proposes that it has an impact on training transfer as a part of the work environment first proposed in the Baldwin and Ford (1988) study.

Research Questions

The research questions for the present study are the same as those in the Kupritz (2002) study. The primary question asked: What workplace design features do trainees perceive as facilitating and impeding transfer? While this question was the primary focus of the study, a secondary question was asked to determine where workplace design fits in with other organizational factors: What is the relative impact of these workplace design features on transfer compared with other organizational factors perceived to impact transfer?

Definition of Terms

The following terms and definitions are provided to assist readers of this study. Each term has specific significance to the study.

1. Structured interview- The fundamental principle of the structured interview is to provide a framework within which respondents can express their own understandings in their own terms (Patton, 2002). The particular structured interview used in this study is called the Domain Definition whereby a set of interlinking questions using verbatim responses are plugged into subsequent questions so that the interviewee's own language is used in the questions. In this way, the questions are respondent generated (Harding & Livesay, 1984).

2. Heuristic Elicitation Methodology (HEM)- a research methodology consisting of qualitative and quantitative methods utilizing successive phases of elicitation where the researcher develops subsequent questions/instruments from responses elicited in an earlier phase.

3. Authenticity and Trustworthiness- Interpretivist research seeks to legitimize knowledge through authenticity and trustworthiness of the findings, which are the criteria used to judge the quality and credibility of the research findings (Denzin & Lincoln, 1994; LeCompte, & Schensul, 1999; Patton, 2002). While the concepts of authenticity and trustworthiness are used often times interchangeably with internal validity, Patton (2002) points out that the qualitative paradigm "has moved toward preferring language such as trustworthiness and authenticity" (p. 51). The present study uses this preferred language in its discussion about the study's research quality and credibility.

4. Workplace Design- includes building design, interior and exterior features, and surrounding landscapes. Sundstrom (1985, p. 174) describes workplace design as the "layout and appearance of buildings, the arrangement and properties of rooms, characteristics of equipment and furniture, and the associated ambient conditions (sound, light, temperature, air)".

5. Social interference and interpretive theories- two theoretical perspectives are primarily used to guide the present study regarding the applied nature of research and its methodology: Social interference theory and interpretive theory. Social interference attributes negative employee reactions to perceived lack of control and difficulty performing regular work tasks (Evans, Johannson, & Carere, 1994; Oldham, Cummings, & Zhou, 1995). The present study links this perspective to the physical environment's role as a possible facilitator or inhibitor of training transfer. Interpretivism, as interpretive theory of culture (Denzin & Lincoln, 1994), assumes that we can only know reality through the intrasubjective and intersubjective understandings and meanings constructed within the collaborative world (Angen, 2000). The present study links this perspective to the method used in the study.

LITERATURE REVIEW

Training Transfer: Definition

While training transfer is generally referred to as the degree to which trainees effectively apply the knowledge, skills, and attitudes gained in a training context to the job (Baldwin & Ford, 1988; Burke & Baldwin, 1999), multiple definitions of this complex phenomenon exist in the literature. Ford and Weissbein (1997) define training transfer as the application, generalizability, and maintenance of new knowledge and skills. Many researchers use the terms training and learning interchangeably. For example, Ausubel and Robinson (1969, p. 609) referred to learning transfer as "the utilization of learning in one context that was acquired in another context." As one of the earlier studies focusing on learning transfer in an organizational context, the authors identified three types of learning transfer: (1) sequential, (2) lateral, and (3) vertical.

Sequential transfer refers to efforts to use knowledge gained initially in a training intervention to help workers or students learn subsequent materials. Lateral transfer refers to using knowledge gained across substantive subject matter areas. Vertical transfer refers to the utilization of learning up the levels of the learning taxonomy. Another early study by Huczynski and Lewis (1980) assessed organizational factors facilitating and inhibiting the transfer of learning from management technique courses to work situations. More recently, Velsor and Musselwhite (1986) investigated learning transfer relative to leadership development programs, Holton et al. (2000) used the term "transfer of learning" to acknowledge the variability in the kinds of training and learning that are needed in the modern workplace, and Lim and Johnson (2002) use the term "learning transfer" in their study assessing the learning transfer made by HRD professionals from a

Korean organization for a training intervention focusing on technologies used to improve performance.

For purposes of this dissertation, training transfer refers to organized attempts to transform new knowledge and skills into on the job performance. However, regardless of the definition used to describe the phenomenon, transfer of training continues to be one of the most salient and complex issues facing HRD professionals and practitioners (Kozlowski, Brown, Weissbein, Cannon-Bowers, & Salas, 2000).

Training Transfer: History

The extant organizational-training literature is saturated with empirical studies focusing on facilitators and inhibitors of training transfer. However, two of the most comprehensive reviews of the organizational-training literature provide a framework for the present study.

The Baldwin and Ford (1988) and Ford and Weissbein (1997) studies are widely accepted among HRD researchers and practitioners as the most comprehensive reviews of the training transfer literature completed to date. The authors review much of the early training transfer literature, and provide criticisms and directions for future study. Baldwin and Ford (1988) developed a model of the transfer process that used training-input factors, training outcomes, and conditions of transfer to describe the training transfer process.

Conditions of transfer refer to the application of learned material to the work environment and maintaining the learned material over an extended period of time in the work environment. The authors define training outcomes in terms of the amount of new learning that occurs within a training intervention and the level of retention following the

intervention. However, the history of training transfer research began with many early studies that focused on training-inputs, which include training program design, trainee characteristics, and characteristics of the work/job-environment (Baldwin & Ford, 1988).

Training Program Design

Training program design received an extensive amount of attention from training and development researchers in the 1950s and 1960s. These studies generally focused on increasing training transfer by improving the design of training content. Thorndike and Woodworth (1901) were two of the first researchers to advocate the use of identical elements—incorporating identical stimulus-response elements in the learning and transfer environments.

Crafts (1935) and Underwood (1951) also recommended this approach to improving training content design. McGehee and Thayer (1961) suggested teaching general principles, the rules underlying training content, as a method of improving training design. Many other researchers examined this method as well (see, for example, Cominsky, 1982; Crannel, 1956; Forgus & Schwartz, 1957). Some researchers examined the use of stimulus variability—the presentation of salient training stimuli in a variety of ways—to increase training transfer through improved training content (Baldwin, 1987; Duncan, 1958; Ellis, 1965).

Another empirically researched principle for improving training content included utilizing various conditions of practice (Briggs & Naylor, 1962; Naylor & Briggs, 1963; Wexley & Thornton, 1972). Specifically, this technique included using distributed sessions, effective feedback, and over learning in the training environment.

Training evaluation has also received attention in the training and development literature relative to training program design. Kirkpatrick (1967) provided a four-level model that included guidelines for the effective evaluation of: (1) trainees' reaction to a particular training program; (2) the amount of learning that occurred; (3) the changes in on-the-job behaviors that resulted from the training; and (4) the tangible results of the training program. More recently, attempts have been made to expand Kirkpatrick's four-level evaluation model to include return on investment calculations to help organizations more accurately analyze the economics of training program design and implementation (Phillips, 1997). Holton (1996) and Russ-Eft (1995), in particular, have criticized these types of studies for overlooking secondary environmental elements impacting training transfer.

Baldwin and Ford (1988) identified two basic limitations in these types of studies: (1) the tasks used limited the researcher(s)' ability to generalize beyond short-term, basic motor tasks and information recall training; and (2) the researchers in these studies used learning and short-term retention as criterion measures and they did not examine the direct effect of training-design factors on training outcomes and relate those outcomes to conditions of transfer.

While Ford and Weissbein (1997) acknowledged that progress had been made in these areas in their updated review of the relevant organizational-training literature (they cite Baldwin (1992) as an example of a study that began using more complex tasks, diverse samples, and longer time intervals between training intervention and criterion assessment to more effectively demonstrate transfer), the use of overall measures of

effectiveness in lieu of analyzing specific dimensions of transfer remained a serious problem that needs to be addressed in the literature.

Trainee Characteristics

A wealth of empirical research focused on trainee characteristics. Researchers primarily used retention as the criterion measure for trainee characteristic studies (Baldwin & Ford, 1988). Some of the earliest studies of this type asked trainees to recall training content soon after the completion of a training intervention (Wexley & Baldwin, 1986). Other researchers collected information relative to the application and maintenance of learned skills in the work environment.

Huczynski and Lewis (1980) sought to isolate the organizational factors impacting transfer from those related to individual characteristics or the training course design in their study of the learning transfer process in management training. The researchers believed that courses chosen for analysis in previous studies were generally too complicated. The variables were multidimensional in nature and the research designs and instruments could not deal with them effectively. Therefore, the researchers selected a management course with only two main objectives: 1) to teach participants principles of network analysis and 2) to encourage them to apply their new knowledge in the work environment.

The researchers compared two groups of course members. The first group (University Group) consisted of 17 staff members from various West Scotland heavy construction and engineering firms who attended the session held at Glasgow University. The second group (Company Group) consisted of 32 trainees within a West Scotland

electronics firm. This group attended an in-house session facilitated by a management consultant.

The researchers collected data through survey questionnaires and semi-structured interviews (Huczynski & Lewis, 1980). The questionnaire was administered in two parts. The first part of the questionnaire was designed to determine how useful each participant believed the network analysis would be in performing tasks on the job. The second part of the questionnaire assessed each participant's perception of the technique's applications in practice. Finally, the researchers asked the participants about their intent to transfer their trained skills to the work environment through the semi-structured interviews.

After four months, the researchers asked the participants about their perceptions of how successful they believed they were in transferring skills from the training intervention to their work environment. The researchers found strong support for improving training transfer success through enhanced participant motivation which could be accomplished through allowing the participant to make his/her own decisions regarding course attendance, allowing the participant to be directly involved in the decision making process, and encouraging discussions with supervision regarding course expectations and outcomes (Huczynski & Lewis, 1980).

Noe (1986) also analyzed trainee characteristics and integrated relevant organizational behavior theory and concepts into a model suggesting possible links between trainee attitudes and attributes and the effectiveness of training interventions. The model, based in part on Kirkpatrick's (1967) multiple measures of training effectiveness, posits that trainees' attitudes toward their behavior, job/career

development, and work conditions have facilitating and impeding effects on organizational learning, change, and fulfillment of organizational goals (Noe, 1986).

Noe (1986) distinguishes between individuals based on the extent to which she or he makes internal or external attributions relative to work outcomes. The model proposes that these attributions directly influence the individual's reaction to feedback regarding skill assessment, expectancies regarding effort invested to master the training program and the resulting rewards, and attitudes toward job and career. While individuals with internal attributions are more likely to identify psychologically with their work and career and link effort and performance outcomes, external-focused individuals are generally less accepting of assessments of their skills, weaknesses, and abilities. However, Noe (1986) hypothesized that motivation to learn is directly influenced by reaction to skill assessment feedback, expectancies, and career and job attitudes.

The researcher also listed four conditions believed to be necessary for employees to exhibit high motivation to learn (Noe, 1986). First, trainees must feel that a valid assessment of their knowledge, skills, and abilities has been completed. Secondly, trainees must believe that they can master the content of the training program with a reasonable amount of effort. This condition was related to ensuring that employees believed that program participation and content mastery were related to favorable career outcomes such as salary increases and horizontal or vertical movement through the organizational hierarchy. The third condition related to the value trainees place on good job performance. The researchers believed that the more trainees identified psychologically with their jobs, exhibited career exploration behaviors, and valued good job performance the more highly motivated they were to learn. The final condition related

to technology and resources to support learning. Trainees who perceived their organization as providing the necessary workplace support for the trained skills were more highly motivated to learn (Noe, 1986).

More recently, Tziner, Haccoun, and Kadish (1991) concluded that trainee characteristics such as motivation were influential in trained skills transferring into the work environment. Many other researchers have reached similar conclusions (Holton, 1996; Holton & Baldwin, 2000). Trainee characteristics such as personal locus of control (Noe, 1986), individual differences (Gist, Stevens, & Bavetta, 1990), individual motivation (Bates, Holton, Seyler, & Carvalho, 2000), and motivations influencing the transfer of learning to work performance (Machin & Fogarty, 1997; Yamnill & McLean, 2001) have also been explored in the organizational-training literature.

Some of the criticisms of the literature focusing on trainee characteristics include the lack of theoretical frameworks using systematic approaches to study the training transfer phenomena and the use of self-report measures of transfer which are inadequate for relating trainee characteristics to the transfer process and for establishing which training interventions have the most robust impact on transfer (Baldwin & Ford, 1988). Ford and Weissbein (1997) noted the progress that had been made in this area by recognizing studies such as Facteau et al. (1995) which utilized theoretical frameworks from relevant career development literature and expectancy theory to produce a theory-based model of pre-training factors influencing training programs and learning.

Work Environment

The final training-input that has been the subject of many empirical organizational-training studies is the work environment. Baldwin and Ford (1988) noted

that while the practitioner training literature often cited a relationship between positive transfer and factors in the work environment, very little empirical evidence supported these assertions. Recent research examining how organizations work is beginning to shed light on reasons why sound training does not automatically result in effective performance back on the job (Broad, 1997). The present study addresses this specific issue rather than levels of evaluation for training transfer because the study is examining an organizational factor impacting transfer rather than the training itself. As stated earlier, Holton (1996) and Russ-Eft (1995) argue that environmental elements (such as the physical environment) are secondary influences impacting transfer conditions that are not represented in linear evaluation models, such as Kirkpatrick's. Holton and Russ-Eft point out that training evaluation levels (for example, level three which addresses the application of learning on the job) do not address secondary environmental elements.

Leifer and Newstrom (1980) were two of the earliest training and development researchers to suggest a "holistic" approach to successful training transfer and improved employee performance. While the researchers recognized the value of understanding and trying to manipulate the other training-input variables of training program design and trainee characteristics, they also believed successful transfer required additional processes in the work environment.

The researchers' three step training enhancement techniques were designed to be implemented before, during, and post training intervention (Leifer & Newstrom, 1980). Prior to training, the researchers advocated the use of advance letters, prescribed tasks, and supervisor involvement. These pre-training activities were designed to improve the likelihood of transfer by introducing the employee to the training objectives and on-the-

job benefits, involving the supervisor and gaining management support, and preparing the employee through involvement and role definition. During training, the researchers suggested training contracts, problem anticipation discussions, and support groups for transfer enhancement.

While training contracts strengthen participants' commitment to transfer, problem anticipation discussions help them to identify barriers to new skills being applied on-the-job and develop strategies to overcome the obstacles. Support groups are established during training to provide a network for trainees to provide and receive feedback. Finally, the researchers offered delayed evaluation, progress reports, and direct reinforcement as activities that could be conducted post training to increase the likelihood that the new skills would transfer to on-the-job performance (Leifer & Newstrom, 1980).

Early studies of the work environment also used large-scale surveys to examine variables such as leadership climate (Fleishman, 1953), work climate (Baumgartel, Reynolds, & Pathan, 1984), and supervisory support (Huczynski & Lewis, 1980). Transfer climate was also introduced as a factor in the work environment influencing transfer (Miles, 1965).

Baldwin and Ford (1988) identified two major criticisms of the organizational-training literature regarding work environment variables and their impact on training transfer. The first was the need to identify key work-environment variables and to operationalize these variables. While the authors supported the empirical evidence that work environment factors such as managerial support, transfer climate, and opportunity to use trained skills on the job are important variables influencing transfer, they also concluded that these factors were multidimensional in nature and needed to be

operationalized in order to establish causality between work-environment factors and behavioral changes.

The second criticism dealt with the criterion problem, which refers to the difficulty in choosing dimensions to represent a criterion construct (Austin & Villanova, 1992). Baldwin and Ford (1988) noted that many of the aforementioned work environment studies used self-reports of behavioral change as the major measure of transfer. For example, Baumgartel et al. (1984) used the term "intention to transfer" as a measure of the extent of application and maintenance of learned skills, but the measure actually assessed motivation to transfer.

In their updated review of the organizational/training literature, Ford and Weissbein (1997) noted that progress had been made regarding empirical studies of factors in the work environment impacting training transfer. Highlighting the impact of the work environment on training transfer were studies such as Ford, Quinones, Sego, and Sorra (1992), which examined the impact of trainees' work environments on the transfer of training. The study consisted of 180 Air Force training program graduates and their supervisors. The training focused on improving the participants' abilities to operate equipment used in the repair and maintenance of aircraft. The authors concluded since some trainees perform similar jobs they may be given different opportunities to perform their trained skills in their work situation which could inhibit the transfer of these newly learned skills to the job.

More recent studies have provided additional evidence that management support, given prior to and post-training intervention, leads to greater transfer of training (Brinkerhoff & Montesino, 1995). Broad and Newstrom (1992) suggested supervisor

support, and transfer partnerships among trainee, trainer, and manager were of central importance in enhancing transfer of learning. Several other HRD researchers have also analyzed the effects of goal setting, self-management training, and other post-training interventions as factors in the work environment that impact transfer (for example, Gist, Stevens, & Bavetta, 1991; Marx, 1982).

Ford and Weissbein (1997) also reviewed the contemporary organizational-training literature that included several studies that exhibited a greater understanding and measurement of the work environment as well as evidence of interventions in the research design to show a causal relationship between changes in work environment characteristics and impacts to training transfer (for example, Brinkerhoff & Montesino, 1995; Rouiller & Goldstein, 1993). However, the researchers reported that progress was still needed in this area of the literature. Many criticisms in the extant organizational-training literature related to the use of short-term, basic motor tasks that do not represent the changing workplace. Others raised concerns about the lack of theoretical frameworks to adequately study the training transfer phenomena. Even more criticisms cite multiple problems addressing the operationalization of criteria to deal with their multidimensionality (Ford & Weissbein, 1997).

More recent HRD research has emphasized addressing many of these criticisms. The next section of the current study provides a brief review of some of the more contemporary HRD research conducted since the aforementioned landmark studies. These studies seek to address many of the criticisms raised in the aforementioned Baldwin and Ford (1988) and Ford and Weissbein (1997) studies by not only finding additional support for previously identified organizational variables impacting transfer

such as supervisory support, but also improving the reliability and internal validity of training transfer studies through the development of valid and generalizable transfer system scales (Holton, Balwin, et al., 2000).

Training Transfer: Contemporary Research

Several contemporary empirical studies have identified managerial/supervisory support as an organizational factor impacting training transfer since the Baldwin and Ford (1988) review and the updated Ford and Weissbein (1997) study. For example, Hawley and Barnard (2005) investigated the work environment's influence on training transfer in their study involving participants in a training program in the nuclear power industry. Twenty-one managers participated in the training course designed to help the managers learn to utilize training as a performance improvement approach rather than simply an organizational process with unknown benefits to the organization. The course had five phases including modules focusing on performance consulting, performance analysis, solution design, solution delivery, and solution evaluation.

The researchers used qualitative methods, such as focus groups and follow-up telephone interviews, and quantitative methods, such as pre, mid, and post-course surveys to collect data on the effectiveness of the course and to assess the level of skills transferred back to the work environment (Hawley & Barnard, 2005). Two primary themes emerged from the data analysis. First, strong evidence supported the positive influence of peer support on the ability of the trainees to transfer their new learning to on the job performance. Secondly, the researchers found strong support for the negative influence of lack of supervisory support in the transfer process (Hawley & Barnard).

Similarly, contemporary researchers such as Cromwell and Kolb (2004) have used a three-points-of-time research design to more accurately measure maintenance of learned skills in the workplace. These researchers looked at four work-environment factors--organization support, supervisor support, peer support, and participation in a peer support network--and their relationship to learning transfer at one, six, and twelve-month intervals following a supervisory skills training intervention and found some significant differences in trainees' perceptions of their ability to transfer learned skills to the workplace immediately following the training and at the aforementioned time intervals (Cromwell & Kolb, 2004).

