ABSTRACT

WIELAND HANDY, LISA A. The Importance of the Work Environment Variables on the Transfer of Training. (Under the direction of Brad Mehlenbacher.)

Today's organizational leaders want stronger evidence of training's effectiveness and they want to know how training is improving their organizational performance. Although the work environment variables have been emphasized by research as important to the transfer of training, it is surprising that little research has addressed the issue of the employees' perception of the work environment variables and if they perceive these work environment variables as being significant in their ability to transfer their knowledge and skills gained from training back to the job. The purpose of this study was to examine a proposed model of training transfer, which relates the employees' perceived importance of the work environment variables to transfer of training within an organizational work setting. Participants were 115 full-time service engineers who completed an instructor-led training, which prepared them to perform services on technical equipment at client sites. Participants received the first questionnaire immediately after training, which measured the existence of the work environment variables and the motivation to transfer training. The second questionnaire was sent to the same participants 60 days after the training, which measured their importance of the work environment variables and their transfer achieved. A Pearson's correlation and multiple regression were conducted and five variables were omitted from further analysis due to low reliability scores. The results showed a positive relationship and a moderate correlation between motivation to transfer and perceived transfer achieved and the correlation was statistically significant. The importance of the work environment variables accounted for 11.1% of the variance in motivation to transfer. Importance of peer support

and importance of feedback/performance coaching were significantly related to motivation to transfer. Due to a small sample size and self-reported data, the study results should be interpreted with some caution.

The Importance of the Work Environment Variables on the Transfer of Training

by
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BIOGRAPHY

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Ms. Lisa Wieland Handy is the daughter of LeRoy and Geraldine Wieland. She resides in North Carolina with her family and loving pets.

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CHAPTER I: INTRODUCTION

Faced with economic uncertainty, globalization, and competition, most organizations have invested in formal training for their employees in hopes of having this training investment reciprocated through improved performance and competitive advantage (Awoniyi, Griego, & Morgan, 2002; Donovan, Hannigan, & Crowe, 2001; Yamnill & McLean, 2001).

The American Society for Training and Development (ASTD), in their *2004 State of the Industry Report,* posits that management is placing greater pressure on training professionals to demonstrate the value of training (Sugrue & Kyung-Hyun, 2004). Although the total training dollars spent by organizations vary, one estimate by *Training Magazine's 23rd Annual Industry Report* (2004) suggests that companies spent $51.4 billion on training in 2004 and $51.3 billion in 2003. Furthermore, 26 percent of the 2004 respondents reported larger training budgets in comparison to their 2003 training budget (Dolezalek, 2004). The significant amount of resources spent on training, as a means to achieve organizational results, has caused organizational leaders to ask for justification of the value and effectiveness of training.

In the past, it was appropriate to demonstrate the effectiveness of training by reporting on the number of participants, their average score on final exams, the average score of the "smile" or reaction sheet, and the number of courses in the course catalog. Today's organizational leaders want stronger evidence of training's effectiveness that goes beyond the participants' reactions to training and the numbers trained. They want

to know how training is improving their organizational performance and how these changes in knowledge, skills, and attitudes (KSAs) are impacting their bottom-line. This trend has emerged as organizations demand more accountability, data, and results regarding their return on training investments (Salas & Cannon-Bowers, 2001; Salas, Cannon-Bowers, & Kozlowski, 1997). ASTD's *2004 State of the Industry Report* postulates that the organizations that understand the link between learning and performance have increased their efforts to align learning with business goals, target learning resources at mission-critical competencies, and measure both the effectiveness of learning and the efficiency of the learning organization in delivering improved performance outcomes.

Training Effectiveness

Donald Kirkpatrick's (1967) work is a widely recognized and accepted method for evaluating the effectiveness of training programs within an organization. Kirkpatrick's evaluation model is designed for training practitioners to gather data about a training program at four critical perspectives: 1) participant reaction (perceptions) to the training program, 2) participant learning, 3) on-the-job performance change (also known as training transfer), and 4) organizational impact (Rothwell & Kazanas, 1992).

Unfortunately, training practitioners are reluctant to plan or implement a comprehensive approach to measuring the effectiveness of their training programs. According to *Chief Learning Officer* (2005) magazine, 22 percent indicated that they

have no formal metrics in place. Most organizations had metrics in place for Kirkpatrick's levels one and two. However, in terms of assessing on-the-job performance, only 54 percent of these respondents said they assess training at level three (transfer of training) (Rowan, 2005). According to these statistics, most training practitioners use perception data (level one) to design training programs and validate training effectiveness and very few organizations are capturing behavioral data (level three and four) on the transfer of training. This reluctance results from a perceived lack of time and resources or a lack of expertise on how to design an effective evaluation of training (Alliger, Tannenbaum, Bennett, Traver, & Shotland, 1997).

Another concern is that Kirkpatrick's work has been classified as a taxonomy rather than a model because it is missing essential variables that affect learning and transfer processes, such as trainee motivation and work environment factors that affect the transfer of training (Holton, 1996). Without considering these essential variables, it would be difficult to connect learning and changes in individual's behavior. It is difficult to isolate the effects of training versus other changes occurring within and outside the organization (Burrow & Berardinelli, 2003). Furthermore, trainees' attitudes, interests, values, and expectations can influence training effectiveness (Noe, 1986).