Sixty-three frontline supervisors at a large northeastern university participated in the study. Each supervisor had completed a 61-hour training program consisting of 56 hours of in-class instruction and an additional five hours for a group project (Cromwell & Kolb, 2004). Participants in the study completed a five-part questionnaire that asked questions relative to the transfer of critical skills taught in the course. The questionnaire also focused on the level of organizational, supervisory, and peer support received by the participants and their level of involvement in the peer support network. Frontline supervisors and managers also completed questionnaires focusing on these topics in addition to short answer questions regarding their own perceptions of the participants' ability to transfer the training to on-the-job performance (Cromwell & Kolb).

The researchers found that all four of the work-environment factors had a statistically significant positive correlation with learning transfer (Cromwell & Kolb, 2004). Many of the participants reported management support and buy-in as one of a few barriers to the application of their newly trained skills on-the-job.

Lim and Morris (2006) identified managerial support as one of the most influential variables affecting learning transfer in their study of the influence of trainee characteristics, instructional satisfaction, and organizational factors on training transfer. The researchers defined learning outcomes in terms of before, right after, and three months following the training intervention and transfer outcomes in terms of trainees' perceived applicability of learned content and perceived application of learned skills in the workplace at certain intervals after training completion.

Gumuseli and Ergin (2002) conducted a study involving a group of sales representatives participating in the basic sales training program for sales representatives and their supervisors in the Coca-Cola Bottlers of Turkey. In their study, based largely on Kirkpatrick's four-stage evaluation model, the researchers found a significant difference between the experimental group (supported by managers) and the control group (unsupported by managers) relative to positive changes in their on-the-job behavior and the way they transferred training to their regular jobs. Kontoghiorghes (2001) identified supervisory support as an important variable facilitating trainee learning and training transfer in a study of 264 training, human resource, quality, and organizational development professionals.

Similarly, Holton et al. (1997) determined that supervisory support is a critical variable outside of the training program that can positively or negatively affect training transfer in their study focusing on the motivation to transfer skills and knowledge learned in a computer-based training intervention relative to five variables: individual or general attitudes, situational specific attitudes, reactions, learning, and work environment factors.

As with managerial support, ample empirical evidence upholds collegial support as an organizational factor influencing transfer. Pidd (2004) investigated influences of the transfer environment on training transfer in a study of a workplace drug and alcohol training program. The researcher utilized social identity/learning theory to better understand the potential impact of co-worker support on training transfer. In research investigating factors that potentially influence transfer of training in the social services industry in the United Kingdom, Clarke (2002) lists social support among a number of factors in the work environment mediating training transfer. Bates et al. (2000) also lists peer support among several environmental factors including supervisor sanctions, opportunity to use, and supervisor support important to workers relative to motivation to transfer training in their study focusing on factors affecting motivation to transfer training in a computer-based program.

In their study of perceptions related to change and transfer climate that constrained or facilitated employee use of Total Quality (TQ) training, Bennett, Lehman, and Forst (1999) reported coworker support as a work climate factor that supports transfer of training. Holton, Bates, and Ruona (1998) found six variables within organizations that appear to influence training transfer. Peer support is listed among these six along with supervisor support, manager sanctions, opportunity to use learning, openness to change, and feedback.

Finally, in their study of variables influencing the transfer process, Smith-Jentsch et al. (2001) suggest that peer support as a part of the overall team climate is a mediator of training transfer. The researchers assessed 80 pilots in a flight simulator under one of two conditions: maximum performance and typical performance. The maximum

performance group was made aware of the skill being assessed and their teammates' involvement while those in the typical performance group were not. Other organizational factors impacting the transfer of training that continue to receive considerable attention in the contemporary HRD and organizational development (OD) literature include resources and technology to support transfer (Awoniyi, Griego, & Morgan, 2002; Luthans & Stajkovic, 1999) and opportunity to use training (Lim & Johnson, 2002; Clarke, 2002).

The Baldwin and Ford (1988) landmark study of training transfer provided the framework for many contemporary studies of the phenomenon (see, for example, Chen, Holton, & Bates, 2005; Clarke, 2002; Holton et al., 1997; Holton & Baldwin, 2000). However, many of these researchers began to explore a broader view of the training transfer process. Holton and Baldwin (2000) referred to learning (training) transfer as a system, which includes all of the factors in the trainee, the training content, and the organization that impact transfer of learning to organizational performance. This view of training transfer is much broader than earlier studies that primarily focused on the mediating effects of the transfer climate (Roullier & Goldstein, 1993; Tracey et al., 1995). Transfer climate is referred to here as that part of the work environment that mediates the relationship between the organizational context and an employee's attitude and work behavior. HRD researchers can understand and predict transfer issues only by examining the transfer system as a whole (Holton & Baldwin, 2000).

In response to the changing view of training transfer research from examining individual aspects of the trainee, the training content, and the work environment to analyzing the transfer system as a whole, some HRD researchers began to work towards the development of a valid and generalizable set of transfer system scales with valid

constructs and reliable psychometric qualities (Holton, Bates, et al. 2000). Researchers could use these scales to conduct cross-study comparisons with valid constructs that would be applicable across a variety of populations and organizational contexts. Other benefits of the development of a validated and generalizable transfer system instrument included improved diagnostic potential pre-training intervention and more accurate evaluation results relative to the intervention outcomes (Holton, Bates, et al.).

Rouiller and Goldstein (1993) first proposed a general transfer system instrument in their research focusing on the relationship between organizational transfer climate and the transfer of training. Holton et al. (1997) and Holton, Ruona, and Leimbach (1998) used factor analysis in an attempt to validate the transfer constructs and the proposed transfer system instrument. While the researchers were unable to validate the transfer instrument as proposed by Roullier and Goldstein due to significant differences found in the construct structure, they were able to expand on these constructs to develop a nine-factor transfer system instrument, called the Learning Transfer System Inventory (LTSI), that more accurately reflected the perception of individuals as organizationally referent instead of psychologically based (Holton et al., 1997).

Holton, Bates, et al. (2000) refined the Learning Transfer System Inventory adding seven new constructs to the earlier nine-factor version. More recent empirical evidence of the validity of the LTSI has examined the instrument's utility across organizational settings (Holton, Chen, & Naquin, 2003), and across cultural contexts (Chen, Holton, & Bates, 2005) with relatively supportive outcomes for the instrument.

Kontoghiorghes (2004) has also addressed the need for the development of new models for analyzing learning transfer. The researcher advocated a more holistic

approach to researching and explaining the phenomenon in his study examining the validity of a new model of training transfer. This study incorporated multiple design variables from learning and organizational dimensions such as training transfer climate, organizational structure, job design, motivation, satisfaction, and process improvement climate.

This study built upon earlier research by Kontoghiorghes (2001) suggesting that the work environment could be an important dimension impacting training effectiveness especially when considered in relation to performance rather than transfer climate. However, the new model presented in this study offered a more holistic view of the training transfer system and posited individual and organizational performance as a common thread between training transfer and characteristics of the work environment (Kontoghiorghes, 2004).

Several other contemporary studies of training transfer focused on a broader view of the phenomenon by investigating the organizational learning culture and its impact on learning transfer. For the purposes of this study, organizational learning culture describes the process and structural dimensions of learning within the framework of an organization (Watkins & Marsick, 2003). Therefore, the term "learning organization" refers to an organization that has the resources to strategically align people and organizational structure to enable the entire organization to move towards an environment of constant learning and change.

Bates and Khasaweneh (2005) examined the relationship between organizational learning culture, learning transfer climate, and organizational innovation, and presented a research model of the proposed relationship in their study of various public and private

sector organizations in Jordan. The researchers posited learning transfer climate as a mediator of organizational innovation and learning organization culture.

The study involved 450 participants from 28 different public and private sector organizations across the country of Jordan (Bates & Khasaweneh, 2005). The researchers utilized scales from an assessment tool entitled Assessing Strategic Leverage for the Learning Organization (ASLLO) to measure perceived organizational innovation. Organizational innovation is defined here as the perception of how well an organization adopts or creates new ideas and is able to institutionalize these ideas for better productivity, performance, and to improve work processes (Kaiser & Holton, 1998). Scales for the measurement of organizational learning culture were also drawn from the ASLLO. The researchers utilized scales from the Learning Transfer System Inventory (LTSI), developed by Holton, Bates, et al. (2000), to assess learning transfer climate.

The results of the study supported the researchers' hypothesized relationships between organizational learning culture and innovation (Bates & Khasaweneh, 2005). As predicted, the results supported organizational learning culture as a predictor of learning transfer climates and that both of these factors can be facilitators of innovation within organizations.

Egan, Yang, and Bartlett (2004) also examined organizational learning and its effects on training transfer. The researchers sought to better understand the relationships between organizational learning culture, job satisfaction, and motivation to transfer training and reasoned that organizations that embody a learning culture have employees with increased job satisfaction. Therefore, organizational learning culture and job

satisfaction influence employee motivation to transfer training and turnover intention (Egan et al).

The researchers administered a web-based survey to approximately 245 participants representing thirteen large U.S. firms. All of the respondents were employed in the information technology sector of the participating organizations. The Dimensions of Learning Organization Questionnaire (DLOQ), developed by Watkins and Marsick (2003), was used to assess the level of organization learning culture for the study. The researchers used scales related to job satisfaction from the Michigan Organizational Assessment Questionnaire to assess job satisfaction, items with high measured reliability from previous studies to assess motivation to transfer training (see, for example, Noe, 1986; Seyler, Holton, Bates, Burnett, & Carvalho, 1998), and three items from a study by Irving, Coleman, and Cooper (1997) to measure turnover intention.

The researchers utilized structural equation modeling to test the hypothesized relationships among the variables. The data analysis provided support for the all of the hypothesized relationships. First, the researchers found ample support for organizational learning culture as a valid construct for the prediction of job satisfaction along with the two outcome variables: motivation and turnover.

Secondly, the researchers found that while organizational learning culture significantly impacted job satisfaction and motivation to transfer training, the direct influence of job satisfaction on employee motivation to transfer training was positive, but insignificant. Finally, the findings revealed that the impact of learning culture on turnover intention was indirect and mediated by job satisfaction (Egan et al., 2004). Other contemporary researchers have recently examined the training transfer phenomenon from

the perspective of organizational learning and had similar findings (see, for example, Broad, 2000; Jaw & Liu, 2003).

While the development of the LTSI and other contemporary HRD research focusing on the validation of transfer constructs has helped to address some of the concerns raised in the Baldwin and Ford (1988) and Ford and Weissbein (1997) training transfer studies, other HRD researchers have advanced training transfer research by addressing other criticisms raised in these landmark studies.

The Baldwin and Ford (1988) study highlighted the need for training transfer researchers to recognize the multidimensional nature of the transfer constructs that they were using in their studies. Ford and Weissbein (1997) noted that while progress had been made in this area during the years following the Baldwin and Ford (1988) study, deficiencies in this research still needed attention.

Some contemporary HRD studies have sought to improve upon past training transfer research by better exploring the multidimensional nature of transfer constructs employed in recent studies. For example, Smith-Jentsch, Salas, and Brannick (2001) addressed the multidimensional nature of transfer constructs in their study investigating the combined effects of trainee characteristics, team leader support, and team climate on training transfer by collecting multidimensional measures of each construct consistent with the trained skill in addition to measuring the overall performance effectiveness.

The aforementioned landmark studies of training transfer also identified the need for more longitudinal studies addressing the relatively short time frames used to measure transfer (Ford & Weissbein, 1997). Other HRD researchers have improved upon this gap in the research identified by Ford and Weissbein (1997) by examining the effects of

posttraining and relapse prevention interventions on learning transfer and performance. For example, Gaudine and Saks (2004) conducted a longitudinal quasi-experiment examining the effects of relapse prevention and transfer enhancement posttraining techniques on the transfer of learning for nurses attending a two-day training program. The longitudinal design of the study helped the researchers determine that while the effects of the intervention were limited, all the participants showed significant increases in self-efficacy, behavior, and job performance, especially when combined with relapse prevention strategies.

These findings generally supported the findings of a similar study conducted by Burke and Baldwin (1999) that suggested relapse prevention strategies have a modest impact on employee use of transfer strategies. However, the researchers believed that the degree of impact depended on the transfer climate of the organization. Finally, Ford and Weissbein (1997) discussed the need for the development of theories to support new models of the training transfer process.

Yamnill and McLean (2001) provided a comprehensive review of theories supporting Holton's (1996) model of factors affecting transfer of training. The authors cited expectancy theory, equity theory, and goal-setting theory as theories of human behavior that aid HRD researchers in understanding and predicting employee behaviors mediating performance and clarifying the employee motivation to transfer factor in the model. The researchers also provided theories for training transfer design and theories supporting the transfer climate construct in Holton's model (Yamnill & McLean, 2001).

In light of these HRD studies and their contributions to theory building, the following section discusses the ideology and methodology used in the present study for

potential theory building in relative to training transfer research. This discussion intends to briefly familiarize readers with the ideology and methodology utilized in the present study; however, an in-depth examination of the ideology and methodology is outside the scope and purpose of the present study. Lynham (2000) encouraged HRD scholars to "commit to conversations to agree to and clarify inclusive, multiple theory-building research paradigms at a philosophical (ontological and epistemological) rather than just a methods level" (p.175).

HEM: A Balanced Approach to Qualitative and Quantitative Inquiry

Traditionally, HRD researchers have utilized a positivist (quantitative) approach to examine many of the issues most important to the academy-training, organizational development, personnel management, and organizational change (see, for example, Skinner, Tagg, & Holloway. 2000). However, many of these HRD issues are multifaceted and have underlying influences affecting the phenomena being examined. Many researchers are finding some research limitations when quantitative methods are exclusively used (Malterud, 2001; Russ-Eft, 1995; Smith & Dowling, 2001).

The addition of qualitative research methods can help HRD researchers resolve many of these issues and help to bring clarification and in-depth understanding of HRD studies to researchers and the audience for the research findings (Liebscher, 1998; Skinner et al., 2000). Eminent measurement and methods scholars such as Donald Campbell and Lee J. Cronbach have publicly recognized the contributions that qualitative inquiry can make (Merriam & Associates, 2000).

The value of heuristic elicitation (such as the Heuristic Elicitation Methodology)

has long been recognized in social science research (Denzin & Lincoln, 1994; Harding, 1974; Harding & Livesay, 1984; Patton, 2002; Spradley, 1979). The HEM was applauded in a classic environment and behavior methods text, which was recently updated: "This multi-method triangulation approach [HEM] gives…a particularly complete picture of a study phenomenon and the focused interview as a critical probing tool" (Zeisel, 2006, p. 250).

With the exception of Kupritz (1999, 2000a) and Kupritz and Reddy (2002), HRD research has not used the HEM to examine workforce training and organizational development issues. The HEM offers a candidate set of qualitative and quantitative techniques that are readily adaptable to HRD research.

Three major issues will be discussed in this section of the study. The first issue for examination is the current limits of quantitative research in HRD studies and some of the difficulties faced by HRD researchers who exclusively use quantitative methods. The second issue relates to the presentation of empirical support for the HEM's use by discussing the advantages of combining qualitative and quantitative research methods-one of the HEM's most beneficial qualities. Finally, the third issue addresses the characteristics of the HEM. A brief overview of the HEM's history and origin are discussed along with HEM elicitation procedures and research examples.

Current Limits of Quantitative Research in HRD

Over the past decade, the use of stand alone quantitative research methods have left many researchers searching for methods to strengthen the internal validity of their studies (Burba, Petrosko, & Boyle, 2001; Smith & Dowling, 2001). Though common, many quantitative research methods such as employee surveys are now being questioned

by HRD professionals as to their effectiveness in analyzing HRD concerns in the workplace (Swanson & Zuber, 1996; Pernice, 1996). Some HRD professionals are particularly concerned when employee surveys are used independently of other methods.

In their study of failed organizational interventions, Swanson and Zuber (1996) found that using employee surveys without the use of any other data collection process was a primary factor in what HRD professionals commonly refer to as a "failed organizational development intervention." This failed intervention, based solely on one written survey in the subject organization, resulted in decreased productivity and eventually organizational death (Hatcher, 1999). More than one analytic method should always be considered when researching HRD issues in the workplace (Hatcher, 1999; Russ-Eft, 1995).

In addition to concerns expressed regarding the use of narrowly focused employee surveys as a single data collection process, the literature also focuses on the closed nature of stand-alone quantitative research methods and their propensity to neglect important research variables (Smith & Dowling, 2001). Smith and Dowling opted to use a case study method to analyze organizational training programs. The case study method, qualitative in nature, maintained a sense of openness in the research study (see, for example, Van Maanen, 1983; Yin, 1994).

This method also helped to ensure that all variables were explored and that emerging variables were recognized and included in the research (Smith & Dowling, 2001). The study also related several independent variables, including technology, management attitudes, and industrial relations to the extent of training provided to the employees of a number of Australian manufacturing companies. Senior managers were

compared with junior or middle-level managers concerning their commitment to training employees. While the study found that senior managers, because of their long-term perspective, were more committed to training employees than their junior or middle-level counterparts, the researchers believed that a qualitative analysis of the managers' attitudes towards training was needed to better understand their findings and to develop longer-term perspectives in junior or middle-level managers (Smith & Dowling).

The limitations of quantitative methodology in HRD research are major concerns especially when researchers are studying various aspects of different cultures and issues relating to HRD (Kaplan & Maxwell, 1994; Liebscher, 1998). In a study of the comparison of openness of knowledge sharing within organizations of the United States (U.S.) and the People's Republic of China (PRC), the quantitative results indicated that the openness of knowledge sharing among employees in organizations within the two countries was related to their varying levels of collectivism—the relative interest on self vs. collective interests—as well as the potential for conflict between self and collective interests (Chow, Deng, & Ho, 2000). The study also found, consistent with the culture-based expectations of the authors, that employees of Chinese organizations were significantly less likely to share knowledge with a potential recipient than their U.S. counterparts.

The second finding was especially true for potential recipients who were not members of the employees' "in-group." However, the authors found that the quantitative measures yielded only a partial view of self and collective interests (Chow et al., 2000). Using quantitative measures alone did not allow the authors to delve into the cultural attributes that can exert countervailing effects on behavioral intentions (Chow et al.).

While quantitative methods have several limitations when used independently of other analytical methods, researchers can realize many benefits when qualitative and quantitative research methods are combined.

Benefits of Combining Qualitative and Quantitative Research Methods in HRD Studies

Many advantages benefit HRD researchers when qualitative research methodologies are included in their studies. One of these advantages is the in-depth exploration of a phenomenon, one of qualitative research's most fundamental attributes (Black, 1994; Denzin & Lincoln, 1994; Malterud, 2001; Skinner et al. 2000). HRD researchers are able to "seek a deeper truth" through the use of qualitative methods (Black, 1994, p. 425). While HRD researchers generally use more quantitative methodology than qualitative, the issues and concerns of interest to HRD researchers by their very nature may lend themselves more towards qualitative methods (Pernice, 1996; Skinner et al., 2000). Greenhalgh & Taylor (1997) believe qualitative researchers use a "holistic perspective, which preserves the complexities of human behavior" (p. 740).

Much of HRD research is based on interaction among people in the workplace. When conducting HRD studies focusing on personnel or training issues, researchers are often compelled to use an iterative approach, which alters the research methods and the hypothesis as the study progresses in the light of new information gleaned along the way. While quantitative research methodologies generally do not allow this flexibility, HRD researchers, in dealing with people issues, sometimes need to be able show "sensitivity to the richness and variability of the subject matter" (Black, 1994).

Qualitative research methodology is naturally "non-standard and unconfined" (Black, 1994, p. 425) and depends on the subjective experiences of the person or group

being researched and on the researcher himself/herself (Black, 1994). Therefore, HRD researchers who want a deeper understanding of particular individuals or groups related to the HRD issue being addressed in the study can discover a distinct advantage with the inclusion of qualitative research methods.

HRD research needs a methodology that effectively provides quantitative data for statistical analysis of the distribution of attitudes throughout a population, and qualitative data that provides the meaning behind those attitudes. The Heuristic Elicitation Methodology (HEM) used in the present study provides this combination in a way acceptable to researchers in the social sciences as a standard heuristic elicitation procedure in cross-cultural research (Harding & Livesay, 1984).

The HEM, designed to analyze complex issues, has proven to be effective in establishing authenticity and trustworthiness of the findings in studies where it has been employed. This section discusses the philosophy of the HEM and its relationship to ethnography as one type of qualitative methodology. HEM elicitation procedures are then described with research examples given.

As stated earlier, the following section attempts to briefly familiarize readers with the ideology and methodology. Drawing attention to the distinction between methodological commitments and methods is warranted because methodological commitments and assumptions are interconnected in such a way that the "answer given to any one question, taken in order, constrain how others may be answered" (Denzin & Lincoln, 1994, p. 108). The conduct of inquiry is not simply a "matter of mastering technique, copying a method, or following a model. Rather, understanding is to be had through an examination of the epistemological assumptions and claims of a methodology,

through study of its conceptualization of what we are about when we inquire" (Schwandt, 1994, p. 132).

HEM, The Philosophy.

Interpretivism provides the philosophical foundation for the HEM. Interpretivism assumes that we can only know reality through the intrasubjective and intersubjective understandings and meanings constructed within the collaborative world (Angen, 2000). Thus, the resulting understanding of truth differs greatly from "the correspondence theory of truth to which the positivist concept of validity subscribes" (Angen, 2000, p. 386).

The elicitation techniques that make up the HEM work together to uncover and interpret shared meaning regarding a phenomenon. Interpretivist research seeks to legitimize knowledge through authenticity and trustworthiness of the findings, which are the criteria used to judge the quality and credibility of the research findings (Denzin & Lincoln, 1994; LeCompte, & Schensul, 1999; Patton, 2002). Patton (2002) cautions: "It is important to acknowledge at the outset that particular philosophical underpinnings or theoretical orientations and special purposes for qualitative inquiry will generate different criteria for judging quality and credibility" (p. 542). The measurement objective (i.e., inquiry aim) for the qualitative paradigm is to represent or reconstruct personal constructs that people hold through holistic understanding (LeCompte & Schensul, 1999; Yin, 1994).

While the concepts of authenticity and trustworthiness are used often times interchangeably with internal validity, Patton (2002) points out that the qualitative paradigm "has moved toward preferring language such as trustworthiness and authenticity" (p. 51). The present study uses this preferred language in its discussion

about the study's research quality and credibility. In this study, credibility of the measurement is established through instruments that are data respondent generated and data respondent categorized (Harding & Livesay, 1984; LeCompte & Schensul, 1999; Patton, 2002); the language and patterns of speech in the instruments are couched in the same meaning system and frame of reference as respondents (LeCompte & Schensul, 1999; Patton, 2002); particular attention is paid to context through "rich, thick description" (Patton, 2002; Tyler, 2006); and finally, the study triangulates data and methods of inquiry through field observation, archival records, interviews, and a survey that is developed from the interview responses (Denzin & Lincoln, 1994; LeCompte, & Schensul; Patton, 2002).

HEM, The Method.

The elicitation techniques that make up the HEM have been proven to be very effective in collecting culturally specific perceptions from research participants (Harding & Livesay, 1984; Zeisel, 2006). Ethnographic procedures such as the HEM help to establish authenticity and trustworthiness through the nature and format of the questions asked, followed by content analysis procedures (see Denzin, 1978; Denzin & Lincoln, 1994; LeCompte & Schensul, 1999).

The HEM utilizes successive phases of elicitation where the researcher develops subsequent questions/instruments from responses elicited in an earlier phase. The particular organization of the HEM techniques and procedures for data collection and analysis were largely developed by Stefflre (1972), with further development of the techniques by Policy Research and Planning Group, Inc., incorporating a wide range of applications (see, for example, Harding, 1974, 1979).

Policy Research and Planning Group, Inc. further refined the HEM to determine how new items, programs, or services could be developed and described to be culturally appropriate (Harding, 1979; Harding & Livesay, 1984). Harding (1979) broadly used the term "culturally appropriate" to refer to the compatibility of an introduced element with the socio-cultural patterns, goals, values, and circumstances (context) characteristic of the populations to which the element is introduced. The HEM is readily adaptable to HRD research and provides a strategy for examining HRD issues in the workplace.

Today's results-oriented corporate culture generally does not allow extended research time. While the HEM does not provide the instant answers often sought by organizational leaders, it does allow the researcher to collect the necessary data more quickly than the required procedures for a full-blown ethnography (Harding & Livesay, 1984). Future refinement of the HEM should allow researchers to collect the necessary data in a manner efficient enough to allow research-based policy recommendations and decisions to be made (Harding & Livesay).

Researchers can successfully adapt the HEM for use in their studies as long as they have a through understanding of the method and share its ontology, which guides the method (Kupritz, 1996). Careful adaptation of the HEM helps researchers to avoid corresponding incompatible concepts, especially in multidisciplinary studies. However, this should not be confused with corresponding qualitative and quantitative methods. Qualitative work can be positivist or interpretivist (Lin, 1998). The HEM combines these methods in a manner that make it a viable alternative to purely positivist methodological paradigms and theory development in HRD research. The qualitative and quantitative

Heuristic Elicitation Methodology			
	Stage I	Stage II	
Instrument	Domain Definition	Beliefs Elicitation	Preference Ranking
Type of Data	Qualitative	Quantitative	Quantitative
Description	Open-ended interviews in which respondents answer a series of interlinked questions which are recorded verbatim to preserve the language and conceptualizations of the respondents.	Structured interviews in which respondents answer yes or no to questions reflecting aspects of the problem of interest expressed in the concept elicitation.	Structured interviews in which respondents rank order, on the basis of their own preferences, items and attributes in the domain of interest.
Type of Data Analysis	Content Analysis	Statistical techniques from frequencies and distributions to multi-dimensional scaling and hierarchical clustering (the latter are optional)	Mean rankings, tests of significance for subgroup differences

Figure 2. "Heuristic Elicitation Methodology," "Nardi and Harding (1978) "Determining Community Attitudes and Preferences for Programs and Services," Carolina Planning 4 (1) (Spring): 38-45.

methods employed by the HEM all abide by the same ideology and methodological interpretations and application.

HEM, Elicitation Procedures

To illustrate the HEM's elicitation procedures, the current study draws heavily on the work of Dr. Joe Harding who, as president of Policy Research and Planning Group, Inc., was responsible for much of the refinement of the method. The discussion also includes examples of the HEM procedures utilized in two studies (Kupritz, 2000a; Kupritz, 2002) examining workplace design and the role of the physical environment on

HRD issues in the workplace. Figure 2 summarizes the three basic elements of the elicitation phases.

Stage 1- domain definition. The Domain Definition, the first phase of the HEM, utilizes structured interviews in an effort to exhaust the range of the respondents' perceptions concerning the specific variables being examined (for example, Harding & Livesay, 1984; Spradley, 1979, 1980). By exhausting the range of respondents' perceptions, the researcher minimizes the probability of neglecting important variables. The researcher asks two sets of interlinked questions in the domain definition stage. The first set of questions is designed to identify domain "items." The second set of questions is used to determine "item attributes" in the researcher's domain of interest.

Kupritz (2002) used the domain definition stage of the HEM to examine the impact of workplace design on training transfer. To illustrate the style of question used in the Domain Definition, a subset of the questions used in the Kupritz (2002) study is provided below:

1. What skills learned in this workshop are you using now on the job? {Answers = ___.} When ___, what conditions, or office features, or situations make it easier to (or for) ___? {Answers = ___.} Probe: What else might make it easier to conduct ___ other than ___?
2. When ___, what conditions, or office features, or situations make it harder to (or for) ___? {Answers = ___.} Probe: What else might make it harder to conduct ___ other than ___?

The answer to the first question is plugged into the subsequent question in an effort to exhaust the domain (LeCompte & Schensul, 1999). For example, in the subset of questions listed above, one participant's response to the first question was "delivering unpopular messages." This response is plugged into the second question in the following

manner: “When delivering unpopular messages, what conditions, or office features, or situations make it easier for delivering unpopular messages?” The answer to the second question, “I always pull them aside—never in a public place,” is followed by the probe question, “What else might make it easier for delivering unpopular messages, other than pulling them aside-never in a public place?” This style of questioning continues until the participant can no longer provide answers—an indication of the exhausting of the domain (Kupritz, 2002).

The final step in the domain definition stage is content analysis (Spradley, 1979). The responses elicited during the interviews are sorted and analyzed to identify categories, themes, and patterns within the domain. This step also includes the development of cover and included terms that adequately represent the semantic relationships revealed during data analyses. Ultimately, the goal of the researcher is to understand the cultural meanings that the participants attach to the responses provided during the domain definition phase (Kupritz, 2002).

Stage 2 – beliefs elicitation. The Beliefs Elicitation is the second phase of the HEM. The Beliefs Elicitation phase, consisting of a beliefs matrix and a preference ranking, is designed to identify beliefs associated with the domain items and attributes and to determine interrelationships among them (Harding, 1979). The questions used in this phase target value judgments whereby the HEM is designed to determine how genuine the participants’ responses are through social consensus. Determining value judgments about architectural features believed to be important to perform learned behavior on the job is a subjective measure and should not be confused with objective

measurement. Subjective and objective measures can have very different criteria for legitimizing knowledge (Kupritz, 2003).

While the Domain Definition stage is qualitative in nature, the Beliefs Elicitation stage is quantitative. The goal of this stage is to measure the extensiveness of beliefs across the population of interest. Because this requires quantification, the beliefs instrument is developed as a binary matrix for efficient statistical analyses. The actual distribution of beliefs (e.g., attitudes, perceptions) throughout the population is examined during this elicitation phase.

Measuring the extensiveness of beliefs within the population requires quantification. The beliefs instrument is constructed in binary matrix form so that it can be statistically analyzed. The Beliefs Matrix, a structured questionnaire, is developed from the Domain Definition responses in language that is familiar to the respondents. That is, categories are respondent-generated and data respondent-categorized. The Matrix consists of a set of row by column categories. The categories cross-relate items and attributes via a question that can be responded to by a "yes" or "no". The respondent can be queried on all possible permutations of row by column categories in a relatively short period of time, utilizing the matrix format. A single interview provides an extensive amount of data concerning the respondent's perceived association between items and attributes. Aggregated frequencies tabulated from all matrix cells form the basis of quantitative analysis.

To illustrate the Beliefs Elicitation phase, we use data from a study of the role of the physical environment in maximizing opportunities for an aging workforce (Kupritz, 2000a). This study examined the physical attributes of the workplace that are

accommodating to the younger and older American service industry workers. Kupritz (2000a) built upon the findings of an earlier study that revealed shared cultural meanings among younger and older workers regarding their descriptions of offices features that impact their ability to perform job functions (Kupritz, 1999). One hundred-twenty administrators participated in this study. Fifty participated in this phase because past experience indicates that data tend to stabilize with a sample size of about fifty (Harding, 1974).

The participants were divided into two groups: older workers (60+ years old) and middle-aged (35-50 years old). For each of the two age groups, the researcher examined the relationship between 19 design features and 15 work activities for a total of 285 questions per participant regarding his/her perceptions of the relationship between work activities and design features. These design features and work activities were arranged in binary matrix format to best visually display the proposed relationships. The researcher placed the least critical design features and work activities near the beginning and the conclusion of the matrix to help minimize the likelihood of respondent disorientation and fatigue.

Participants took about 20 minutes to complete the matrix (Kupritz, 2000). While matrix completion time may seem somewhat short, the questionnaire categories are presented in language familiar to the participants so they spend less time trying to understand them. Also, the participants complete the questionnaire by inserting new category descriptions into the same question rather than answering different questions each time. Finally, the matrix format organized category descriptions into binary groups, which may facilitate the perceptual "chunking" of information (i.e., organizing

information into groups or patterns) for working memory (see Kausler, 1994; Ormrod, 1995).

The internal consistency across the questions of the Beliefs Matrix was not measured in this study because the questions could not be combined to compute tests such as the coefficient alpha or the split-half reliability coefficient (Kupritz, 2005). The nature of the particular instrument dictated that cells should not be internally consistent because each question was unique and designed to measure different features and activities per question. The only appropriate test to use in this situation was a Test/Retest. This option was not realistic or practical due to time limitations and lost work productivity (Kupritz, 2005).

While the Kupritz (2000a) study did not discuss instrument safeguards against threats to internal consistency, a more recent study addressed this concern directly (Kupritz, 2005). The researcher noted that organizational commitment to and promotion of the study helped to emphasize the importance of participants taking the questionnaire seriously. Kupritz (2005) also emphasized the importance of presenting all questionnaire categories in a language familiar to participants. One of the most distinguishing features of the HEM is that questions/instruments are developed from the participants' own language elicited in earlier phases (Harding & Livesay, 1984). Questionnaire categories are not predetermined by the investigator. Rather, questionnaire categories are respondent-generated to ensure a shared meaning of language. Finally, the researcher was physically present to provide assistance and/or instruction to participants on questionnaire completion. The assistance also included small questionnaire instruction sessions with participants.

In the preference ranking stage of the beliefs elicitation, the researcher measured the relative importance of individual design features (Kupritz, 2000a). Participants in each age group in the Kupritz study ranked the 19 design features based on their importance to work performance. Participants took 10 minutes to complete the preference ranking which provides a mean rank for each design item, per age group. The researcher summed each ranking per design item for all respondents and divided by the number of participants per subgroup. The lower mean rank indicates how important the design item is to the participants. Therefore, the rank order reflects not only the design items considered most important to work performance by each age group, but also the items deemed least important as well.

METHODS

This section describes the research setting, study participants, sample size, procedures followed in collecting and analyzing data, and trustworthiness of data.

Research Setting

The setting for the current study was the administrative offices of a major university. Prior to utilizing the Heuristic Elicitation Methodology (HEM), the investigator conducted nonmanipulative direct observation to record physical attributes of the participants' workspaces (see, for example, Schensul, Schensul, & LeCompte, 1999; Zeisel, 2006). Participants were also asked to answer certain questions during the Domain Definition interview to corroborate the investigator's fieldwork. The following discussion describes the investigator's fieldwork observations.

While the participants represented many different departments within the university's organizational structure, their personal workspaces were very similar. Their personal workspaces were desks in open office space, individual and shared cubicles, or offices with floor-to-ceiling solid walls and doors.

In a few instances, the participants with desks located in open office space often shared their personal workspace with one or more other employees. This workspace design generally supported some of their non-supervisory responsibilities such as receiving walk-in visitors and students.

Many departments utilized cubicles to provide participants with individual workspace; although there were a few instances were cubicle space was shared between two employees. Participants' cubicles were generally standard industry sizes with 50",

64”, or 80” high panels. The majority of participants had cubicles with 80” high panels. The cubicles were often arranged in clusters located in the center of the larger open office space surrounded by offices with floor-to-ceiling walls around the perimeter.

Most of the participants’ personal workspaces were offices with floor-to-ceiling walls. This is attributable to the fact that all the participants for the current study were supervisors. Many administrative settings for supervisors commonly occupy individual offices with doors because of their supervisory responsibilities. While most of the participants’ offices displayed a standard design with only a desk, file cabinets, and minimal seating for visitors, a few of the participants had additional small group meeting space or an extra workstation where work could be spread out.

Participants

The investigator used purposeful sampling to identify participants for the present study. Participants were sought who held nonacademic supervisory positions at a major land-grant university. 74% of the participants were between the ages of 31 and 45. 72% of the participants’ tenure at the university was 20 years or less. The majority of the participants were female (72%). The participants’ general work responsibilities entailed the supervision and evaluation of direct reports, managing and executing budgets, assignment and coordination of day-to-day tasks, preparing presentations and reports, and providing services to internal and external customers. These supervisors occupied cubicles with 50”, 64”, or 80” high panels, a desk in their offices’ shared open space, or an individual office with floor-to-ceiling solid walls.

The participants had attended a performance review workshop designed and

facilitated by the university's employee and organizational development (EOD) department and had been applying the skills learned for at least 6 months. The purpose of the training was to improve the participants' ability to conduct effective performance reviews with their employees.

Primary skills taught in the workshop included effective use of the performance review form, learning to focus on staff members' behavior, not the individual, conducting an effective performance interview, and partnering in the performance review process. Secondary skills taught in the workshop included active and effective listening, providing clear and direct feedback, establishing positive professional relationships, establishing trust, and creating an environment where staff feel appreciated.

Participation in the performance review workshop was mandatory for all university supervisors. Each participant chose one of four workshops each with duration of four hours. The workshops were provided for the supervisors during the fall semester of 2005 and the spring semester of 2006.

The investigator for the present study worked closely with training specialists in EOD to select the training workshop for the study. The EOD specialists shared institutional records with the investigator detailing the facilitator's guide, handouts, and PowerPoint slides used to conduct the workshop. This archival data source helped the investigator become familiar with the workshop's goals and expected outcomes (Zeisel, 2006). The investigator reviewed these materials with the specialists. The specialists, one of whom was an instructor for the workshop, also provided the investigator with a complete participants' list.

The investigator did not observe or participate in the actual training workshops.

The training workshops were completed before the present study actually began. However, similar studies examining the impact of workplace design on training transfer have been successfully conducted with this department recently (Kupritz, 2002).

Sample Size

The investigator utilized both phases of the Heuristic Elicitation Methodology (HEM) to conduct the present study. Twenty-four supervisors who had completed the training workshop and been applying their new skills in the workplace were interviewed for the first phase of the HEM called the domain definition. Twenty-four is a common sample size for this phase of the HEM because of the richness of information garnered from the participants and data saturation generally occurs before interviewing the entire sample (Lincoln & Guba, 1985; Patton, 1990). Data saturation, also called redundancy, occurs when subsequent responses do not yield additional insights. In this study, data saturation occurred around the 11^{th} or 12^{th} interview, which is a common number in qualitative research (personal communication with Dr. Virginia Kupritz, 2007).

In the second phase of the HEM, the investigator administered a structured questionnaire, consisting of a beliefs matrix and a preference ranking, to 50 supervisors who had completed the training workshop and had been applying their new skills in the workplace for at least 6 months. As explained earlier, researchers experience with the use of the HEM have found that the data tend to stabilize with a sample size of about 50 (Harding, 1974; Nardi & Harding, 1978).

Data Collection and Analysis Procedures

As a cognitive ethnographic method, the HEM assumes that it is possible to match certain items and attributes with particular cultural values (Harding & Livesay, 1984). The method seeks to preserve the language and conceptualizations of the respondents, thereby decreasing the likelihood that significant attributes of the domain being examined will be overlooked (Harding & Livesay, 1984; Spradley, 1979, 1980). The first phase of the HEM is qualitative and analyzes complex issues through the exhaustion of the range of respondent perceptions relative to the phenomenon being examined. The second phase of the HEM is quantitative and utilized to determine beliefs associated with issues under examination and to identify interrelationships among them. The second phase builds upon the first phase. In keeping with HEM procedures, all HEM questions asked and subsequent data categories analyzed were generated by the participants themselves and were not predetermined by the investigator. Appendix A represents the HEM instrument used in this study.

In conducting the first phase of the HEM, the investigator conducted structured interviews with each of the twenty-four university supervisors selected through purposeful sampling for this study. Each participant was given a research study information form as required by the office of research at the university where the present study was conducted. The form included the purpose of the study and a statement ensuring confidentiality for all participants. The investigator also provided the participants with a list of the skills taught in the performance review workshop to refer to as the interviews were conducted.