Training evaluation, like Kirkpatrick's evaluation model, examines "what works" and is a micro view. It measures what was learned at different levels and is the basis for determining the training effectiveness of a particular training intervention

(Salas & Cannon-Bowers, 2001). Kirkpatrick is effective for summative and formative evaluations of training programs. Training effectiveness, on the other hand, is concerned with "why training works" and it is a macro view. It looks at the training intervention from a systems perspective where the success of training depends not only on the methods used but: 1) how training is positioned, supported, and reinforced by the organization, 2) the motivation and focus of trainees, and 3) what mechanisms are in place to ensure the transfer of the newly acquired KSAs to the job (Kraiger, Ford, & Salas, 1993). The most meaningful factor in evaluating the effectiveness of training is the trainee's work performance and therefore, a better performance indicator maybe in the knowledge and skills employees transfer from the training back to the work environment (Burrow & Berardinelli, 2003). The work environment comprises all of the conditions in which an employee has to perform the tasks and duties belonging to his/her function (Gielen, 1996).

Factors Influencing Transfer of Training

Although there are many definitions of transfer, it is generally agreed that transfer of training, as defined by Baldwin and Ford (1988), is the degree to which trainees effectively apply the knowledge, skills, and attitudes gained in a training context to the job and maintained over time. This definition suggests that transfer of training is a function of factors within the formal training context as well as characteristics in the transfer or work environment (Tracey, Tannenbaum, & Kavanaugh, 1995). Furthermore, this definition has three implications: 1) there is

something to transfer, such as the knowledge, skills, and attitudes gained in a training context, 2) the trainee should be both able and motivated to transfer the learning, and 3) there is the situation, different from the training context, in which the training content is applied (Gielen, 1996). Transfer of training is a way of thinking, perceiving, and processing information; without the ability to transfer, people could not engage in everyday thinking and reasoning (Haskell, 1998).

Two critical outcomes of effective training are learning and transfer of training (Holton, Bates, & Ruona, 2000). Transfer is seen as a function of three sets of factors: 1) trainee characteristics (ability, personality, motivation), 2) training design (principles of learning, sequencing, training content), and 3) the work environment (support, opportunity to use) on training outputs (learning, retention) and conditions of transfer (generalization, maintenance) (Cheng & Ho, 2001).

Research demonstrates that transfer of training is complex and involves multiple factors and is affected by a system of influences (Baldwin & Ford, 1988; Cheng & Ho, 2001; Holton & Baldwin, 2003; Noe & Schmitt, 1986; Rouiller & Goldstein, 1993). In a review of the literature on the transfer of training, it was found that a significant amount of the extant research focuses on trainee characteristics and design factors (Baldwin & Ford, 1988; Noe, 1986; Noe & Schmitt, 1986). However, significantly less has been done to understand how: 1) work context factors influence transfer of training, 2) transfer-related factors present themselves in organizations, and 3) these factors can be effectively changed or managed (Egan, Yang, & Bartlett, 2004; Holton, Hsin-Chih,

& Naquin, 2003; Tannenbaum & Yukl, 1992). Furthermore, researchers have demonstrated some support for the effectiveness of posttraining interventions, however, relatively little is known about their application in organizations and employees' reaction to them (Huint & Saks, 2003). Since Baldwin and Ford (1988), researchers have agreed that one conceptualization of the manner in which work environment factors affect the transfer of learned behaviors to the job is through a transfer of training climate (Holton, Bates, Seyler, & Carvalho, 1997; Mathieu, Tannenbaum, & Salas, 1992; Rouiller & Goldstein, 1993).

The transfer climate is defined as those situational cues and consequences that either inhibit or help to facilitate the transfer of what has been learned in training into the job situation (Rouiller & Goldstein, 1993). The transfer climate is not the work environment per se, but rather the interpretation through which the work environment affects job behaviors and attitudes. Transfer climate is described as a "sense of imperative" (Schneider & Rentsch, 1988, cited in Holton, et al. 1997) that arises from a person's perceptions of the work environment, and that influences the extent to which a person applies learned skills to the job (Holton et al., 1997). These studies conclude that the transfer climate can significantly affect an individual's ability and motivation to transfer learning to the job.

Although these authors support the importance of the transfer climate, it was not clear how the transfer climate should be operationalized and measured reliably (Holton et al., 1997). These studies led Holton, Bates, Seyler, and Carvalho (1997) to develop a

conceptual framework that illustrates the general relationship between transfer climate and transfer of training. This model, through its succession, broadens the focus from an emphasis on a transfer climate to an emphasis on a transfer system. The authors' framework is known as The Learning Transfer Systems Inventory (LTSI): Conceptual Model of Instrument Constructs, which is shown below in Figure 1.1. This model considers five influences: 1) secondary influences, 2) motivation, 3) environment, 4) outcomes, and 5) ability. The LTSI model, displays the complete transfer system, which are all factors in the person, training, and organization that influence transfer of training to job performance (Holton et al., 2000).