The interviews were approximately thirty-to sixty minutes in length and were conducted in the participant's personal workspace or an adjacent conference room. Each of the participants had completed the performance review training through the university's employee and organizational development (EOD) department and had been applying his or her newly trained skills in the workplace for at least 6 months. Prior to conducting the interviews, the investigator performed a pilot study to ensure that the questions could be understood. Only minimal refinement in the wording of two probe questions was necessary.

The structured interview phase of the HEM, also known as the domain definition, identifies domains through semantic relationships relative to the behaviors, artifacts, and knowledge people have learned or created (Spradley, 1979, 1980). A domain is a set of categories developed from a single semantic relationship. For example, in the present study one response to an interview question asking participants about their job responsibilities was "scheduling." In the domain analysis, scheduling and other included terms used by respondents to describe their everyday tasks are categorized as types of job responsibilities.

The seventeen questions asked were designed to exhaust a domain and avoid referential meaning by asking for use through contrast, similarity, uniqueness, and the ideal (Harding & Livesay, 1984; LeCompte & Schensul, 1999; Spradley, 1979, 1980). The questions were interlinked and used the language of the respondents. Responses to the first questions were used to identify items in the domain while subsequent questions helped to identify attributes of each item. To illustrate the nature and format of the

interview questions, three of the seventeen questions used in this study are presented here:

1. What skills that you learned in the performance review workshop are you now able to use back on the job? {Answers = ___}
2. When ___ {Question 1 Skills Learned}, what workplace conditions, situations or office design features make it easier to ___? {Answers = ___}
3. What else makes it easier to perform ___, other than ___? {Probe}

For example, one response to the first question was "providing clear and direct feedback." This answer was plugged into the second question as follows: "When providing clear and direct feedback, what workplace conditions, situations, or office design features make it easier to provide clear and direct feedback?" Past experience with the method indicates plugging the respondent's answer into the beginning and end of a question helps the respondent better understand what is being asked.

A response to the second question was "having my own office with a door." The probe question followed: "What else makes it easier to provide clear and direct feedback, other than having your own office with a door?" A response to the probe question was, "I can't really think of anything else" indicating to the investigator that this particular domain had reached the point of exhaustion. The investigator recorded, by hand, all participants' responses verbatim. This allows the respondents' language and patterns of speech to be preserved and utilized in later phases of the method (Harding, 1974; Harding & Livesay, 1984).

Upon completion of the first phase of the HEM, the investigator conducted content analysis on the responses received during the interviews. The material was transcribed and content analyzed following Spradley's taxonomic and domain analysis procedures (Spradley, 1979). Using the interview responses, the investigator conducted

the content analysis by identifying patterns, categories, and reoccurring themes. This information was organized on a tabular worksheet that the investigator used to display semantic relationships.

The investigator identified included and cover terms that accurately represented the semantic relationships. The included terms, items and attributes of the respondents' work environment, were then grouped in a domain analysis worksheet. The worksheet allowed the investigator to group similar elicited phrases together with the appropriate cover term. The domain analysis for this study is included in Appendix B.

In administering the second phase of the HEM, the information from the content analysis is used to design the beliefs matrix and preference ranking. This phase of the HEM is quantitative and is used by the investigator to examine the actual distribution of beliefs (e.g. attitudes, perceptions) across the population being investigated. The beliefs matrix is a structured questionnaire developed from the responses elicited during the first phase of the HEM. In this way, the language and patterns of speech in the survey were couched in the same meaning system and frame of reference as the participants (LeCompte & Schensul, 1999). The beliefs matrix for the present study consisted of 22 design items and nine training skills\activities elicited from the responses in the first phase set up in row by column format. This format allowed the investigator to cross-relate the design items and training skills\activities via the following question, "Is __ [design feature] important for/when __[training skill/activity]?" Respondents answered this question for each of 198 cells by entering 1 for "yes" or 0 for "no" into the corresponding cell on the response sheet.

The preference ranking was used to allow the respondents to rank the 22 design

features in order of importance. The investigator instructed the respondents to rank the design items by answering the following question, “What are the most important design features for you to have at work to perform your new training skills?” Respondents used a standard card sorting technique to make the ranking process easier.

Each of the 22 design items was listed on the front of 3”x 5” index cards with the corresponding item number on the back. First, each respondent received a set of index cards and were instructed to spread the cards out on the table. Respondents placed each design item into one of three piles indicating whether they felt the item was of high, medium, or low importance. Next, the respondents ranked the design items within the newly created groupings and made one composite pile of design items with the most important design item on the top and the item with the lowest importance on the bottom. Finally, the respondents recorded their preference rankings from the numbers listed on the back of each card on to the response sheet.

The second phase of the HEM was completed during three workshops coordinated through EOD and facilitated by the investigator. The investigator provided specific instructions on completing the beliefs matrix and preference ranking and was present throughout each workshop to answer questions. The respondents received instructions on completing the beliefs matrix and were allowed time to complete it before the investigator gave them instructions for the preference ranking. The response rate of the second phase was 100% with no missing data. Respondents took approximately 20 minutes to complete the beliefs matrix and an additional 15 minutes to complete the preference ranking. Presenting questionnaire categories in a language that is familiar to participants may facilitate the relatively short time participants took to complete the

questionnaire. As stated earlier, participants are not reading different questions each time in the beliefs matrix; they are merely inserting new category descriptions into binary groups that may facilitate the perceptual "chunking" of information for working memory.

Authenticity and Trustworthiness of Data

One of the strengths of ethnographic procedures, such as the HEM, is their ability to establish authenticity and trustworthiness (Denzin & Lincoln, 1994; Lecompte & Schensul, 1999; Patton, 2002). The triangulation of the particular data and methods used in the HEM helps to establish the quality and credibility of the findings. As stated earlier, HEM procedures are data respondent generated and data respondent categorized. The respondents' language was used in the interlinked questions of the HEM's first phase. This helped the investigator create a shared meaning of language with the respondents. Probe questions used throughout the interviews helped respondents exhaust the range of their perceptions of the variables under examination. The inclusion of probe questions decreased the likelihood that the investigator overlooked important pieces of a domain (LeCompte & Schensul, 1999; Spradley, 1979, 1980).

After the content analysis, the investigator calculated cumulative frequencies of similar types of items and attributes to determine which included terms were elicited most often. This process helped the investigator better understand the distribution of beliefs across each domain category (Miles & Huberman, 1994). The investigator also conducted member checks and peer examination by allowing domain categories and tentative interpretations to be reviewed by participants and EOD specialists familiar with the study and the performance review workshop, who gave positive feedback. A second

investigator, with lengthy experience in the use of the HEM and who had conducted the original study (Kupritz, 2002), independently analyzed the data with an interrater reliability coefficient of 0.95. Peer examination and member checks have been found to enhance the authenticity and trustworthiness of research findings (Merriam, 1998).

RESULTS

The results of the first and second phase of the HEM are presented here.

Results-Phase I

The participants identified certain workplace design features as facilitating or impeding the opportunity to use the skills they learned in the performance review workshop for supervisors. They responded to questions regarding workplace conditions, situations, or design features that either facilitate or impede their ability to apply their newly acquired skills on the job.

Workplace design features elicited most frequently as facilitating the participants' ability to perform trained skills on the job involved office design characteristics that supported privacy needs. The investigator recorded the following verbatim responses that are representative of common descriptions given by the participants regarding the need for privacy to perform some of their trained skills: "Having a private office definitely helps with this [providing clear and direct feedback]." "Being able to find a quiet, private place [is most important to me]." "Having a private office is most supportive [of the use of the skills]." Participants believed having office design features that supported their direct reports' and staff's need for privacy was also important in facilitating their opportunity to use their newly trained skills. Verbatim responses representative of common descriptions given by the participants regarding the privacy needs of their direct reports and staff included: "Each staff member having their own private workspace [is important]." "Each staff member having a place for themselves for privacy." "Everyone [on staff] needs their own private office space." "[My employees] having a private office

is important because no one likes to be given negative or positive feedback in front of their peers."

Many of the participants discussed the importance of having an office with a door to increase privacy when performing some of the trained skills. Verbatim responses representative of common descriptions given by participants regarding the importance of having an office with a door to help facilitate the use of the newly trained skills included: "Having my own office with a door is important [for using the skills]." "My doors are always open, but it makes it easier to perform the skills when you can close the door." "Having an office with blinds and a door makes it easier to perform the skills." "Having private space with a door [is important for performing the skills]."

The participants also perceived having a convenient group meeting space as facilitating their ability to use their newly trained skills in the workplace: "Having a conference room definitely helps to maintain privacy and confidentiality." "Using the conference room made it [performance review] more private and less interruption." "I think the employees spoke more freely because of the privacy." "[Onsite] meeting room with a speaker phone for larger meeting…Current meeting room is offsite, hard to schedule, lots of disruptions…huge windows that don't offer much privacy."

Other verbatim responses representative of common descriptions given by the participants regarding the need for convenient group meeting space to facilitate their ability to use their newly trained skills included: "Having a conference room with the proper equipment and acoustics [is important for using the skills]." "An onsite conference room would be great…we have conference calls that we have in my office and everyone

crowds in to participate." "We have a training office that is nice for providing training to our employees…this helps make positive professional relationships."

Finally, participants believed being in close proximity to direct reports and other staff was another facilitator of applying their learned skills on the job. The participants used verbatim responses such as "being physically located with my staff" and "only people involved in our core business responsibilities should be here" to discuss the importance of being in close proximity of direct reports and colleagues to effectively apply some of the skills learned in the training workshop.

Other verbatim responses representative of common descriptions given by participants regarding the need to be in close proximity to direct reports and other staff members to effectively use the newly trained skills included: "[Having] all administrative people on the same floor in an open office design would help with communication…better team atmosphere." "[Being in] close proximity helps me give immediate and direct feedback to my team members." "Close proximity allows me to see the behaviors as they occur."

Features elicited most often as impeding the participants' ability to utilize their newly acquired skills in the workplace involved office design features that did not support privacy needs. Common complaints included noise, distractions, excessive office traffic, and lack of confidentiality: "Sometimes, especially when the situation deals with sensitive issues, it would be good to have a private office to give and receive feedback." "Not having an individual office with a door there is no privacy and everyone can overhear everyone else's conversations and business transactions." "Not having a quiet place would definitely make it very difficult to perform the performance interview and

establish two-way interaction." "Traffic flow is certainly an issue."

Other verbatim responses representative of common descriptions given by participants regarding workplace design features that did not support their privacy needs include: "Lack of privacy is definitely a problem." "Not having private space makes it impossible to conduct a confidential performance review." "Not having a secluded meeting place makes it difficult to provide clear and direct feedback in a timely manner." "High noise levels make active and effective listening difficult sometimes." "Having distracting noise levels is not conducive to positive professional relationships…more privacy is needed."

Participants also expressed frustration from efforts to apply their newly acquired skills, but being hindered by proximity problems with direct reports and staff. Participants' frustrations were noted by comments such as these: "My office location is in the top of the building in the back corner and it makes it difficult to interact with a lot of the staff." "Being in separate offices makes it harder to intervene in problem situations." "You don't always see what is going on." "We have two physically different locations and this affects my ability to use many of the skills especially in evaluating performance because I cannot see what is going on in a lot of cases."

Other verbatim responses representative of common descriptions given by participants regarding proximity problems that prevent them from effectively utilizing their newly trained skills on the job included: "Having [my] personal office located away from other staff makes applying all of the skills difficult." "Much of my feedback to staff is provided over the phone or e-mail because we are in different locations." "Being

isolated from associates on other floors makes establishing positive professional relationships difficult."

Finally, some participants believed that the antiquated design of the offices prevents optimal use of the trained skills. Participants expressed concerns regarding outdated office design through phrases such as these: "The building is old and the layout makes communicating difficult." "This office is not designed very well for giving or receiving feedback…Not very good for having a conversation with employees." "Antiquated facilities need renovation…not enough space, storage, few spaces for groups to meet, accessibility issues." "The office is designed for individual work, not collaboration." "The office design over here does not encourage us to work together as a staff." "We need a better facility layout…more room." "Some staff and students are in locations where there is little interaction between us." "Some of my staff are located in small offices that used to be closet space…renovations are sorely needed…staff definitely feel unappreciated in this environment."

The investigator found through content analysis that supportive workplace design was one of the four main factors facilitating the participants' use of the trained skills on the job. Likewise, the participants identified unsupportive workplace design as one of the four main organizational factors that hindered their ability to apply their newly acquired skills in the workplace. Table 1 reports cumulative frequencies computed for the main organizational factors elicited by the participants. Cumulative frequencies for elicited responses were highest for supportive workplace design perceived to facilitate the opportunity to use trained skills, followed by positive management support. Cumulative frequencies for elicited responses were highest for unsupportive workplace design

Table 1. Cumulative Frequencies for the Main Organizational Factors Perceived to Affect Participants' Opportunity to Use Newly Trained Skills

Organizational Factors Facilitating the Opportunity to Use Newly Trained Skills:	*f*
Supportive workplace design	167
Positive management support	63
Availability of resources, technology, and equipment	37
Positive co-worker support	25
Organizational Factors Impeding the Opportunity to Use Newly Trained Skills:	*f*
Unsupportive workplace design	101
Lack of resources, technology, and equipment	23
Lack of management support	22
Lack of time to perform	21

perceived to impede the opportunity to use trained skills, followed by lack of resources, technology, and equipment.

The investigator also examined the distribution of beliefs across similar types of items for each organizational factor through a taxonomic analysis (i.e., further break down) of cumulative response frequencies. Examination of the distribution of beliefs across the similar types of items allowed the investigator to further analyze the relative impact of workplace design compared with other organizational factors.

Table 2 reports response frequencies computed across items and attributes for supportive workplace design compared with positive management support, which was elicited most frequently as facilitating participants' opportunity to use their newly trained skills on the job after supportive workplace design. These results are further supported

Table 2. Response Frequencies Computed Across Items and Attribute Groupings for Workplace Design Compared with Management Support and Availability of Resources, Technology, and Equipment

Organizational Factors	*Item and Attribute Groupings*	*f*
Supportive workplace design facilitating participants' opportunity to use newly trained skills on the job	Workplace design features supporting privacy needs	80
	Convenient group meeting space	39
	Close proximity to direct reports and staff	20
	More overall space	7
	Aesthetically pleasing, adequate comfort level	6
	Adequate lighting	6
	Workspace with windows	6
	Control of the thermostat	3
Positive management support facilitating participants' opportunity to use newly trained skills on the job	Encouragement from supervisors and managers	29
	Effective interpersonal communication	11
	Empowering employees	7
	Approachable leadership	6
	Managers holding employees accountable	5
	Managers understanding employees' work environment	5
Unsupportive workplace design impeding participants' opportunity to use newly trained skills on the job	Workplace design features not supporting privacy needs	57
	Proximity problems with direct reports, staff, and partners	24
	Antiquated office design	10
	Use of cubicles preventing effective communication	10
Lack of resources, technology, and equipment impeding participants' opportunity to use newly trained skills	Limited funding	13
	Lacking certain technologies to perform new skills	6
	Inadequate staffing levels	4

by a particular question asked during the interviews regarding organizational factors that facilitated training transfer: "Of all the workplace conditions, situations, and office design features that support (make it easier to use) your new training skills, which ones (workplace conditions, situations, or office design features) most support your ability to use these new training skills?" Twenty of the 32 verbatim responses related to supportive workplace design. Many of these verbatim responses related to privacy needs: "Private office [is most supportive] because no one likes to be given negative or positive feedback in front of peers and others." "Ability to close door and have privacy and confidentiality most supports my use of the new training skills." "Having our own individual office space…Without it, we would not have anyway to have privacy or confidential meetings." The importance given to supportive workplace design by participants further supports the Kupritz (2002) study in which the participants' elicited responses were highest for positive management support perceived to facilitate transfer, followed by supportive workplace design.

In the present study, 8 of the 32 verbatim responses to the aforementioned interview question related to positive management support. One of the participants expressed his/her satisfaction with the current levels of supervisory support they receive for applying their newly trained skills in the workplace: "Right now, my supervisor is very supportive of my work and efforts [to perform my new skills]." "That is very important to me." Another participant expressed the importance of supervisory support by comparing it to the importance of workplace design features: "Having the conference room is the most important feature for meetings, privacy, and shared workspace." "[However], supervisors being supportive of subordinates is probably just as

important…Just giving each other a pat on the back or receiving one from a supervisor is probably as important as any physical office feature."

These findings are consistent with much of the organizational development and training literature which documents the importance of supervisory/management support for training transfer (see, for example, Baldwin & Ford, 1988; Gumuseli & Ergin, 2002; Hawley & Barnard, 2005; Holton et al., 1997; Kontoghiorghes, 2001; Lim & Morris, 2006).

Table 2 also reports response frequencies computed across items and attributes for unsupportive workplace design compared with lack of resources, technology, and equipment, which was elicited second most frequently as impeding participants' opportunity to use their newly trained skills on the job after unsupportive workplace design. Among all organizational factors, items and attributes regarding workplace design features not supporting privacy needs were elicited most often as impeding participants' opportunity to use their newly trained skills on the job.

These results are further supported by a particular question asked during the interviews regarding organizational factors that impeded training transfer: "Of all the workplace conditions, situations and office design features that support (make it easier to use) your new training skills, which ones (workplace conditions, situations, or office design features) most hinder your ability to use these new training skills?" Fourteen of the 38 verbatim responses related to sharing/using cubicles or working in space with little or no privacy: "Definitely no cubicles…lots of confidentiality issues to deal with and privacy is a must;" "Sharing cubicles is probably the most hindering factor [when trying to use newly trained skills] because there is no privacy;" "No cubicles…all employees

should have their own private office space." The participants' focus on personal workspaces with more privacy further supports the Kupritz (2002) study in which the participants' elicited responses for organizational factors impeding transfer were highest for unsupportive workplace design followed by lack of management support.

In the present study, nine of the 38 verbatim responses to the aforementioned interview question related to the lack of resources, technology, and equipment as an organizational factor impeding the participants' opportunity to use their newly trained skills on the job. One participant expressed frustration with trying to make her employees feel appreciated (one of the training skills taught in the workshop): "The inability to provide resources and incentives to make employees feel appreciated is the most hindering workplace condition." Another participant expressed disappointment in regularly not having adequate resources and support for his use of the new skills: "It is hard to use new skills not having technology support for e-mail and answering phones…we don't have the staff or the resources to do many of the things we are trained to do."

These findings are consistent with much of the organizational development and training literature that documents the importance of having adequate technology, resources, and equipment to support training transfer (see, for example, Ford & Weissbein, 1997; Lim & Johnson, 2002).

Results-Phase II

Beliefs Matrix

Each participant considered the relationship between 22 workplace design

features and nine training skills/activities, which had been arranged in a binary matrix. The participants answered yes or no to the question, "Is X [design feature] important for when Y [training skill/activity]?" by entering a 1 for yes or 0 for no into the response form. Each participant, upon completing the beliefs matrix, answered 198 questions concerning his or her perceptions of what training skills/activities are associated with each of the workplace design features.

The probability of association between workplace design features and training skills\activities was calculated using the binomial distribution at the .01 level of significance. The null hypothesis, H_o : P = .50, was tested against the nondirectional alternative, H_a : P ≠ .50. Z-scores reached significance for matrix cells whose p value (sample proportion) was much greater than or much less than the hypothesized P value (population proportion). The hypothesized P value was calculated at .50 for all cells and the critical value for significance was +/- 2.33. For comparison, Table 3 reports Z-scores that reached significance for particular workplace design features and training skills\activities. Table 4 reports the cumulative frequencies for yes responses per cell.