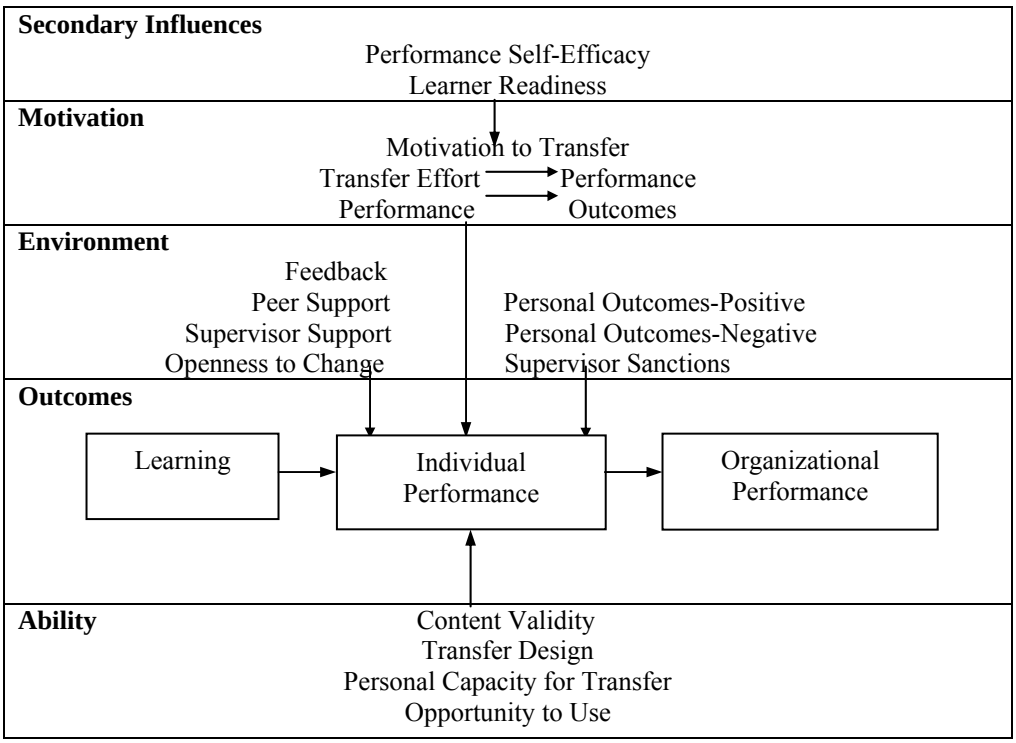

Figure 1.1 Learning Transfer System Inventory: Conceptual Model
Source: Holton, Bates, and Ruona (2000, p. 339).

Training practitioners must give careful consideration to many variables and issues surrounding transfer. Therefore, they usually adopt a trial and error approach to manage transfer of training (Broad & Newstrom, 1992; Cheng & Ho, 2001; Holton, 2003). Good transfer strategies should help training practitioners in understanding, analyzing, and selecting appropriate interventions for those problems that training can address in the organization. In order to implement the proper interventions for the transfer of training, training practitioners must understand the work environment factors and how these factors influence transfer (Holton et al., 2000). Furthermore, they should be able to provide more definitive answers to "why" training was effective by understanding: 1) the nature of training transfer and the barriers, 2) the enablers to transfer in the work environment, and 3) the work environment factors that have a positive (or a negative) influence on individual performance and organizational performance.

Problem Statement

Transfer of training does not occur in isolation, but rather in a dynamic work environment. Once trainees return back to their jobs, the pressures of day-to-day demands may push them back into old habits and behavior patterns. If employees do not transfer the knowledge and skills they have acquired from training back to the job, then neither the employee nor the organization will benefit (Elangovan & Karakowsky, 1999). However, the work environment can support or discourage the learners to apply their newly acquired knowledge and skills (Tannenbaum & Yukl, 1992).

It is estimated that the extent to which learning typically is transferred into performance range from 5 to 20 percent (Broad, 2000). This estimate is a rather low payoff for the investment in training. One reason that transfer of training is so disappointingly low is that the transfer process is complex and involves multiple factors and influences, such as motivation, self-efficacy, ability to learn, and training design (Baldwin & Ford, 1988; Cheng & Ho, 2001; Holton & Baldwin, 2003; Noe & Schmitt, 1986; Rouiller & Goldstein, 1993).

Furthermore, Holton, Chen, and Naquin (2003) state that the existing research is not action-oriented. These studies end at identifying, describing, or measuring factors that may influence transfer without considering how transfer-related factors present themselves in organizations or how those factors might be effectively managed. For example, due to cultural differences across organizations, supervisor support may be a more powerful predictor of training transfer in a government agency, while peer support may be a better predictor of training transfer in a manufacturing plant (Holton et al., 2003). In order for training and development professionals to move toward an action-oriented agenda, they must first understand how transfer-related factors present themselves in organizations (Holton et al., 2003). In addition, Cheng and Ho (2001) point out that some recent studies do not report consistent outcomes and do not provide strong evidence for valid causality. For example, organizational commitment was found to be related to training transfer in some studies (Tesluk, Farr, Mathieu, & Vance, 1995), but not in others (Facteau, Dobbins, Russell, Ladd, & Kudisch, 1995).

Supervisor's support has clearly been established in the literature as a critical work environment factor that influences the transfer process. However, there continues to be mixed results and gaps in the literature regarding the specific supervisor factors that influence transfer (Clarke, 2002; Hawley & Barnard, 2005). Some studies lend support to the hypothesis that supervisor's support is significant in the transfer of learned behaviors to the work setting (Bates, Holton, Seyler, & Carvalho, 1999; Brinkerhoff & Montesino, 1995; Ford, Quinones, Sego, & Sorra, 1992; Hawley & Barnard, 2005; Seyler, Holton, Bates, Burrnett, & Carvalho, 1998). Other studies did not find a significant positive relationship between supervisor's support and transfer (Awoniyi et al., 2002; Facteau et al., 1995; Van der Klink, Gielen, & Nauta, 2001).