Z-scores reached significance 127 times, 65 positive and 62 negative, for similar design features and training\skills activities. For example, the participants positively associated having their personal workspace facing away from foot traffic aisles with using the performance review form effectively, focusing on staff members' behavior, not the individual, conducting an effective performance interview, active and effective listening, providing clear and direct feedback, and establishing positive professional relationships. Having flexible furniture and equipment that can be arranged to fit work needs was positively associated with conducting an effective performance.

Table 3. Binomial Distribution Analysis Investigating the Associations Between Workplace Design Features (X) and Training Skills\Activities (Y)

Significant Positive Association
Significant Negative Association
No Association

The question asked: "Is X [design feature] important for/when Y [activity]?"

[X] DESIGN FEATURES		[Y] ACTIVITIES	1. using the performance review form effectively	2. focusing on staff members' behavior, not the individual	3. conducting an effective performance interview	4. partnering in the performance review process	5. active and effective listening	6. providing clear and direct feedback	7. establishing positive professional relationships	8. establishing trust	9. creating an environment where staff feel appreciated
having sufficient lighting and controls	1.		5.66	1.41	6.22	2.26	4.53	3.11	1.98	1.41	4.81
having sufficient temperature/ventilation/air conditioning and controls	2.		3.96	3.11	6.51	2.26	5.37	4.24	2.83	1.7	5.66
having a larger personal workspace	3.		-2.55	-2.26	0.57	-0.85	-2.26	-3.11	-1.7	-3.96	0.28
having my own individual office with floor-to-ceiling solid walls	4.		4.53	3.96	6.79	5.66	6.51	5.37	3.96	4.24	3.96
having a shared office with floor-to-ceiling solid walls	5.		-4.53	-4.53	-3.68	-2.83	-2.55	-2.83	-3.11	-3.68	-3.39
having my own cubicle with 50" high panels	6.		-5.09	-4.81	-4.53	-4.53	-4.53	-4.53	-5.37	-5.09	-5.37
having my own cubicle with 64" high panels	7.		-5.09	-5.37	-4.24	-4.53	-4.53	-4.81	-5.09	-4.53	-5.09
having my own cubicle with 80" high panels	8.		-2.83	-3.11	-1.7	-1.7	-1.7	-2.26	-1.7	-2.26	-2.26
having a shared cubicle with 50" high panels	9.		-5.37	-6.22	-5.09	-5.37	-5.37	-5.37	-4.53	-5.37	-5.09
having a shared cubicle with 64" high panels	10.		-5.37	-6.51	-5.09	-5.37	-5.37	-5.66	-4.53	-5.37	-5.09
having a shared cubicle with 80" high panels	11.		-5.37	-6.22	-4.53	-4.81	-4.53	-5.09	-3.96	-5.09	-4.24
having a door to close	12.		5.66	4.81	6.79	4.81	6.51	5.66	3.39	4.24	2.83
having a window to see natural daylight and views outside the building	13.		-2.55	-3.68	-3.68	-3.68	-3.39	-3.39	-1.7	-2.26	0.57
having a conference/meeting room available when needed	14.		3.39	1.98	6.22	5.37	5.37	4.24	4.53	3.68	5.66
having comfortable furniture	15.		3.96	2.26	6.22	5.37	5.37	4.24	4.53	3.68	5.66
having flexible furniture and equipment that can be rearranged to fit work needs	16.		1.41	0.28	4.53	2.83	2.83	1.98	1.98	1.13	3.96
having a sufficient work surface to spread out work	17.		5.37	-0.57	5.66	2.55	0.28	0.85	1.7	0.28	3.11
having sufficient office equipment/reference materials/supplies and easy access to them	18.		5.37	0.28	4.53	2.26	0	2.55	2.55	1.41	4.24
having coworkers who work together located close together	19.		-1.98	-1.13	-2.26	-1.13	-1.13	-0.85	2.26	2.26	1.98
having my personal workspace facing away from foot traffic	20.		2.26	1.7	3.39	2.26	3.68	2.83	1.13	1.13	0.28
having my personal workspace located away from high foot traffic aisles	21.		4.81	3.96	5.94	4.24	6.22	5.09	2.83	2.26	2.26
having my workspace physically located on campus	22.		0.28	0	0.85	1.13	0.85	0.57	0.85	1.13	1.41

Table 4. Cumulative Frequencies for "Yes" Responses Per Cell

Significant Positive Association
Significant Negative Association
No Association

The question asked: "Is X [design feature] important for/when Y [activity]?"

[X] DESIGN FEATURES		[Y] ACTIVITIES: 1. using the performance review form effectively	2. focusing on staff members' behavior, not the individual	3. conducting an effective performance interview	4. partnering in the performance review process	5. active and effective listening	6. providing clear and direct feedback	7. establishing positive professional relationships	8. establishing trust	9. creating an environment where staff feel appreciated
having sufficient lighting and controls	1.	45	30	47	33	41	36	32	30	42
having sufficient temperature/ventilation/air conditioning and controls	2.	39	36	48	33	44	40	35	31	45
having a larger personal workspace	3.	16	17	27	22	17	14	19	11	26
having my own individual office with floor-to-ceiling solid walls	4.	41	39	49	45	48	44	39	40	39
having a shared office with floor-to-ceiling solid walls	5.	9	9	12	15	16	15	14	12	13
having my own cubicle with 50" high panels	6.	7	8	9	9	9	9	6	7	6
having my own cubicle with 64" high panels	7.	7	6	10	9	9	8	7	9	7
having my own cubicle with 80" high panels	8.	15	14	19	19	19	17	19	17	17
having a shared cubicle with 50" high panels	9.	6	3	7	6	6	6	9	6	7
having a shared cubicle with 64" high panels	10.	6	2	7	6	6	5	9	6	7
having a shared cubicle with 80" high panels	11.	6	3	9	8	9	7	11	7	10
having a door to close	12.	45	42	49	42	48	45	37	40	35
having a window to see natural daylight and views outside the building	13.	16	12	12	12	13	13	19	17	27
having a conference/meeting room available when needed	14.	37	32	47	44	44	40	41	38	45
having comfortable furniture	15.	39	33	47	37	43	36	40	33	43
having flexible furniture and equipment that can be rearranged to fit work needs	16.	30	26	41	35	35	32	32	29	39
having a sufficient work surface to spread out work	17.	44	23	45	34	26	28	31	26	36
having sufficient office equipment/reference materials/supplies and easy access to them	18.	44	26	41	33	25	34	34	30	40
having coworkers who work together located close together	19.	18	21	17	21	21	22	33	33	32
having my personal workspace facing away from foot traffic	20.	33	31	37	33	38	35	29	29	26
having my personal workspace located away from high foot traffic aisles	21.	42	39	46	40	47	43	35	33	33
having my workspace physically located on campus	22.	26	25	28	29	28	27	28	29	30

an environment where staff feel appreciated. The participants associated having their own individual office with floor-to-ceiling solid walls with the performance of all of the training skills and activities.

Participants negatively associated having a window to see natural daylight and views outside the building with many of the training skills\activities including focusing on staff members' behavior, not the individual, conducting an effective performance interview, partnering in the performance review process, active and effective listening, and providing clear and direct feedback. Having a larger personal workspace was negatively associated with providing clear and direct feedback and establishing trust, but was found to have no statistically significant relationship to any other training skills or activities.

While the participants found no statistically significant relationship between having their own cubicle with 80" high panels and most of the training skills and activities including conducting an effective performance interview, partnering in the performance review process, active and effective listening, providing clear and direct feedback, establishing positive personal relationships, establishing trust, and creating an environment where staff feel appreciated, all other design items related to cubicles were negatively associated with each training skill and activity regardless of the height of the panels.

While the language and patterns of speech in the survey were couched in the same meaning system and frame of reference as the participants (LeCompte & Schensul, 1999), Cronbach's alpha was computed to further assess the internal consistency of this particular instrument as the activities could be grouped together as all pertaining to supervisory skills. An estimate of internal consistency for each design feature across the

nine activities (i.e., 22 alphas) was high in the participant sample (.83-.98) and indicates strong internal consistency across the instrument. Table 5 reports the 22 alphas computed for the present study.

Preference Ranking

Table 6 positions the mean rank of each workplace design feature listed in the Beliefs Matrix with its corresponding overall rank order. Rankings per design item were summed across all participants and divided by the number of participants. Therefore, design features with the lowest mean rank are also closest to being ranked first, or most important, to facilitate the opportunity to use newly trained skills. The rank order reflects not only which design features each participant considered most important for the performance of the training skills\activities on the job, but also which features were believed to be least important to facilitate the opportunity to use newly trained skills.

The participants ranked "having my own individual office with floor-to-ceiling solid walls and a door" first in importance for the performance of the training skills\activities out of the 22 design items. "Having a door to close" was ranked second followed by "having sufficient lighting and controls," and "having sufficient temperature/ventilation/air conditioning and controls" in third and fourth place respectively. One-way ANOVA and post hoc comparisons revealed that there was no statistically clear distinction between these four design items (ANOVA discussion follows).

Table 5. Alpha Scores Computed Per Design Item Across All Training Skills/Activities

Design Feature	Alpha
having sufficient lighting and controls	.83
having sufficient temperature/ventilation/air conditioning and controls	.89
having a larger personal workspace	.89
having my own individual office with floor-to-ceiling solid walls	.82
having a shared office with floor-to-ceiling solid walls	.94
having my own cubicle with 50" high panels	.94
having my own cubicle with 64" high panels	.93
having my own cubicle with 80" high panels	.97
having a shared cubicle with 50" high panels	.94
having a shared cubicle with 64" high panels	.94
having a shared cubicle with 80" high panels	.94
having a door to close	.85
having a window to see natural daylight and views outside the building	.95
having a conference/meeting room available when needed	.86
having comfortable furniture	.85
having flexible furniture and equipment that can be arranged to fit work needs	.91
having sufficient work surface to spread out work	.87
having sufficient and accessible office equipment/reference materials/supplies	.89
having coworkers who work together located close together	.93
having my personal workspace facing away from foot traffic	.95
having my personal workspace located away from high foot traffic aisles	.90
having my workspace physically located on campus	.98

Table 6. Rank Order and Mean Rank for Design Features Perceived as Important for Performing Training Skills/Activities

Design Feature	Rank	Mean Rank
D1 having sufficient lighting and controls	3	5.02
D2 having sufficient temperature/ventilation/air conditioning and controls	4	5.04
D3 having a larger personal workspace	11	11.54
D4 having my own individual office with floor-to-ceiling solid walls	1	2.88
D5 having a shared office with floor-to-ceiling solid walls	17	15.58
D6 having my own cubicle with 50" high panels	19	17.74
D7 having my own cubicle with 64" high panels	18	16.58
D8 having my own cubicle with 80" high panels	16	15.46
D9 having a shared cubicle with 50" high panels	22	20.68
D10 having a shared cubicle with 64" high panels	21	19.38
D11 having a shared cubicle with 80" high panels	20	18.62
D12 having a door to close	2	3.46
D13 having a window to see natural daylight and views outside the building	12	11.94
D14 having a conference/meeting room available when needed	8	8.36
D15 having comfortable furniture	7	8.00
D16 having flexible furniture and equipment that can be arranged to fit work needs	9	10.14
D17 having sufficient work surface to spread out work	6	7.98
D18 having sufficient and accessible office equipment/reference materials/supplies	5	7.76
D19 having coworkers who work together located close together	13	12.00
D20 having my personal workspace facing away from foot traffic	15	12.24
D21 having my personal workspace located away from high foot traffic aisles	10	10.60
D22 having my workspace physically located on campus	14	12.22

Participants ranked “having sufficient and accessible office equipment/reference materials/supplies” fifth in importance for the performance of the training skills/activities out of the 22 design items followed by “having sufficient work surface to spread work out,” “having comfortable furniture,” “having a conference/meeting room available when needed,” and “having flexible furniture and equipment that can be arranged to fit work needs” in sixth, seventh, eighth, and ninth place respectively. “Having my personal workspace located away from high foot traffic aisles” ranked tenth in importance for the performance of the training skills/activities by the participants followed by “having a larger personal workspace,” “having a window to see natural daylight and views outside the building,” “having coworkers who work together located close together,” “having my workspace physically located on campus” in eleventh, twelfth, thirteenth, and fourteenth place respectively.

The participants ranked “having my personal workspace facing away from foot traffic” fifteenth out of the twenty-two design items relative to their importance for performing the training skills/activities. One-way ANOVA and post hoc comparisons revealed that there was no statistically clear distinction between these eleven design items (ANOVA discussion follows).

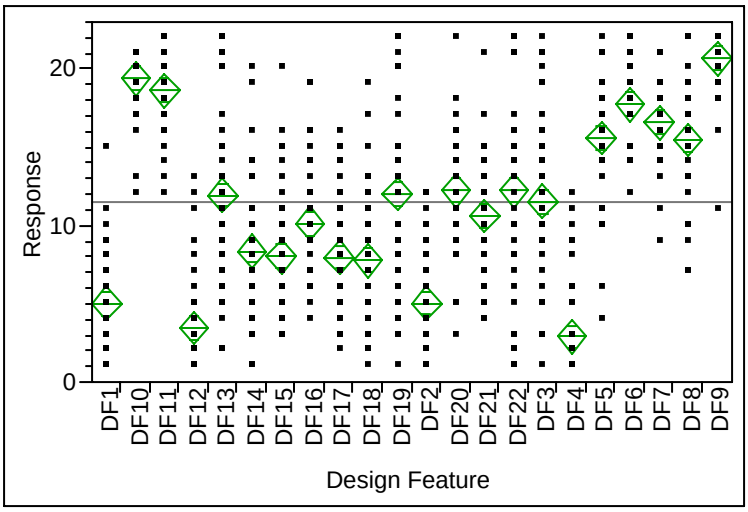
Six of the final seven design item rankings related to the use of cubicles. “Having my own cubicle with 80” high panels” ranked sixteenth and “having a shared office with floor-to-ceiling solid walls ranked seventeenth. Finally, “having my own cubicle with 64” high panels” was ranked eighteenth in importance for performing the training skills/activities by the participants followed by “having my own cubicle with 50” high panels,” having a shared cubicle with 80” high panels,” having a shared cubicle with 64”

high panels," and "having a shared cubicle with 50" high panels" in nineteenth, twentieth, twenty-first, and twenty-second respectively. One-way ANOVA and post hoc comparisons revealed that there was no statistically clear distinction between these seven design items (ANOVA discussion follows).

JMP software was utilized to link the statistics with graphics that visualize the data. Figure 3 reports the results of the ANOVA. The *p*-value is less than the significance level (alpha level) of 0.05 ($p < .0001$). The ANOVA yielded a significant F and the null hypothesis is rejected. The mean of at least one design feature is statistically different from the others. Figure 4 reports the means, standard deviations and confidence intervals for the means of each design feature.

To better understand why the ANOVA yielded a significant F, three post hoc comparisons were computed to compare the statistical difference among the means: All Pairs Tukey Cramer procedure; Each Pair student's t-test; With Best Hsu's MCB. The following analysis reports which design features are statistically significant from each other. The design features 20, 22, 19, 13, 3, and 21 are significantly different from the design features 2, 1, 12, and 4. Similarly, others can also be interpreted. The general rule of thumb is that levels not connected by the same letter are significantly different.

Figure 5 also reports that the design features 9, 10 and 11 are not statistically significant from each other. Similarly, the design features 10, 11, and 6 are not statistically significant from each other. The design features 11, 6 and 7 are not statistically significant from each other. The design features 18, 2, and 1 are not statistically significant from each other. Finally, the design features 2, 1, 12 and 4 are not statistically significant from each other. Similarly, others can also be interpreted.



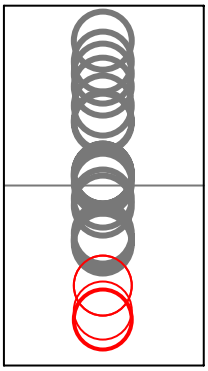
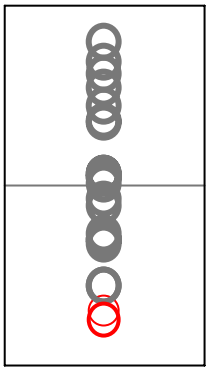
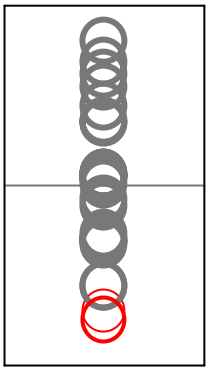
Analysis of Variance

Source	DF	Sums of Squares	Mean Squares	F Ratio	Prob > F
Design Feature	21	28472.870	1355.85	91.8440	<.0001
Error	1078	15914.020	14.76		
C. Total	1099	44386.890			

Figure 3. One Way Analysis of Variance

Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
DF1	50	5.0200	2.99993	0.4243	4.167	5.873
DF10	50	19.3800	2.01919	0.2856	18.806	19.954
DF11	50	18.6200	2.13704	0.3022	18.013	19.227
DF12	50	3.4600	2.79365	0.3951	2.666	4.254
DF13	50	11.9400	5.46383	0.7727	10.387	13.493
DF14	50	8.3600	4.40204	0.6225	7.109	9.611
DF15	50	8.0000	3.76883	0.5330	6.929	9.071
DF16	50	10.1400	3.34426	0.4729	9.190	11.090
DF17	50	7.9800	3.43743	0.4861	7.003	8.957
DF18	50	7.7600	3.87330	0.5478	6.659	8.861
DF19	50	12.0000	5.90745	0.8354	10.321	13.679
DF2	50	5.0400	3.14908	0.4453	4.145	5.935
DF20	50	12.2400	3.40803	0.4820	11.271	13.209
DF21	50	10.6000	3.51672	0.4973	9.601	11.599
DF22	50	12.2200	7.47865	1.0576	10.095	14.345
DF3	50	11.5400	5.13575	0.7263	10.080	13.000
DF4	50	2.8800	2.98048	0.4215	2.033	3.727
DF5	50	15.5800	3.74760	0.5300	14.515	16.645
DF6	50	17.7400	2.25705	0.3192	17.099	18.381
DF7	50	16.5800	2.24145	0.3170	15.943	17.217
DF8	50	15.4600	3.11160	0.4400	14.576	16.344
DF9	50	20.6800	2.01464	0.2849	20.107	21.253

Figure 4. Means, Standard Deviations and Confidence Intervals for the Means

All Pairs Tukey Cramer	Each Pair student's t-test	With Best Hsu's MCB
		

All Pairs Tukey-Cramer Procedure

Level										Mean
DF9	A									20.680000
DF10	A	B								19.380000
DF11	A	B	C							18.620000
DF6		B	C	D						17.740000
DF7			C	D						16.580000
DF5				D						15.580000
DF8				D						15.460000
DF20					E					12.240000
DF22					E					12.220000
DF19					E					12.000000
DF13					E					11.940000
DF3					E					11.540000
DF21					E	F				10.600000
DF16					E	F	G			10.140000
DF14						F	G			8.360000
DF15						F	G			8.000000
DF17						F	G			7.980000
DF18							G	H		7.760000
DF2								H	I	5.040000
DF1								H	I	5.020000
DF12									I	3.460000
DF4									I	2.880000

Levels not connected by the same letter are significantly different.

Figure 5. All Pairs Tukey-Cramer Procedure

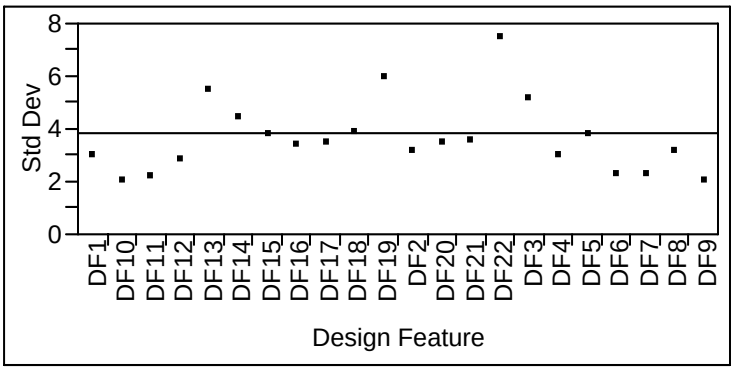
Level											Mean
DF9	A										20.680000
DF10	A	B									19.380000
DF11		B	C								18.620000
DF6			C								17.740000
DF7				E							16.580000
DF5				E							15.580000
DF8				E							15.460000
DF20					F						12.240000
DF22					F						12.220000
DF19					F	G					12.000000
DF13					F	G					11.940000
DF3					F	G	H				11.540000
DF21						G	H				10.600000
DF16							H				10.140000
DF14								I			8.360000
DF15								I			8.000000
DF17								I			7.980000
DF18								I			7.760000
DF2									J		5.040000
DF1									J		5.020000
DF12										K	3.460000
DF4										K	2.880000

Levels not connected by the same letter are significantly different.

Figure 6. Student's t-test

Figure 6 reports design features that are significantly different from each other as well as design features that are not statistically significant from each other. The student's t-test is interpreted in the same manner as described for Figure 5. Data were screened for homogeneity of variance.

Figure 7 reports that the O'Brien, Brown-Forsythe, Levene, and Bartlett tests were significant. The *p*-values of all the tests are less than the assumed significance level (alpha value) of 0.05 ($p < .0001$). Hence, the variance of at least one design feature is significantly different from the others. The Welch ANOVA test assumes that the variance of each group is not equal. The *p*-value of the Welch ANOVA test is less than the assumed significance level (alpha value) of 0.05 ($p < .0001$). Hence, the null hypothesis



Test	F Ratio	DFNum	DFDen	Prob > F
O'Brien[.5]	14.4702	21	1078	<.0001
Brown-Forsythe	13.1448	21	1078	<.0001
Levene	14.3259	21	1078	<.0001
Bartlett	12.9590	21	.	<.0001

Welch Anova testing Means Equal, allowing Std Devs Not Equal

F Ratio	DFNum	DFDen	Prob > F
193.8520	21	393.2	<.0001

Figure 7. Test that the variances are equal

is rejected. Data transformation was not performed to preserve the originality of the data and to avoid the difficulty of interpreting the final results with transformed data (UT Statistics Department, personal communication, 2007; see also the classic research of Daniel, 1976).

Hierarchical clustering

Hierarchical clustering analyses were also conducted to further investigate the clustering of the mean rankings of the design features. Linkage types, Ward's Minimum Variance method, Single Linkage (nearest neighbor), Complete Linkage (furthest neighbor), and Simple Average, were computed.

The Ward's Minimum Variance method is a hierarchical method designed to

optimize the minimum variance within clusters. The algorithm begins with one large cluster encompassing all objects to be clustered. In this case, the error sum of squares is 0. The program searches objects that can be grouped together while minimizing the increase in error sum of squares. Error sum of squares is computed as:

$$SS_e = x^2_i - 1/n(\Sigma x_i)^2$$

Ward's method creates clusters of near equal size, having hyper spherical shapes.

The Single Linkage (nearest neighbor) method clusters objects based on minimum distance between them. This is also called the nearest neighbor rule. The Complete Linkage (Furthest neighbor) method clusters objects based on the maximum distance between them. This is also called the furthest neighbor rule. The Simple Average method clusters objects based on the average distance between all pairs of objects.

The clustering results seemed to be slightly different for the Ward's Minimum Variance method and the other methods. It was clear that the design features 5, 6, 7, 8, 9, 10, and 11 formed one cluster for the Linkage types. However, the Single Linkage, Complete Linkage and Simple Average methods clustered the design features 1, 2, 4 and 12 as one cluster and the design features 3, 13, 14, 15, 16, 17, 18, 19, 20, 21, and 22 as another cluster. The Ward's Minimum Variance method, on the other hand, showed the design features 1, 2, 4, 12, 14, 15, 17, and 18 as one cluster and 3, 13, 16, 19, 20, 21, and 22 as another cluster. Therefore, out of the 3 clusters formed it was obvious that two clusters overlapped.

Fuzzy clustering

To investigate this overlap, a fuzzy clustering algorithm was computed, which clustered the design features into 3 clusters. In hard clustering such as hierarchical and non hierarchical, data is divided into distinct clusters where each data element belongs to exactly one cluster. In fuzzy clustering, data elements can belong to more than one cluster, and associated with each element is a set of membership levels, and then using them to assign data elements to one or more clusters. The results of the fuzzy clustering on the raw means (means of the design features) are reported in Table 7.

Table 7 clearly shows that the design features 1, 2, 4 and 12 form the first cluster, design features 3, 13, 14, 15, 16, 17, 18, 19, 20, 21, and 22 form the second cluster and the design features 5, 6, 7, 8, 9, 10, and 11 form the third cluster. These three clusters represent what the participants perceived to be the most important design features (cluster 1), medium important design features (cluster 2), and least important design features (cluster 3) that facilitate the opportunity to use learned training skills back on the job. For further clarity, Table 8 provides an overall summary of these three clusters in relationship to the rank order and mean rank of each design feature. While the post hoc procedures revealed the groupings of design features in detail, the three clusters in Table 8 provide corporations with an immediate and easy to read reference of the relative importance of these design features to training transfer.

Table 7. Membership Matrix Section

Row	Cluster	Prob in 1	Prob in 2	Prob in 3
1 DF1	1	1.0000	0.0000	0.0000
2 DF2	1	1.0000	0.0000	0.0000
3 DF3	2	0.0000	0.9999	0.0000
4 DF4	1	1.0000	0.0000	0.0000
5 DF5	3	0.0000	0.0013	0.9987
6 DF6	3	0.0000	0.0000	1.0000
7 DF7	3	0.0000	0.0000	1.0000
8 DF8	3	0.0000	0.0021	0.9979
9 DF9	3	0.0000	0.0004	0.9996
10 DF10	3	0.0000	0.0000	1.0000
11 DF11	3	0.0000	0.0000	1.0000
12 DF12	1	1.0000	0.0000	0.0000
13 DF13	2	0.0000	0.9998	0.0001
14 DF14	2	0.0029	0.9971	0.0001
15 DF15	2	0.0093	0.9906	0.0001
16 DF16	2	0.0000	1.0000	0.0000
17 DF17	2	0.0101	0.9898	0.0001
18 DF18	2	0.0263	0.9736	0.0001
19 DF19	2	0.0000	0.9998	0.0002
20 DF20	2	0.0000	0.9994	0.0005
21 DF21	2	0.0000	1.0000	0.0000
22 DF22	2	0.0000	0.9995	0.0005

Table 8. Graphic Summary of Rank, Mean Rank and Cluster Analysis Results

Design Feature	Rank	Mean Rank	Cluster
D4 having my own individual office with floor-to-ceiling solid walls	1	2.88	1
D12 having a door to close	2	3.46	1
D1 having sufficient lighting and controls	3	5.02	1
D2 having sufficient temperature/ventilation/air conditioning and controls	4	5.04	1
D18 having sufficient and accessible office equipment/reference materials/supplies	5	7.76	2
D17 having sufficient work surface to spread out work	6	7.98	2
D15 having comfortable furniture	7	8.00	2
D14 having a conference/meeting room available when needed	8	8.36	2
D16 having flexible furniture and equipment that can be arranged to fit work needs	9	10.14	2
D21 having my personal workspace located away from high foot traffic aisles	10	10.60	2
D3 having a larger personal workspace	11	11.54	2
D13 having a window to see natural daylight and views outside the building	12	11.94	2
D19 having coworkers who work together located close together	13	12.00	2
D22 having my workspace physically located on campus	14	12.22	2
D20 having my personal workspace facing away from foot traffic	15	12.24	2
D8 having my own cubicle with 80" high panels	16	15.46	3
D5 having a shared office with floor-to-ceiling solid walls	17	15.58	3
D7 having my own cubicle with 64" high panels	18	16.58	3
D6 having my own cubicle with 50" high panels	19	17.74	3
D11 having a shared cubicle with 80" high panels	20	18.62	3
D10 having a shared cubicle with 64" high panels	21	19.38	3
D9 having a shared cubicle with 50" high panels	22	20.68	3

DISCUSSION AND CONCLUSION

The Beliefs Matrix and Preference Ranking analyses combined to determine the strength of association between the workplace design features and the training skills/activities and the relative importance placed upon these features by the participants for performing their new skills on the job. Finally, linking the earlier, more qualitative data and analysis with the latter, more quantitative data and analysis helped to extend several theoretical considerations. Hatcher (1999), Russ-Eft (1995), and Swanson and Zuber (1996) have argued for some time that more than one analytic method should be considered in researching HRD issues in the workplace. In addition to concerns expressed regarding the use of narrowly focused employee surveys as a single data collection process, HRD research has also questioned the closed nature of stand alone quantitative research methods and their propensity to neglect important research variables (Smith & Dowling, 2001). The present study attempted to rectify these potential problems through data and methodological triangulation. Combining particular data and methodological procedures helped to strengthen the authenticity and trustworthiness of the findings (Keyton, 2006; Miles & Huberman, 1994; Patton, 2002). The findings indicate that workplace design appears to play a vital role in facilitating as well as impeding transfer for supervisory skills in this study. The following discussion summarizes the findings, potential limitations, and implications of the study as well as suggestions for future research.

Research Question #1

What workplace design features do trainees perceive as facilitating and impeding transfer? Supervisors in this study perceived workplace design to be a major factor in the work environment that affects their ability and opportunity to perform learned training skills on the job. This finding appears to validate the conceptual model that guided the study. Indeed, this finding is supported by over thirty years of environment and behavior research documenting workplace design's impact job performance and employee satisfaction (Brill, Weidemann, & BOSTI Associates, 2001; Brookes & Kaplan, 1972; Oldham et al., 1995; Raffaello & Maas, 2002; Sundstrom, 1985; Wallis, Steptoe, & Cole, 2006).

Workplace design features facilitating transfer

The participants identified a wide range of design features that they perceived as facilitating transfer. Figure 8 extends the conceptual framework for this study by identifying workplace design features elicited most often by participants in this study that facilitate the opportunity to use learned training skills and specific design features ranked most important and medium importance for performing learned training skills back on the job. These features included the physical enclosures (such as density of individual workspaces or cubicles and offices with floor-to-ceiling walls accompanied by a door), layout (convenience and proximity), appearance (aesthetics), ergonomic design (especially control of comfort level), acoustical and visual privacy, and windows. Each of these workplace design features is commonly identified in the environment and behavior literature as influential on job performance and worker satisfaction (see, for example,

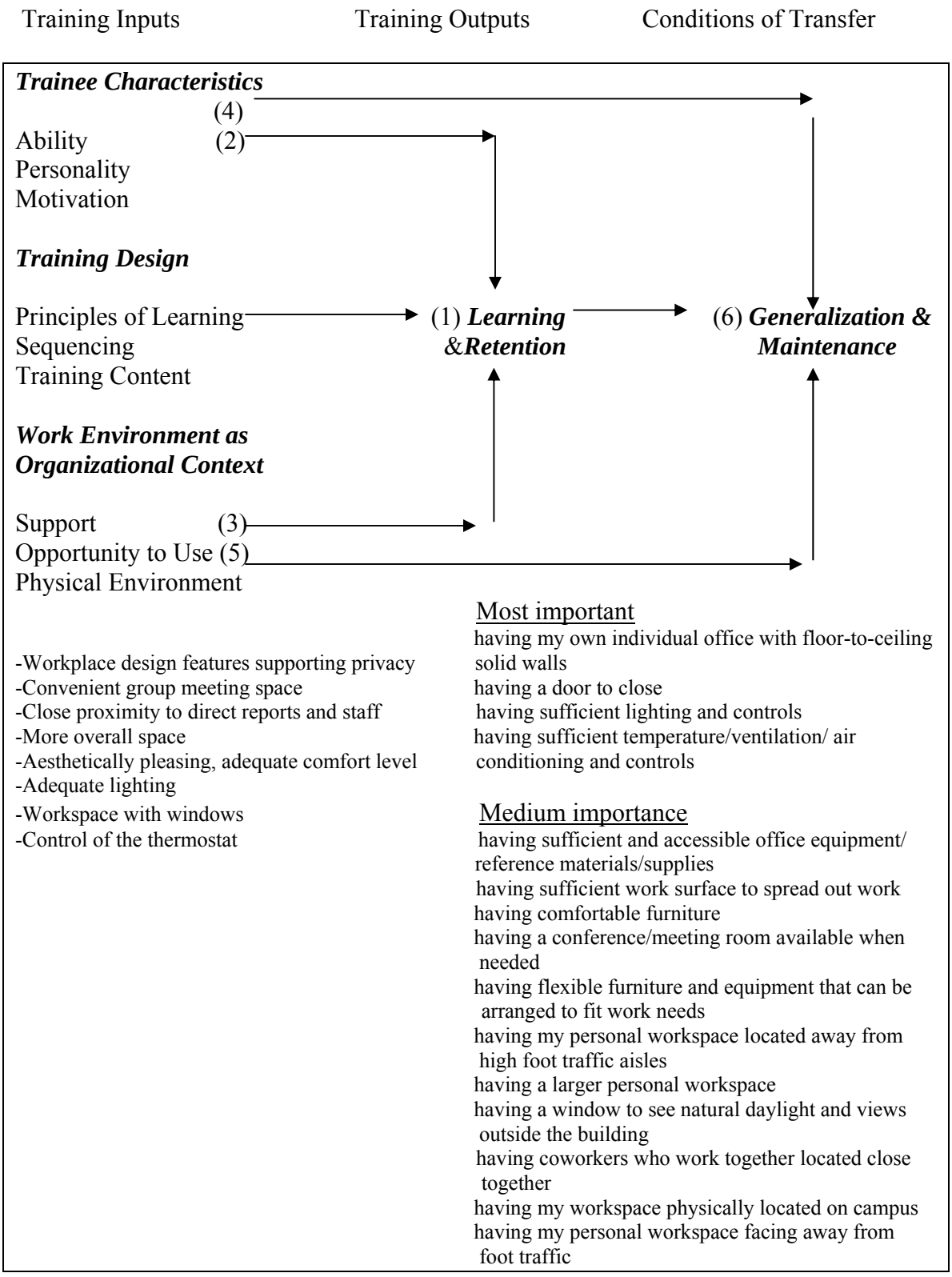


Figure 8 . Proposed model of the training transfer process including workplace design

The focus here on acoustical and visual privacy is also consistent with environment and Brill, 1993). For example, the participants' focus on physical enclosures is consistent with environment and behavior research that suggests that workers at all organizational levels gain their greatest sense of privacy by enclosure in private offices with floor-to-ceiling solid walls and a door (Brill, Weidemann, & BOSTI Associates, 2001). behavior research that suggests office noise can disrupt job performance through stress, distraction, and/or overload (Paul, 1996).

An analysis of the Beliefs Matrix results yields some interesting findings. The participants perceived particularly strong, positive relationships among the two design features: "Having my own individual office with floor-to-ceiling solid walls" and "Having a door to close" and all nine of the training skills\activities. These findings are consistent with the verbatim responses of many of the participants expressing the need for privacy when performing the training skills/activities related to conducting a performance review. For example, the following verbatim responses are representative of common descriptions given by the participants: "Having a private office is most supportive [of performing all the skills]." "My doors are always open, but it makes it easier to perform the skills when you can close the door." "Being able to shut the door is a plus…[so] privacy is not a concern…distractions minimal so that is good as well."

The participants also perceived particularly strong, positive relationships among other sets of design features and training skills\activities. The design features "having a conference/meeting room available when needed" and "having comfortable furniture" were both considered important to the training skills\activities "using the performance

review form effectively," "conducting an effective performance interview," "partnering in the performance review process," "active and effective listening," "providing clear and direct feedback," "establishing positive professional relationships," and "creating an environment where staff feel appreciated."

In analyzing the participants' individual rankings of workplace design features according to their importance to performing the newly trained skills and work activities, participants ranked "having my own individual office with floor-to-ceiling solid walls and a door" first followed by "having a door to close" in second place. As mentioned earlier, these design features are commonly identified in EB research as influencing acoustical and visual privacy by allowing workers to perform trained skills and work activities without distraction. EB researchers (see, for example, Brill, Weidemann, & BOSTI Associates, 2001) identified acoustical problems in the workplace as one of the main problems impeding job performance and satisfaction.

Another workplace design feature related to privacy that received significant attention from the participants in the present study, "having a conference/meeting room available when needed," ranked eighth. Many of the participants stressed the importance of having access to a convenient meeting or conference room to perform their newly trained skills/work activities. The following verbatim responses are representative of common descriptions given by the participants: "Using the conference room made it [performing the performance review] more private and less interruptions…I think the employees spoke more freely because of the privacy," "Having a conference room definitely helps to maintain privacy and confidentiality," "[Our] current meeting room is offsite, hard to schedule, lots of disruptions…huge windows that don't offer much

privacy." These verbatim responses highlighting the importance of having convenient meeting space are also consistent with some of the field observations of the investigator in that some of the interviews for the present study were conducted in conference or small meeting rooms when the participant felt their personal workspace might be too small, or did not provide a level of privacy they were comfortable with.

One particularly important finding of the present study that distinguishes it from earlier research examining the impact of workplace design on training transfer was the grouping of design features into three subgroups by the participants based on their importance to performing the training skills/activities on the job. While a fair amount of variance exists for the individual rankings of the design features, there was consensus on particular groups of design features being significantly different from other groups.

The most important cluster included design feature 4 (having my own individual office with floor-to-ceiling solid walls), 12 (having a door to close), 1 (having sufficient lighting and controls), and 2 (having sufficient temperature/ventilation/air conditioning and controls. Prior research has documented that worker ability to control air quality, lighting and thermal conditions in the workplace impacts worker health and performance (see, Burge, 2004; also the review by Hedge, 2000). Indeed, Kroner, Stark-Martin and Willemain (1992) determined that personal control over environmentally responsive workstations increased worker productivity by two percent.

The medium importance cluster included design feature 18 (having sufficient and accessible office equipment/reference materials/supplies, 17 (having sufficient work surface to spread out work), 15 (having comfortable furniture), 14 (having a conference/meeting room available when needed), 16 (having flexible furniture and

equipment that can be arranged to fit work needs), 21 (having my personal workspace located away from high foot traffic aisles, 3 (having a larger personal workspace), 13 (having a window to see natural daylight and views outside the building), 19 (having coworkers who work together located close together), 22 (having my workspace physically located on campus), and 20 (having my personal workspace facing away from foot traffic).

The findings alert and direct organizations to where they should channel their finite resources to support training transfer and provide organizations with a better ability to differentiate critical design features from design features that are more marginal to training transfer.

Workplace design features impeding transfer

In the present study, elicited responses from the participants for organizational factors perceived to impede their opportunity to use the new training skills on the job were highest for unsupportive workplace design followed by lack of resources, technology, and equipment. These results from the interviews were further supported by responses to a particular question regarding the most hindering workplace condition, situation, or office design feature relative to the use of the new training skills. Again, unsupportive workplace design garnered the most responses from the participants.

Certain workplace design features were elicited most often by participants as impeding their opportunity to use learned training skills back on the job. The findings indicate that participants perceived workplace design features not supporting privacy needs; proximity problems with direct reports, staff, and partners; antiquated office design; and use of cubicles preventing communications as impeding transfer. Participants

perceived particularly strong negative relationships among five of the six design features related to cubicles and all nine of the training skills\activities. While the Beliefs Matrix used in the present study distinguished among various industry heights for cubicles, there was strong agreement among the participants that cubicles, regardless of height, were not important for performing their newly trained skills\activities on the job. These findings were consistent with participants' verbatim responses regarding the use of cubicles.