Baldwin and Magjuka (1991) suggest that certain management actions prior to training significantly affect trainees' perceptions of organizational importance and their motivation to learn and transfer. Management's actions send signals to employees that affect perceptions and influence behavior. An organization's members will expend effort on what they perceive as important and neglect behaviors deemed unimportant to the organization. These authors tested a model where motivation to learn and transfer was influenced by trainees' perceptions of organizational importance. The focus of their study was to determine what characteristics of an intervention indicated to employees its relative organizational importance and are important training signals associated with post-training outcomes.

The Baldwin and Magjuka (1991) study raises the question of what does an employee perceive as important in the context of transfer? Do employees perceive work environment variables as important? Although the work environment variables have been emphasized by research as important to the transfer of training, it is surprising that little research has addressed the issue of the employees' perception of the work environment variables and if they perceive these work environment variables as being significant in their ability to transfer the acquired knowledge, skills, and attitudes gained from training back to the job.

In addition, there is a lack of research that has studied: 1) the employees' perception of the importance of the work environment variables in the context of transfer, 2) if the perceived importance of the work environment variables predicts the employees' motivation to transfer, 3) the employees' perceived transfer achieved, and 4) if employees' perceive their job performance improving when they transfer learned knowledge and skills. The problem serving as the focus of this research is to fill in the gap that remains between where employees exit a training classroom and where they return to the job and have had an opportunity to practice and apply their new KSAs. Further research is needed to compare these perceptions and determine if employees do perceive these work environment variables as important in order to transfer KSAs to the job.

Furthermore, Cheng and Ho (2001) argue that more studies should be conducted to test posited variables in various training contexts to facilitate the development of a database of findings that will allow comparison, contrast, and further elaboration. By testing the variables in different settings, a more consistent view of their functions on transfer could be obtained. The scarcity of research on the practical benefits of how transfer-related factors present themselves in organizations or how those factors might be effectively managed, are important to training practitioners, organizations, and researchers in their understanding of how to support transfer of training in organizations.

Adopting a trial and error approach to manage transfer of training is a costly and time-consuming approach that may not yield desired outcomes (Cheng & Ho, 2001). Good transfer theories and models should help training practitioners to understand, analyze, and select appropriate interventions for those problems that transfer and training can address in the organization. By understanding how employees view the work environment variables and if transfer is valued by an organization and its employees, training professionals can ensure that transfer is part of the design for a complete training program.

Purpose of the Study

The purpose of this study is to examine a proposed model of training transfer (Figure 1.2), which relates the employees' perceived importance of the work environment variables to transfer of training within an organizational work setting.

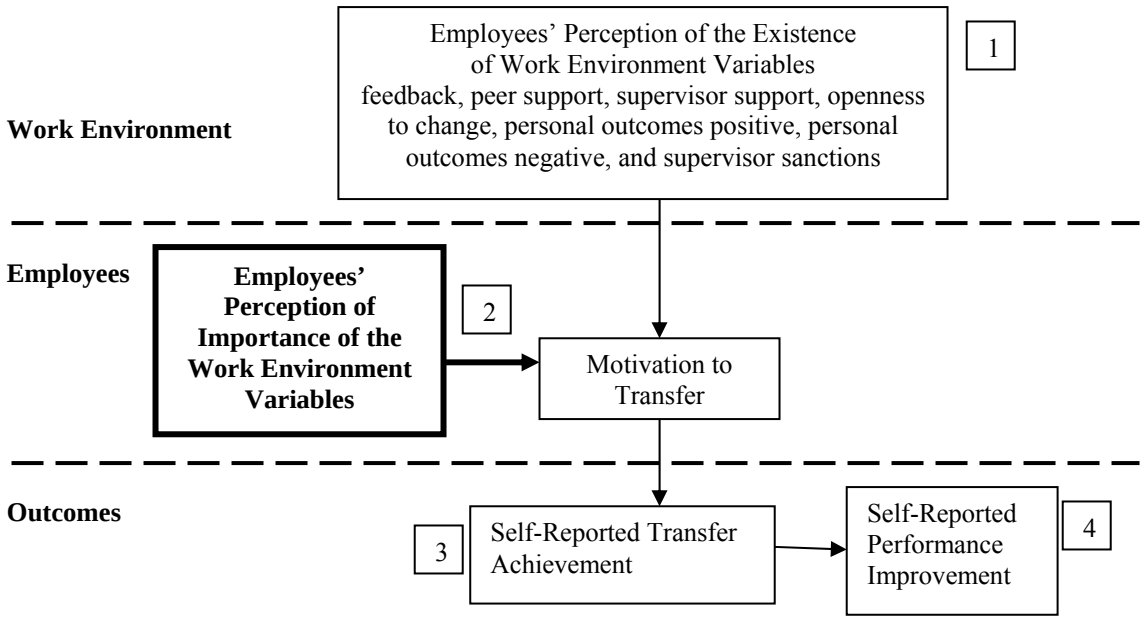

Figure 1.2 Proposed Model: Importance of Work Environment Variables

Specifically, the proposed relationships are: 1) the employees' perception of the importance of the work environment variables in the context of transfer, 2) whether the employees' perception of the importance of the work environment variables predicts the employees' motivation to transfer, 3) whether employees perceive that transfer was achieved, and 4) whether employees perceive their job performance improving when they transferred their newly learned knowledge and skills.