Indeed, participants ranked these types of design features as least important in performing the new training skills/activities on the job. The third cluster of design features ranked in the least important group included design feature 8 (having my own cubicle with 80" high panels), 5 (having a shared office with floor-to-ceiling solid walls), 7 (having my own cubicle with 64" high panels), 6 (having my own cubicle with 50" high panels), 11 (having a shared cubicle with 80" high panels), 10 (having a shared cubicle with 64" high panels), and 9 (having a shared cubicle with 50" high panels).

These findings were consistent with participants' verbatim responses during the structured interviews. For example, when respondents were asked a particular question regarding the most hindering workplace condition, situation, or office design feature relative to the use of the new training skills, nearly 50% of the verbatim responses related to sharing/using cubicles or working in space with little or no privacy.

While all of the participants in the present study were supervisors and most of their personal workspaces were individual offices with floor-to-ceiling solid walls and a door, a large amount of negative attention focused on the use of cubicles. Some of this negativity could be attributed to the fact that most of the participants' staff was located in individual or shared cubicles. Many of the participants expressed displeasure in their

staffs not having private individual workspace or other quiet areas to perform their tasks. For example, one participant was particularly concerned about shared cubicle use and its effect on job performance: “My staff are located in a small office space that they share with some equipment. It is loud and often times there is little or no privacy. I often cannot provide feedback immediately because of this.” These findings are also supported by the field observations of the investigator. On three occasions the participant introduced the investigator to their staff at their personal workspace. Each of these staff persons’ workspaces was located in cubicles. During each introduction the investigator was easily able to overhear the personal and/or telephone conversations of other employees located in adjoining cubicles.

Research Question #2

What is the relative impact of these design features on transfer compared with other organizational factors perceived to impact transfer? Content analysis revealed that the participants perceived supportive workplace design as one of the four main organizational factors facilitating transfer. There were 167 elicited responses related to supportive workplace design compared to 63 elicited responses related to positive management support. Likewise, unsupportive workplace was among the four primary organizational factors perceived by the participants to impede transfer.

There were 101 elicited responses related to unsupportive workplace design compared to 23 elicited responses related to lack of resources, technology, and equipment, the organizational factor elicited most frequently after unsupportive workplace design as impeding transfer. The other organizational factors (positive

management support, availability of resources, technology, and equipment, positive co-worker support, lack of resources, technology, and equipment, lack of management support, and lack of time to perform) perceived by the participants to facilitate and impede transfer are already widely recognized in transfer research (Baldwin & Ford, 1988; Ford & Weisbein, 1997; Holton & Baldwin, 2000; Kontoghiorghes, 2004).

These findings are similar to those of previous studies of the phenomenon (Kupritz, 2002). While the Kupritz (2002) study determined that positive management support was the main organizational factor facilitating transfer followed by supportive workplace design, the present study found supportive workplace design to be the main organizational factor affecting the participants' opportunity to use their newly trained skills in the workplace, followed by positive management support.

In analyzing the main organizational factors impeding transfer, the Kupritz (2002) study determined that unsupportive workplace design was the main factor limiting workers' ability to apply learned skills on the job, followed by lack of management support. Similarly, the participants in the present study perceived unsupportive workplace design to be the main organizational factor impeding their efforts to use their newly trained skills back on the job. Organizations should not infer that these findings apply to all work settings as it may depend upon the relevancy to the particular work situation and circumstances. For example, in contrast to the Kupritz (2002) study, participants in the present study perceived lack of resources, technology, and equipment to be the second most inhibiting organizational factor relative to their use of the newly trained skills on the job.

Limitations of the Study

As a case study, a potential limitation of the present study deals with the transferability of the findings beyond the context of the current setting. (i.e., ability to generalize the findings). Dynamic and changing contexts make replication in similar physical and social contexts difficult. The investigator for the present study attempted to facilitate replication by providing detailed information on the research setting, study participants, sample size, procedures followed in collecting and analyzing data, and methods used to ensure trustworthiness of data, and the role of the investigator. Detailed information provided in the Kupritz (2002) case study, for example, made it easier to replicate the procedures for this study.

Another potential limitation of the study is the short time constraint mandated by corporate culture, which can increase the difficulty of establishing authenticity and trustworthiness in field settings. Although the HEM is not a device providing immediate answers, it allows for completing of data collection and analysis faster than the long-term field work necessary for a full blown ethnography without threatening authenticity and trustworthiness. Harding and Livesay (1984) contend that the HEM is moving in the direction of allowing "completion of data collection fast enough so that policy recommendations arising out of the research are not irrelevant because decisions had to be made in a short time period" (p. 73).

Subjective measurement was used to determine the amount of new learning that occurred during the performance review workshops. While participants in the Domain Definition were asked to recall the skills that they learned in the performance review workshops that they are now able to use on the job, the workshops did not have an

assessment component for objective measurement. Therefore, it is not clear whether the training skills/activities investigated in the current study were actually learned in the workshops conducted by EOD.

Finally, future research should seek to use a larger sample size for the preference ranking. While data tend to stabilize with a sample size of 50 for the Beliefs Matrix (Harding & Livesay, 1984), the small sample size of the preference ranking in the present study may account for the variance experienced when this data was analyzed. A larger sample could not be obtained for the present study because the 50 supervisors who had agreed to participate in the study represented almost the entire population from the four supervisory workshops, which had only been offered once at the time of the study.

HRD Implications and Future Research

The findings from this study indicate that HRD professionals should pay attention to the vital role that workplace design appears to play in transfer for supervisory skills, especially considering ASTD's 2001 report that corporate expenditures for managerial and supervisory training are at "fairly high levels" worldwide (Marquardt, King, & Koon, 2001, p. 10). The findings in the present study suggest that university administrators could realize more tangible gains in employee performance from their training efforts by investing in more supportive workplace designs, especially regarding the most critical design features. More supportive workplace designs may help provide work environments that increase the frequency and use of newly trained skills on the job.

Future research should investigate the return on investment of capital expenditures measuring improvements made to workplace design to support transfer

compared to employee productivity in terms of quantity and quality of work output as well as production time on the job. Indeed, Phillips (1997) points out, "while level 3 evaluations such as frequency and use of skills are important to gauge the success of the program's application, it still does not guarantee that there will be a positive impact in the organization" (p. 43). Meanwhile, administrators and training directors/specialists should not be deterred in searching for ways to improve workplace design. While Harris (2006) estimated facility related expenses (i.e., real estate and equipment) to be the second largest organizational asset at about 31% of operating costs, many workplace design solutions can be implemented by organizations with minimal or no cost at all.

In the present study, for example, the investigator noted that some of the workplace design concerns raised by the participants could be improved with minor adjustments to the arrangement of furniture or restructuring of staff seating locations. One participant expressed concern regarding informally sharing her staff with other departments located in the same suite. This was primarily because one of her staff was located in the open reception area of the office suite and appeared to be a receptionist for the entire suite. This staff member's desk could be moved away from the suite entrance towards the hallway leading to her department's section of the suite to help alleviate the confusion about this staff person's role in the work setting.

Another workplace design concern raised by the participants that could be improved with minor adjustments and/or minimal costs relates to access to conference rooms or group meeting space. While many of the participants expressed frustration with not having convenient meeting space when needed for conducting performance reviews and other related training skills, some of these concerns could be addressed through

facilities sharing across departments and other organizational units. Field observations of the investigator revealed that while some of the participants' office suites did not have a conference room, there was often a conference room located on the same or adjacent floors that belonged to a different department.

Future research should also examine ways to design a training environment that simulates the physical (and social conditions for that matter) conditions of the application environment. Instructional design models have long stressed that transfer is more likely to occur when learning conditions approximate the application environment (see, for example, Clark & Voogel, 1985; Laker, 1990). For example, O-Neill and Evans (2000) staged interruptions during training as trainees practiced certain tasks in order to approximate office conditions these learners encounter on-the-job. Kupritz (2000b) argues that the training needs to "approximate the actual conditions created by design limitations and design opportunities holds true for any training experience, be it a noisy office environment or an extreme environment such as a military maneuver in desert-like conditions…Simply put, sound training may not occur in a quiet atmosphere if in fact the actual workplace is noise and filled with distractions and interruptions, any more than military training would occur in desert-like terrain for desert warfare" (p. 31). These types of adjustments may be needed in the training environment used for the participants in the current study in light of all the negative attention given to cubicle use. EOD training specialists may need to consider using cubicles in the training environment or provide techniques for dealing with performing performance reviews in cubicle filled work environments.

Overall, participants in the present study did not feel cubicles were important for the performance of their newly trained skills on the job. Caution is advised here in transferring this finding across all work practices. Participants in the present study were asked about the importance of various workplace design features relative to performing work activities related to the performance review training they received, not other tasks unrelated to this specific training workshop.

Finally, future research should examine the impact of workplace design on training transfer in varying work practices and settings. The physical environment may be an important organizational factor affecting transfer for some work practices but not others, or it may be important for transfer across the board.

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APPENDICES

APPENDIX A

Domain Definition

Name_____

Date of Birth_____

Job Title_____

Brief Job Description_____
_____
_____
_____

I am examining work issues that impact using new training skills back on-the-job. Examples of <u>work issues</u>, that is, the workplace conditions, office features or situations: management type issues-management procedures to support level; timeliness of training to try out new skills; availability of resources and equipment; training relevance, potential application of training; coworker support; and workplace design issues."

I understand you attended_____ Workshop. When?_____

UTHR gave me a list of the skills taught in this course:

- Conducting an Effective Performance Interview
- Effective Use of the Performance Review Summary Form
- Active and Effective Listening
- Providing Clear and Direct Feedback
- Establishing Positive Professional Relationships
- Partnering in the Performance Review Process

What kind of walls enclose your work area [your immediate workspace]?

- **Floor-to-ceiling solid walls with door**
- **5' Height partitions with/without door**
- **7' Height partitions with door**
- **Open area with no screens or walls**

[Prompt] Now, I'd like to talk to you about your new training skills and work issues that impact them.

Q 7. What skills that you learned in the _____ workshop are you now able to use back on the job? [Answers = X]	Q 8. When X, what workplace conditions, Situations or office design features Make it **easier** to X? [Answers = Y]	Q 9. What else makes it **easier** To perform X, other than Y? [Probe]

Q 10. When X, what workplace conditions, situations or office design features make it **harder** to X? [Answers = Y]	Q 11. What else makes it **harder** to perform X, other than Y? [Probe]	Q 12. What skills that you learned in the _____ workshop are you **not** able to use back on the job? [Answers = X]

Q 13. What workplace conditions, situations or office design features have not allowed you to use X?	[Prompt] Now, I'd like you to talk about what for you would be the "ideal" workplace to support your training skills that you learned in the _____ workshop. This includes features that need to be avoided as well as features that need to be provided.	Q 14. What workplace conditions, situations or office design features would the "ideal" workplace **have** (to support your new training skills back on the job)?

Q 15. What workplace conditions, situations or office design features would the "ideal" workplace **avoid**, or **not have,** (that would make it harder to use your new training skills back on the job)?	[Prompt] Finally, I'd like you to think about all the workplace conditions, situations and office design features that support your new training skills that you are able to use.	Q 16. Of all the workplace conditions, situations and office design features that support (make it easier to use) your new training skills, which ones (workplace conditions, situations or office design features) **most support** your ability to use these new training skills?

Q 17. Of all the workplace conditions, situations and office design features that support (make it easier to use) your new training skills, which ones (workplace conditions, situations or office design features) **most hinder** your ability to use these new training skills?		

Survey Questionnaire Part A Please answer this question: "Is X [design feature] important for/when Y [training skill/activity]?" Answer 1 (for yes) and 0 (for no). [X] DESIGN FEATURES		1. using the performance review form effectively	2. focusing on staff member's behavior, not the	3.conducting an effective performance interview	4.partnering in the performance review process	5.active and effective listening	6. providing clear and direct feedback	7. establishing positive professional relationships	8. establishing trust	9. creating an environment where staff feel appreciated
having sufficient lighting and controls	1.									
having sufficient temperature/ventilation/air conditioning and controls	2.									
having a larger personal workspace	3.									
having my own individual office with floor-to-ceiling solid walls	4.									
having a shared office with floor-to-ceiling solid walls	5.									
having my own cubicle with 50" high panels	6.									
having my own cubicle with 64" high panels	7.									
having my own cubicle with 80" high panels	8.									
having a shared cubicle with 50" high panels	9.									
having a shared cubicle with 64" high panels	10.									
having a shared cubicle with 80" high panels	11.									
having a door to close	12.									
having a window to see natural daylight and views outside the building	13.									
having a conference/meeting room available when needed	14.									
having comfortable furniture	15.									
having flexible furniture and equipment that can be arranged to fit work needs	16.									
having a sufficient work surface to spread out work	17.									
having sufficient office equipment/reference materials/supplies and easy access to them	18.									
having coworkers who work together located close together	19.									
having my personal workspace facing away from foot traffic	20.									
having my personal workspace located away from high foot traffic aisles	21.									
having my workplace physically located on campus	22.									

Survey Questionnaire Part B

This part of the questionnaire answers the question, "What are the **most** important design features for you to have at work to perform your new training skills?"

Rank order these design features from <u>most</u> important to <u>least</u> important.

IMPORTANCE RANK	ITEM NUMBER ON BACK OF CARD
1ST	**____ (most important)**
2ND	**____**
3RD	**____**
4TH	**____**
5TH	**____**
6TH	**____**
7TH	**____**
8TH	**____**
9TH	**____**
10TH	**____**
11TH	**____**
12TH	**____**
13TH	**____**
14TH	**____**
15TH	**____**
16th	**____**
17th	**____**
18th	**____**
19th	**____**
20th	**____**
21st	**____**
22nd	**____ (least important)**

Demographic Information:

Job Title_____

Age 18-30____ 31-45____ 46-54____ 55-65____ over 65____

Gender M____ F____

Tenure at UT (years on job) less than 10 years____ 10-20 years____ 20-30 years____ over 30 years_____

Personal Workspace: Office with floor-to-ceiling walls____ Cubicle with panels_____

[place check] Individual____ Shared____ Individual____ Shared____

Open with no walls or cubicle panels____

APPENDIX B

DOMAIN ANALYSIS

INCLUDED TERM	SEMANTIC RELATIONSHIP	COVER TERM
-direct and clear feedback was very valuable	is a kind of	Training skill learned now using back on the job
-providing clear and direct feedback		
-providing clear and direct feedback		
-providing clear and direct feedback		
-providing clear and direct feedback		
-providing clear and direct feedback		
-providing clear and direct feedback		
-providing clear and direct feedback		
-providing clear and direct feedback		
-providing clear and direct feedback		
-providing clear and direct feedback		
-providing clear and direct feedback		
-providing clear and direct feedback		
-focusing on staff behavior, not the individual		
-focusing on staff behavior, not the individual		
-focusing on behaviors, not the person		
-focusing on staff members' behaviors, not the person		
-focusing on staff members' behaviors, rather than the individual		
-focusing on the staff members' behaviors, not the individuals		
-focusing on staff members' behaviors, not individuals		
-focusing on staff members' behaviors, not the individual		
-focusing on staff members' behaviors, not the individual		
-focusing on staff members' behaviors, not the individual		
-focusing on staff members' behavior, not the individual		

INCLUDED TERM	SEMANTIC RELATIONSHIP	COVER TERM
-creating an appreciative work environment **-creating an environment of appreciation** **-creating a work environment where employees feel appreciated** **-creating an environment that makes a staff member feel appreciated** **-creating an environment that allows staff to feel appreciated** **-creating an environment that allows staff to feel appreciated** **-creating an environment that allows a staff member to feel appreciated** **-creating an environment that allows staff to feel appreciated.**	**is a kind of**	**training skill learned now using back on the job**
-establishing trust **-establishing trust** **-establishing trust** **-establishing trust** **-establishing trust** **-establishing trust** **-establishing trust** **-establishing trust**		
-establishing positive professional relationships **-establishing positive professional relationships** **-establishing positive professional relationships** **-establishing positive professional relationship** **-establishing positive professional relationships** **-establishing positive professional relationships** **-establishing positive professional relationships** **-establishing positive professional relationships**		
-active and effective listening **-active and effective listening** **-active and effective listening** **-active and effective listening** **-active and effective listening**		

INCLUDED TERM	SEMANTIC RELATIONSHIP	COVER TERM
-active and effective listening -active and effective listening -active and effective listening -active and effective listening	is a kind of	training skill learned now using back on the job
-effective use of the summary form -effective use of the summary form -effective use of the performance review form -effective use of the performance review summary form -effective use of the performance review summary form -effective use of the summary form -effective use of the summary form -effective use of the performance review summary form -effective use of the performance review summary form -effective use of the performance review summary form -effective use of the summary review form -effective use of the performance review summary form		
-conducting an effective performance interview -conducting an effective performance interview -conducting effective performance interviews -conducting an effective performance interview -conducting an effective performance interview -conducting an effective performance interview -conducting an effective performance interview -conducting an effective performance interview		

INCLUDED TERM	SEMANTIC RELATIONSHIP	COVER TERM
-conducting an effective performance interview **-conducting an effective performance interview** **-conducting an effective performance interview** **-conducting an effective performance interview**	**is a kind of**	**training skill learned now using back on the job**
-partnering in the performance review process [2-way interaction] **-partnering {in the} performance review process** **-partnering in the performance review process** **-partnering in the performance review process** **-partnering in the performance review process** **-partnering in the performance review process** **-partnering in the performance review process** **-partnering in the performance review process [2-way interaction]**		

INCLUDED TERM	SEMANTIC RELATIONSHIP	COVER TERM
-doing performance reviews **-doing the performance review** **-doing the performance review**	**is a kind of**	**training skill learned in workshop NOT able to use on the job**
-using the performance review summary form **-using the summary form**		
-sometimes I'm very limited in my ability to create an environment that allows a staff member to feel appreciated **-creating an environment that allows a staff member to feel appreciated** **-creating an environment that allows a staff member to feel appreciated** **-creating an environment that allows a staff member to feel appreciated** **-recognizing the efforts of students and staff and making them feel appreciated**		
-establishing trust is probably the hardest along with establishing positive professional relationships **-establishing trust** **-establishing trust is a work in progress, but still severely lacking…No one has a feeling of trust.**		
-providing clear and direct feedback		
-establishing positive professional relationships		
-partnering in the performance review process		

INCLUDED TERM	SEMANTIC RELATIONSHIP	COVER TERM
-promises broken [by leadership] -leadership only gives us bits and pieces of stories -leadership not sharing information -employees do not feel safe -no leadership on the issue [creating an environment of appreciation] -organizational culture that values academics, and only sees staff as support -leadership has not clarified employee roles -institutional, systemic barriers	**is a kind of**	**workplace condition that has NOT allowed the worker to use a learned training skill**
-lack of staff and {financial} resources -don't have the resources to provide employees incentives -I basically use all of the skills with the exception of the actual performance review form and that is because I currently have no direct reports		
-time management…we often get so wrapped up in our daily tasks that we fail to show the proper amount of attention to employees to make them feel appreciated -timing -scheduling -time and scheduling are primary workplace conditions that keep me from creating an appreciative environment		
-employees going around supervisors to get information -no strong communication from leadership -showing appreciation for some employees causes other employees to feel slighted		
-design flaws in the form prevent it from being adequate		

INCLUDED TERM	SEMANTIC RELATIONSHIP	COVER TERM
-{office} being downtown as opposed to campus makes it harder for employees to come to our offices **-the individual office spaces are small** **-physical layout of personal space very limiting** **-staff share a small office space** **-equipment is located in same office space as employees** **-it is loud** **-little or no privacy** **-very little space**	**is a kind of**	**office design feature that has NOT allowed the worker to use a learned training skill**

INCLUDED TERM	SEMANTIC RELATIONSHIP	COVER TERM
-openess allows for a good comfort level and freedom of discussion **-having private space** **-having an office with a door and blinds** **-having private space with a door** **-having private offices** **-having my own personal office** **-having private offices for all employees** **-having private {individual} office space** **-having own individual office space** **-having my own private office space** **-for the first time in my career I have the personal office space designed the way I wanted it. I have a door, workstation, filing cabinets, etc. that are conducive to performing the skills.** **-having private individual workspace** **-everyone should have their own cubicle or personal workspace…We have two or three people in one cubicle in some cases.** **-having my own personal office** **-having my own office with a door** **-everyone having their own cubicle or private workspace** **-having my own personal workspace** **-[having a] private office because no one likes to be given negative or positive feedback in front of peers and others** **-cubicles would have a sense of privacy…no sharing** **-having my own office to conduct the reviews makes it easier because it is quieter here than anywhere else** **-having an office with a door** **-have an office with walls, doors, and a ceiling and a window for privacy and to be able to look outside**	**is a way to**	**facilitate opportunities for training transfer through supportive workplace design**

INCLUDED TERM	SEMANTIC RELATIONSHIP	COVER TERM
-having a private office is most supportive -having a private, but welcoming, relaxed atmosphere -comfortable space that puts staff at ease…seating and tables -having a private office definitely helps with this [providing clear and direct feedback]…more private -everyone needs own office space -being able to shut the door is a plus…privacy is not a concern…distractions minimal so that is good as well -my doors are always open, but it makes it easier to perform skills when you can close the door -having more individual workspace -each staff member has a place for themselves for privacy -each employee have more individual space…more isolation so employees are less distracted and focused on producing a quality product -it helps if the employee will complete their own evaluation first and then we find a quiet place [private] to discuss what we feel their performance has been -having private office space to perform reviews or conference room -[being able to] coming from behind the desk….close my door and turning off the phone -having a personal office -each staff member having their own private workspace -private office is key for privacy -having a {personal} office with walls, doors, and a ceiling -having a bigger personal office -having comfortable chairs, lighting, box of kleenex -my personal workstation is perfect for conducting small meetings, performance review,	is a way to	facilitate opportunities for training transfer through supportive workplace design

INCLUDED TERM	SEMANTIC RELATIONSHIP	COVER TERM
-each employee having more individual space -ample space for individual offices, group meetings, and arranged to make the offices more accessible for students -my office does it [make it easier to perform skills] make it more comfortable -having individual offices with ample space -having a training office -having a quiet {office} environment -being able to find a quiet {private} place -more privacy -comfortable {office} environment -having a conference room definitely helps to maintain privacy and confidentiality -having a secluded meeting space -more individual private spaces -having a small conference room -using the conference room made it [performance review] more private and less interruptions…I think the employees spoke more freely because of the privacy -more group space for discussions…I don't like to have to pull a person away from a situation to have a private discussion -having an onsite meeting room -having conference room access -having a convenient conference room -having an onsite conference room -more recognition for successes and space to accomplish it -get togethers-space for it -more space for employees so they feel more appreciated…Filing cabinets are in front of people's desks. Barriers for customers and workers	is a way to	facilitate opportunities for training transfer through supportive workplace design

INCLUDED TERM	SEMANTIC RELATIONSHIP	COVER TERM
-computer hook-ups determine how my personal space is laid out and how I sit. My idea space would not have these barriers -[Onsite conference] meeting room with a speaker phone for larger meeting…Current meeting room is offsite, hard to schedule, lots of disruptions…huge windows that don't offer much privacy -conference room would be nice, but it is offsite and it makes the employees less comfortable -having a conference room with the proper equipment and acoustics -having group meeting space -having more group meeting space -having a bigger conference room -having the conference room -we have a training office that is nice for providing training to employees this helps make positive professional relationships -having access to the conference room -office design that allows for confidentiality -having more overall space -having a better facility layout -desk not facing windows -having adequate space -having more space to get things done -having an up-to-date office design -an onsite conference room would be great…we have conference calls that we have in my office and everyone crowds in to participate -having more space -provide a better reception area with computers and places to complete forms -having a larger {office} space -space around the desk for staff	is a way to	facilitate opportunities for training transfer through supportive workplace design

INCLUDED TERM	SEMANTIC RELATIONSHIP	COVER TERM
-shared desk space for staff to layout things they need to show me -having {a} conference room -make the conference room bigger and more visually pleasing. Its hard for my staff and I to sit down and talk or have a small meeting -having an individual office with a door -having our own individual office -comfortable facility -prettier office space -office suite is pretty compact and we are located together helps -glass incased areas -placing offices within the suite closer together -having an office suite strictly for our people -everyone {in our administrative area} being located on the same floor -being closer to the Dean's office -"one stop shopping" all the key components for any division would be located in one building on the same floor -being accessible to students and colleagues -being in close proximity to my direct reports -being physically located with my staff -an area strictly for the business people…I would like for my staff to not be separated by other staff doing different things -only people involved in our core business responsibilities should be here -all administrative people on the same floor in an open office design would help with communication…better team atmosphere -close proximity helps me to give immediate and direct	is a way to	facilitate opportunities for training transfer through supportive workplace design

INCLUDED TERM	SEMANTIC RELATIONSHIP	COVER TERM
-being {physically} close to my employees **-accessibility throughout the day is great** **-being close to direct reports** **-it's the close proximity that makes the difference** **-close proximity allows me to see the behaviors as they occur** **-administrative area being housed in the same location** **-having all administrative people on the same floor** **-having faculty members' offices located away from the main thoroughfare** **-being physically located on campus would be the most supportive feature** **-being physically present to stay connected to colleagues, staff and leadership** **-being physically located on campus** **-physically move to campus** **-being physically located close to the dean** **-having control of the thermostat** **-having the ability to control office temperature** **-windows to the outside {of the building}** **-having windows** **-having a window** **-more windows…more relaxing atmosphere** **-having more windows** **-a prettier office space** **-more plants to make customers & employees feel welcome and comfortable** **-having good lighting** **-having adequate lighting** **-having a well-lighted office** **-having great lighting** **-having good lighting** **-better lighting** **-having a clean office**	**is a way to**	**facilitate opportunities for training transfer through supportive workplace design**

INCLUDED TERM	SEMANTIC RELATIONSHIP	COVER TERM
-feeling safe **-having a safe working environment…I come to work on the weekends sometimes**	**is a way to**	**facilitate opportunities for training transfer through supportive workplace design**
-having an open office design **-[having an] open office supports most activities** **-having an open office** **-supervisors being able to see employees**		
-size and number of staff helps to avoid distractions **-we have a small staff and we know each other very well…we know what to expect from each other and that makes it easier to appreciate what each person does** **-it's easy to trust people you have worked with for a long time and that appreciate what you do**		
-having an offsite meeting location		
-having more accessible office space **-different layout to [make better] accessibility**		
-convenient parking		
-better common space for employees on breaks or lunches		

INCLUDED TERM	SEMANTIC RELATIONSHIP	COVER TERM
-close proximity can make it harder to perform many of the skills **-not having own office** **-not having an individual office with a door there is no privacy and everyone can overhear everyone else's conversations and business transactions** **-not having own private workspace** **-not having private office** **-sometimes, especially when the situation deals with sensitive issues, it would be good to have a private office to give and receive feedback** **-not having a secluded meeting place makes it difficult to provide clear and direct feedback in a timely manner** **-not having private workspace** **-not having own personal workspace** **-lack of privacy is definitely a problem** **-privacy issues, no personal space** **-not having private space makes is impossible to perform confidential performance reviews** **-not having a quiet place would definitely make it very difficult to perform the performance interview and establish two way interaction** **-office noise** **-excessive construction** **-high noise levels makes active and effective listening difficult sometimes** **-I wouldn't consider a bar** **-having noisy distractions** **-having excessive traffic and noise** **-having traffic in the reception area** **-having unnecessary noise and distractions** **-having too much traffic** **-traffic flow is certainly an issue** **-having office traffic**	**is a way to**	**impede opportunities for training transfer through unsupportive workplace design**

INCLUDED TERM	SEMANTIC RELATIONSHIP	COVER TERM
is not conducive to positive professional relationships…more privacy is needed **-having a totally open office space** **-direct feedback is sometimes heard by everyone in the office. Sometimes this is not good. So close proximity in this case is bad** **-negative feedback is sometimes given in front of everyone and even when I bring them into my office and close the door…closing the door is viewed negatively** **-having open office space** **-having a spread out office suite** **-being in separate office suites** **-being in separate offices makes it harder to intervene in problem situations. you don't always see what is going on.** **-my office location is in the top of the building in the back corner and it makes it difficult to interact with a lot of the staff** **-definitely no cubicles…lots of confidentiality issues to deal with and privacy is a must** **-having cubicles** **-having cubicles** **-lumping multiple employees into small cubicles** **-sharing cubicles** **-having cubicles would be the most hindering feature** **-having cubicles** **-having cubicles** **-lumping multiple employees into small cubicles** **-being downtown** **-being physically disconnected from other partner departments** **-being isolated from associates**	**is a way to**	**impede opportunities for training transfer through unsupportive workplace design**

INCLUDED TERM	SEMANTIC RELATIONSHIP	COVER TERM
-establishing positive professional relationships more difficult -having doors makes it more difficult sometimes because of the isolation -isolation…some days there are 3 or 4 people, somedays none -isolation from other administrative offices -no interaction -being physically located away from mainstream offices -having personal office located away from other staff makes applying all of the skills difficult Much of my feedback to staff is provided over the phone or e-mail because we are in different locations	is a way to	impede opportunities for training transfer through unsupportive workplace design
-we have two physically different locations and this affects my ability to use many of the skills…especially in evaluating performance because I cannot see what is going on in a lot of cases -geographically disconnected from other student activity associated student services		
-having small quarters -being located too close together -sharing cubicles is probably the most hindering factor because there is no privacy -having small, shared office space -having to share a small office		
-having a small personal office		
-not having private meeting space -not having adequate group space -less group space -not having a neutral meeting area -no group space for get togethers		

INCLUDED TERM	SEMANTIC RELATIONSHIP	COVER TERM
-non ability to make conversations confidential -not having windows -not having windows -no windows is a hinderance because it makes everyone more tired -less windows should be avoided because everyone likes to be able to see outside. It makes the day less dreary -not having windows except for the production workers because they need to concentrate on the tasks given them and the lighting would be messed up -windows that cannot be blinded	is a way to	impede opportunities for training transfer through unsupportive workplace design
-unattractive office design (uninviting)		
-antiquated office design update…I have leaks that need fixing - the office design over here does not encourage us to work together as a staff -antiquated facilities need renovation…not enough space, storage, few spaces for groups to meet, accessibility issues -office space design makes it harder to accomplish all of the skills -basically the office space design makes using the skills most difficult -the building is old and the layout makes communicating difficult -the office is designed for individual work, not collaboration -better layout in the facility…more room -this office is not designed very well for giving or receiving feedback…not very good for having a conversation with employees - Some staff and students are in locations where there is little		

INCLUDED TERM	SEMANTIC RELATIONSHIP	COVER TERM
- Some of my staff are located in small offices that used to be closet space…renovations are sorely needed…staff definitely feel unappreciated in this environment **-having distant parking** **-dark areas with poor lighting** **-having offsite restrooms** **-space with no privacy** **-uncomfortable seating** **-far away parking** **--leadership understanding we work well together** **-having supportive, well-trained supervisors or managers** **-the university has taken steps to make employees more accountable for HR issues and performance** **-communication from leadership helps with all the skills because we know what is expected** **-supervisor encouragement** **-having more contact from leadership relative to performance** **-being fair and honest** **-managers having respect for employees** **-encouragement especially when there are issues or a low score** **-encouraging the employees and showing you appreciate them helps to make the process easier as well…if an employee is not happy in their job they could care less about a performance review** **-right now my supervisor is very supportive of my work and efforts…that is very important to me**	**is a way to**	**facilitate opportunities for training transfer through positive management support**

INCLUDED TERM	SEMANTIC RELATIONSHIP	COVER TERM
-having a comfortable management style **-[having the] confidence to confront problems and issues directly** **-being approachable** **-showing appreciation** **-it is easier to evaluate employees when managers {management} truly understanding the work environment of staff** **-[managers and staff having] common knowledge of the job function** **-as a supervisor, I am very supportive of the employees as well as the other supervisors in the administrative area** **-my supervisor being supportive of my work** **-strong support from leadership** **-supervisors and leaders actually caring about employees** **-the good ole boy system would be demolished [by leadership] and everyone would have equal opportunity for raises, advancement, etc.** **-[providing feedback] sometimes done in a group setting to clarify for others and take the pressure off individuals** **-informal discussions in a private location** **-I make notes and don't wait until there are issues, having a great job description** **-leadership committed to professional growth** **-being supportive of employees** **-being given credit for past experience [by supervisors]** **-receiving encouragement from management** **-having mutual respect between supervisors and employees and management and all the employees** **-more empowerment to**	**is a way to**	**facilitate opportunities for training transfer through positive management support**

INCLUDED TERM	SEMANTIC RELATIONSHIP	COVER TERM
-receiving a pat on the back -informal feedback helps with this [building trust] -use tools such as surveys and customer comments -receiving credit {from management} for past experience -having an open door policy with colleagues and supervisors -we have an open door policy that helps with establishing positive professional relationships and partnering throughout the process -having an open door policy -everyone understanding the performance review process	**is a way to**	**facilitate opportunities for training transfer through positive management support**
-having managers and leaders that do not understand work environment -more interference from managers and leaders that do not know what we do -management and leaders really don't understand all the work that is involved in conducting performance reviews properly -not being able to trust the supervisor -chain of command breakdowns…we don't work with the office manager very well -[managers allowing] salary discrepancies and the good ole boy system of rewarding employees makes it hard to establish trust and make employees feel appreciated -having unfocused leaders -leadership sends informal messages that tell employees they are easily replaced…"Part of the culture of UT. This workplace condition does not make employees feel appreciated -having supervisors that don't	**is a way to**	**impede opportunities for training transfer through a lack of management support**

INCLUDED TERM	SEMANTIC RELATIONSHIP	COVER TERM
-when the employee does not trust you as the supervisor or you don't respect the employee that can make the whole process harder -if the review is negative in nature it is more difficult to partner in the process -level of administrative authority makes it more difficult for people to come into the office and feel comfortable -less empowerment for employees -unfocused staff and leaders who lose site of the vision and mission of the department.	**is a way to**	**impede opportunities for training transfer through a lack of management support**
-having adequate computers -having the budget to get things we need -having more staff -more staff would be helpful -more staff would provide a lot of relief for current workers -more staff would be the most helpful to relieve me from doing so much hands on -having more staff -we don't always have the correct staffing needs which makes it difficult to break away to conduct reviews -top quality staff and student assistants -all staff having internet access -having a voice mail system that answers the phones -having the equipment and resources makes it easier to partner in the performance review process -funding…because of the student activity fee -having the necessary equipment, desk space, etc… -having the ability to provide resources and incentives -having the ability to reward, monetarily, good performance -a better system for rewarding employees for performance…as state employees my employees	**is a way to**	**facilitate opportunities for training transfer through available resources, technology, and equipment**

INCLUDED TERM	SEMANTIC RELATIONSHIP	COVER TERM
many times before I do as the supervisor **-it is good to have the resources to give employees what they need…this makes them feel appreciated** **-having upgraded technology, computers, printers** **-having up-to-date equipment** **-having my own personal computer, printer, technology access** **-better salary for work done** **-receiving pay for overtime** **-having better employee reward systems** **-recognition and compensation packages are not an adequate show of appreciation so I generally do other things, little things like notes, small office awards, etc.** **-having reliable computer networks** **-morale boosters…more pay, thank yous, etc….** **-we have a tight budget and furniture expenses are usually not included** **-more training for supervisors and staff** **-plenty of opportunities for professional development and training**	**is a way to**	**facilitate opportunities for training transfer through available resources, technology, and equipment**

INCLUDED TERM	SEMANTIC RELATIONSHIP	COVER TERM
-having limited resources -state employees often don't have the resources that are common in private industry to provide employees incentives -having restrictions on use of resources -having inadequate compensation packages -no consistent reward system for excellent performance -no link between performance and pay for staff as is the case for faculty -not having funding to provide activities -being unable to receive pay for overtime -lacking funding and resources -having a tight budget -having less staff -less staff -not having proper staff or equipment -money…we can't reward our employees in the manner we would like to show how much we appreciate them -having funding and resource deficiencies -staffing deficiencies -having low pay and salary rates -having a limited budget -not having the staff or resources -not having the equipment or technology -being unable to provide resources and incentives -not having the resources	**is a way to**	**impede opportunities for training transfer through lack of available resources, technology, and equipment**

INCLUDED TERM	SEMANTIC RELATIONSHIP	COVER TERM
-having a friendly relationship -day-to-day interaction on a casual basis so that we get to know each other -knowing each other personally -knowing each other very well -knowing what to expect from each other -have an office shutdown for lunch…this could give us time to get together and catch up with each other personally. more fellowship time -the staff have lunch together most days and that helps us to have a good relationship…this helps us to get along and build trust -we work to make the office environment fun…we've been together a long time and that makes performing reviews easier -trusting people you've worked with a long time -having trust among colleagues is the most important condition…if we trust each other and my employees trust me we can deal with any of the rest -trust is essential because you have to believe you have good people working with you -partnering is easier because we have been together for a long time…we've worked together and get along well -being together for a long time -getting along with coworkers -having personal feelings -having a good relationship with coworkers -strong support from colleagues -having lunch with colleagues -having a fun office environment -having trust among colleagues -collaborating as a staff -approaching issues as a team	**is a way to**	**facilitate opportunities for training transfer through positive coworker support**

INCLUDED TERM	SEMANTIC RELATIONSHIP	COVER TERM
-having disgruntled employees…its much harder to focus on their professional performance when they complain and you don't like them personally…Some employees are always unsatisfied regardless they are always negative -problem employees -criticism from other departments -basically the criticism makes using the skills most difficult -having no trust among peers -having no interaction among coworkers -its hard to show appreciation to some employees without others feeling slighted -restrictions on interactions -no interaction among peers…isolation -having many individual personalities -having hostile work environment -it can be difficult to focus on behaviors because we are colleagues and know each other personally -sometimes the good relationships get in the way of addressing issues…personal feelings get in the way -it is also difficult sometimes to focus on behaviors instead of individuals because we know each other so well -no trust among peers -no trust	**is a way to**	**impede opportunities for training transfer through lack of coworker support**

INCLUDED TERM	SEMANTIC RELATIONSHIP	COVER TERM
-the amount of work that we are responsible for makes it harder to perform the performance review process in a timely manner -time and scheduling -huge workload and not being able to relate to the employees properly -scheduling and travel make it difficult to accomplish many of the skills -unflexible scheduling because so many staff are unable to receive pay for overtime -scheduling, travel, practice sites make it very difficult to relate to one another…job takes us physically away from each other. very little observation of performance. you have to take others word for what is actually happening -having heavy scheduling periods -lack of free time and scheduling conflicts -not being able to schedule -volume of forms (too many)…the performance review process is too time consuming -time and scheduling…to do the process [performance review] correctly takes more time than any of us have -there is a lot of paperwork involved in performing the reviews and that requires more time and work that we don't have -the paperwork -more time to produce a quality product -self-evaluations…eliminate the time for extra evaluations	**is a way to**	**impede opportunities for training transfer through lack of time to perform new skill on the job**

Vita

Terron Lynn Hillsman was born in Milan, TN on February 3, 1973. He was raised in McLemoresville, TN and went to grade school at McLemoresville Elementary School and junior high school at West Carroll Middle School in Trezvant, TN. He graduated from West Carroll High School in 1991. From there, he went to Tennessee State University and received a B.S. in Agricultural Business in 1995. He also attended Tusculum College and received a M.A. in Organizational Management in 1999.