The model guiding the research is developed based on Holton, et al.'s (2000) conceptual model (Figure 1.1) and transfer factors found in the literature review. The seven work environment variables, motivation to transfer, transfer effort, and performance are included in Holton et al.'s (2000) model. As shown in the proposed model, the seven work environment variables (independent variables: feedback, peer support, supervisor support, openness to change, personal outcomes positive, personal outcomes negative, and supervisor sanctions) may influence the motivation to transfer (dependent variable). Furthermore, this relationship may be influenced by the suggested importance of the work environment variables.

The predictive variables are the employee's perception of the importance of the work environment variables. For example, if the work environment variable (supervisor support) exists at a high level in the organization and the employee perceives that work environment variable is extremely important in the context of transfer (employee perceives supervisor support is very important in order for him/her to transfer learned KSAs to the job), then it is proposed that the individual's motivation to transfer will be significant and he/she will perceive the achievement of transfer to the job and perceive the improvement of his/her performance. The analysis of employees' perception of the work environment variables as being important in their transfer of training may influence if they transfer their acquired knowledge and skills and if they believe their job performance will improve if they transfer knowledge and skills to the job. Finally, as shown in the proposed model, motivation to transfer (independent

variable) may influence the perceived transfer achieved (dependent variable) and perceived performance improvement (dependent variable).

While secondary influences (self-efficacy, learner readiness) and abilities (training program design, content validity, personal capacity to transfer, and opportunity to use) are recognized as components of the transfer system, these variables will not be addressed in this research study primarily because current literature exists on the relationship of these factors to training effectiveness and it is beyond the scope of this study. A complete review of the related literature supporting the relationships proposed in the model (Figure 1.2) is presented in the next chapter. A brief description of the model is provided here to define the variables selected for the study.

Overview of Proposed Model

Motivation to transfer is the intention of the trained employee to apply the newly learned knowledge and skills mastered in the training program back to the work environment (Seyler et al., 1998). As shown in Figure 1.2, seven work environment variables are suggested to influence the motivation to transfer. However, the perceived importance of the work environment variables is suggested to influence this relationship between the work environment variables and motivation to transfer. Based on previous research specific to the work environment variables, the selected seven work environment variables are feedback, peer support, supervisor support, openness to change, personal outcomes positive, personal outcomes negative, and supervisor sanctions.

1. Feedback (performance coaching) is defined as the extent to which individuals receive constructive input, assistance, and feedback from people in their work environment (peers, employees, colleagues, managers, etc.) when applying new abilities or attempting to improve work performance. Feedback may be formal or informal cues from the workplace (Holton et al., 2003).
2. Peer Support is defined as the degree to which peers mutually identify and implement opportunities to apply KSAs learned in training, encourage the use of or expect the application of new skills, display patience with difficulties associated with applying new skills, or demonstrate appreciation for the use of new skills (Holton et al., 2003).
3. Supervisor (Manager) Support is defined as the managers' involvement in clarifying performance expectations after training, identifying opportunities to apply new KSAs, setting realistic goals based on training, working with individuals on problems encountered while applying new skills, and providing feedback when individuals successfully apply new KSAs (Holton et al., 2003).
4. Openness (Resistance) To Change is defined as the work groups' resistance to change, willingness to invest energy to change, and degree of support provided to individuals who use techniques learned in training (Holton et al., 2003).
5. Personal Outcomes Positive is defined as the increased productivity and work effectiveness, increased personal satisfaction, additional respect, a salary increase or

reward, the opportunity to further career development plans, or the opportunity to advance in the organization (Holton et al., 2003).

6. Personal Outcomes Negative is defined as the reprimands, penalties, peer resentment, too much new work, or the likelihood of not getting a raise if newly acquired skills are utilized (Holton et al., 2003).
7. Supervisor (Manager) Sanctions is when managers oppose the use of new KSAs, use techniques different from those taught in training, do not assist individuals in identifying opportunities to apply new KSAs, or provide inadequate or negative feedback when individuals successfully apply learning on-the-job (Holton et al., 2003).

Research has shown that the seven work environment variables can influence an individual's motivation to transfer (Cheng & Ho, 2001; Holton et al., 1997). As shown in Figure 1.2, the proposed model, the employees' perception of the importance of these seven work environment variables is suggested to influence their motivation to transfer. Therefore, if the work environment variable (supervisor support) exists at a high level in the organization and the employee perceives that work environment variable is extremely important in the context of transfer (employee perceives supervisor support is very important in order for him/her to transfer learned KSAs to the job), then it is suggested that the individual's motivation to transfer will be significant and he/she will perceive the achievement of transfer to the job and perceive the improvement of his/her performance.

Research Questions

The following research questions are guiding the study:

1. What are the trainees' perceptions of the existing work environment variables in supporting transfer immediately after training?
2. What are the trainees' perceptions of the importance of the work environment variables in supporting transfer two months after training?
3. What is the relationship between trainees' motivation to transfer (immediately after training) and perceived transfer achieved (two months after training)?
4. What is the predictive ability of the importance of the work environment variables to predict the trainees' motivation to transfer their training to practice?

Definitions

Motivation to Transfer: the intended effort towards utilizing the skills and knowledge learned in a training context to the trainee's job (Seyler et al., 1998).

Transfer Climate: Consists of those situational cues and consequences that either inhibit or help to facilitate the transfer of what has been learned in training into the job situation (Rouiller & Goldstein, 1993).

Transfer System: All factors in the person, training, and organization that influence transfer of learning/training to job performance (Holton et al., 2000).

Transfer of Training: Positive transfer of training is the degree to which trainees effectively apply the knowledge, skills, and attitudes gained in a training context to the job and maintained over time (Baldwin & Ford, 1988).

Work Environment: The work environment comprises all of the conditions in which an employee has to perform the tasks and duties belonging to his/her function (Gielen, 1996).

Significance of the Study

A study of how trainees perceive the importance of the work environment variables and transfer of training is significant for several reasons. First, organizations have invested billions of dollars in formal training for their employees in hopes to have this training investment reciprocated through improved performance and competitive advantage (Awoniyi et al., 2002; Donovan et al., 2001; Yamnill & McLean, 2001). This significant resource allocation is pressuring training practitioners to demonstrate the effectiveness of training.

Second, this study will add to the body of knowledge and provide insight to conflicting results of work environment variables influencing transfer of training. Cheng and Ho (2001) suggest that interventions can be developed for effective transfer of training only by clearly understanding the work environment variables that support and undermine them. They also argue that more studies should be conducted to test posited variables in various training contexts in order to generalize their findings. By testing the variables in different settings, a more consistent view of their functions on training transfer could be obtained.

Finally, while we can only speculate on the extent to which post-training transfer is taking place and seen as valuable to the employees or organizations, this study will add to the research knowledge of: 1) the employees' perception of the importance of the work environment variables in the context of transfer, 2) whether the employees' perception of the importance of the work environment variables predicts the

employees' motivation to transfer, 3) whether employees perceive that transfer was achieved, and 4) whether employees perceive their job performance improving when they transferred their newly learned knowledge and skills.

Limitations

Although this study may shed some light on employees' perceptions of the importance of the work environment variables, these results should be interpreted with some caution. This study contains all self-report and perception data from the trainees (full-time service engineers and technicians) from two high-tech companies.

Certainly a true observable measure of training transfer and improved job performance would be a better measure than the self-reported responses used in this study. However, it would be very difficult for the researcher to travel to the client sites with 100 or more service engineers and therefore, beyond the budget and time frame of this study to access direct measures of transfer and improvements to job performance.

Finally, the purposive sampling procedure decreases the generalizability of research findings. This study will not be generalizable to all populations in transfer research because the sample is not a true random sample (Gall, Borg, & Gall, 1996). In addition, the recommended sample size was not achieved for this research study and therefore, the scales for the two questionnaires could not be validated with exploratory factor analysis. The researcher had to rely on past validations from the authors of the survey instrument.

CHAPTER II: REVIEW OF THE LITERATURE

Transfer of training has historically been a critical topic of investigation in human resource development (HRD) and adult education research (Holton et al., 2003; Pedersen & Liu, 2002). Broad and Newstrom (1992) state that transfer of training is based on three major challenges. First, U.S. organizations spend billions of dollars each year on training for their employees to provide them with the needed knowledge and skills to improve organizational performance.

Second, most formal investments in organizational training and development is dissipated because most of the knowledge and skills gained in training are not fully applied by trainees back on the job (Broad & Newstrom, 1992). There is a strong consensus that training is a wasted investment if the acquisition of knowledge and skills are not generalized to the job, and are not maintained over time (Baldwin & Ford, 1988; Broad & Newstrom, 1992; Burrow & Berardinelli, 2003; Haskell, 1998; Kozlowski & Salas, 1997; Yamnill & McLean, 2001).

Finally, faced with economic uncertainty, globalization, and competition, most organizations have invested in formal training for their employees in hopes of having this training investment reciprocated through improved performance and competitive advantage (Awoniyi et al., 2002; Belling, James, & Ladkin, 2004; Ellinger, Watkins, & Bostrom, 1999; Seyler et al., 1998; Yamnill & McLean, 2001).

For organizations to remain competitive and develop a highly skilled workforce, improving transfer of training needs to be one of HRD's top priority (Broad &

Newstrom, 1992). For this reason, Elangovan & Karakowsky (1999) contend that effectiveness of transfer is very important in determining the usefulness of training and development programs in organizations. However, it is estimated that the extent to which learning typically is transferred into performance range from 5 to 20 percent (Broad, 2000). This estimate is a rather low payoff for the investment in training.

One of the reasons that transfer of training is so disappointingly low is that the transfer process may not be as simple as it first appears. Transfer of training does not occur in isolation, but rather in a dynamic work environment. The work environment can support, discourage, or prohibit trainees from applying their newly acquired knowledge and skills to their job (Tannenbaum & Yukl, 1992). According to Broad (2000), if a good performer is pitted against a bad system, the system will win every time. In other words, once trainees return back to their jobs, the pressures of day-to-day demands may push them back into old habits and behavior patterns. If employees do not transfer the knowledge and skills they have acquired from training back to the job, then neither the employee nor the organization will benefit (Elangovan & Karakowsky, 1999).

Individual performance is key and transfer of training is a core issue with respect to linking individual change to the requirements of the organizational system (Yamnill & McLean, 2001). Transfer of training can be the primary leverage point by which training can influence organizational-level outcomes (Gaudine & Saks, 2004). Therefore, if there is a consensus that training makes a difference in individual and

organizational performance, then research should support the training practitioners in their understanding of how to support transfer of training in their organizations (Yamnill & McLean, 2001).

This chapter will review the literature related to transfer of training by first discussing the early theoretical frameworks that under gird transfer studies. In addition, there will be a discussion of the early studies on transfer of training. Following this discussion, a review of the relevant transfer studies that examine the affects of the work environment factors (situational or task constraints and social support) on transfer of training and motivation to transfer. Finally, is a summary of the development of the transfer climate to the transfer system, Holton, et al.'s (2000) conceptual model, and the recent studies that focus on transfer as the outcome.

Motivation Theories Supporting Transfer of Training

A common foundation and framework from the literature review is the interaction of relationships among the transfer theories. For example, expectancy, equity, and goal setting influence personal motivation to transfer and high motivation for learning and transfer may influence expectancy and goal setting for transfer (Lim & Morris, 2006). Several theories of work motivation help to predict behaviors that contribute to performance at work, as well as clarify the motivation to transfer learned knowledge and skills from the classroom to the job. The motivation theories of equity, expectancy, and goal-setting are the motivation theories that provide a theoretical framework for transfer of training.

Equity Theory

Adams (1963) is the major contributor to the equity model of motivation. Equity theory is simply based on the idea that people want to be treated fairly in relation to others (Yamnill & McLean, 2001). It is based on the premise that a person will compare his/her inputs (extra work effort, skills) to outputs (pay, advancement, and benefits). This critical ratio is then compared to another individual's (other) inputs to outputs (Lawson & Shen, 1998). The person can take a variety of actions to restore equity or balance in the ratios. For example, altering inputs or outputs, cognitively distorting inputs or outcomes, leaving the position or organization, changing the inputs or outcomes of the other, or changing the other (Lawson & Shen, 1998). It is clear that organizational members observe actions and associated consequences of other members and compare themselves to others and that the "perception" of equity is much more important than actual equity conditions (Lawson & Shen, 1998).

According to Vroom (1964, cited in Yamnill and McLean, 2001), individuals seek equity in their jobs and job satisfaction reflects the extent to which rewards received match the rewards the employee believes should be received. Equity theory is based on three assumptions: 1) people develop beliefs about what constitutes a fair and equitable return for the contributions they make to their jobs, 2) people compare their own returns and contributions to those of others, and 3) beliefs about unfair treatment (inequity) create tension that motivates people to reduce that tension (Yamnill & McLean, 2001). Therefore, in regards to motivation to transfer, it is important for

training practitioners to understand what employees perceive they should receive from their work environment when they transfer the learned knowledge and skills.

Expectancy Theory

Vroom (1964) is a major contributor to the expectancy model of motivation theory. Vroom's valance-instrumentality-expectancy model of motivation assumes that people make choices that maximize pleasure and minimizes pain (Lawson & Shen, 1998). His formula for the theory is P=f(F x A), which suggests that job performance (P) is the result of the interaction of two components, force (F) and ability (A), with ability representing the potential for performing some task (Yamnill & McLean, 2001). The force to perform is the sum of the products of the valences of all outcomes (E) and the valence or rewards of those outcomes (V). According to Lawson and Shen (1998), valance is a person's expected level of satisfaction from a work-related outcome, rather than the real value the person actually derives from the outcome.

Instrumentality is the person's belief that certain actions will lead to other outcomes (second-level outcomes) that are desirable or will avoid undesirable outcomes. Therefore, it is important for employees to understand and internalize the connection between specific actions and specific outcomes and for the organization to live up to its promises (Lawson & Shen, 1998). Expectancy is the strength of an employee's belief that a particular outcome will emerge, ranging from zero (I can't do it) to one (I can do it) (Lawson & Shen, 1998). It is a momentary belief concerning the likelihood that a particular act will precede a particular outcome; satisfaction leads to

performance (Yamnill & McLean, 2001). However, Porter and Lawler argue that it is the reverse; if rewards are adequate, high levels of performance may lead to satisfaction (Yamnill & McLean, 2001). They state that effort is a function of the value of the potential reward for the employee (valence) and the perceived effort-reward probability (expectancy). Effort then combines with abilities, traits, and role perceptions to determine performance (Yamnill & McLean, 2001).

In order for an organization to apply Vroom's 1964 model of motivation, managers need to be certain that positively valent rewards are associated with good job performance and that their employees perceive the connection between the two conditions; linking rewards with performance. In addition, individuals will be more motivated if they believe that their effort will lead to enhanced performance. Learners who are successful in applying the KSAs during training feel able to perform and, therefore, are more motivated to transfer (Holton, 1996).

Noe (1986) and Baldwin and Ford (1988) suggest the use of the expectancy theory for studying training motivation. Valence, instrumentality, and expectancy measures provide the ability to determine why motivation may be low, medium, or high. Furthermore, these measures may help determine if motivation is linked to the perception that one can acquire a skill or to the expectancy that the application of the skill will lead to specific outcomes or to the achievement of the reward.

Goal-Setting Theory

Goal-setting theory suggests two cognitive determinants of behavior: intentions and values (Yamnill & McLean, 2001). Intentions are the immediate precursors of human action. The second cognitive process manifests itself in the choice or acceptance of intentions and subsequent commitment to those goals. Goals are immediate regulators of performance. A goal is the level of performance an individual is trying to accomplish; it is the object of behavior (Yamnill & McLean, 2001). Difficult and specific goals direct attention and action and once an individual accepts a goal, the person will try (performance) until the goal is achieved or the goal is lowered or abandoned (Lawson & Shen, 1998).

The performance can result in two kinds of rewards: 1) intrinsic, which is intangible (feeling of accomplishment), and 2) extrinsic, which is tangible outcomes (pay, promotion) (Yamnill & McLean, 2001). If individuals believe there is a link between training and rewards, then it is likely they will be enthusiastic about training and be willing to make an effort to acquire desired knowledge and skills (Tracey, Hinkin, Tannenbaum, & Mathieu, 2001).

In summary, these motivation theories provide researchers and practitioners a conceptual framework for transfer of training. Goal-setting and expectancy theory may explain how and why behavior is facilitated or restrained before, during, and after a training (Yamnill & McLean, 2001). To support the degree of transfer, it is important to understand why individuals choose to apply their knowledge and skills in their

workplace and how they perceive performance and rewards. These motivation theories help training practitioners predict behaviors that contribute to performance at work and these provide clarity to Holton, et al.'s (2000) conceptual model of the transfer system.

Early Studies on Transfer of Training

Transfer of training has been an interest of research for more than fifty years. According to Broad and Newstrom (1992), Edwin Fleishman, Edwin Harris, and Harold Burtt (1955) conducted one of the first formal transfer research studies. Their study measures the changes in behavior of International Harvester foremen who completed a leadership principles and techniques course. The foremen demonstrate the desired behavior change back on the job immediately following the training. However, overtime most of the foremen reverted back to their old habits and behavior. The desired change in behavior is achieved only with a few foremen and this group of foremen report to supervisors who consistently demonstrate the desired leadership principles and desired behaviors (Broad & Newstrom, 1992).

Two years after the International Harvester study, James Mosel identifies three conditions for transfer to occur: 1) training content must be applicable to the job, 2) the trainee must learn the content, and 3) the trainee must be motivated to change job behavior to apply what was learned. Mosel notes that the later condition is most difficult because it involves rewards and punishments, incentives and deterrents in the job situation, which are under management's control (Broad & Newstrom, 1992). Since Mosel's study, other researchers are focusing on problems of transfer. In 1971, Leonard

Nadler examines support systems, such as management actions to support transfer, and organizes these support systems into categories relating to level of management and timing of actions (Broad & Newstrom, 1992). Training House (1977) identifies 12 factors inhibiting transfer and Mary Broad (1982) identifies 74 actions managers can take before, during, and after training to aid in positive transfer (Broad & Newstrom, 1992).

The focus on these variables has its beginnings in the concept of trainability. Noe and Schmidt (1986) expand Wexley and Latham's (1981) trainability concept to include the environmental component. They describe trainability as a function of ability, motivation, and environment favorability [Trainability = f (Ability, Motivation, Environmental Favorability)] (Noe & Schmitt, 1986). The ability of the trainee directly influences whether or not the trainee can understand and master the content of the training. Motivation is a force that is composed of energizing (enthusiasm about the training), directing (a stimulus that directs trainees to learn and attempt to master the content), and maintenance components (a force that influences the use of newly acquired KSAs, even in the presence of criticism and lack of support) (Noe & Schmitt, 1986). The environmental component encompasses both trainees' perceptions of social support for the use of new skills and possible task constraints.

As cited in Cheng and Ho (2001), Roberston and Downs (1979) conducted a review of studies regarding trainability testing and suggests that trainees' ability might explain 16 percent of the variance of training effectiveness. In addition, Noe and

Schmidt (1986) suggest that trainees' motivation and work environment may explain another 15-20 percent of the variance (Cheng & Ho, 2001).

In 1988, Baldwin and Ford conducted a twenty-year review of the research from 1967 through 1987. In their review, they examine several studies and classify the factors affecting transfer of training into three categories: 1) training inputs, which consist of trainee characteristics, training design, and work environment, 2) training outcomes, which are learning and retention, and 3) conditions of transfer, which focus on the generalization and maintenance of training (Baldwin & Ford, 1988). Training inputs are seen as affecting learning and retention, which directly influence generalization and maintenance. Under training inputs are the major training-design factors, such as the incorporation of learning principles, the sequencing of content, and the job relevance of the content. Trainee characteristics consist of ability or skill, motivation, and personality factors. Work-environment includes climatic factors such as supervisor or peer support and constraints and opportunities to perform learned behaviors on the job.

Training outputs are defined as the amount of original learning that occurs during the training event and the retention of that material after the training. The conditions of transfer include both the generalization of material learned in training to the job context and maintenance of the learned material over a period of time on the job (Baldwin & Ford, 1988). In their review of the work environment characteristics, Baldwin and Ford (1988) examine seven studies that research the relationship of work

environment characteristics to transfer of training. These seven studies used large-scale questionnaires to examine the relationships of work climate, leadership climate, and supervisory support to transfer criteria. No studies were conducted that examined the effects or changes in the work environment due to an intervention.

Baldwin and Ford (1988) determine that these studies have two major problems. The first issue is that work environment characteristics were not operationalized in past research. For example, research proposes that supervisory support is an important component impacting transfer of training, however, there was little attempt to understand the specific supervisor behaviors that lead to perception of support by trainees. Second, the work environment studies used self-report of behavior change as the major measure of transfer. In fact, to measure transfer of training, some studies used a measure of "intent to transfer," which is motivational rather than a measure of actual transfer.

Among early works on transfer, Noe (1986) and Baldwin and Ford (1988) determine that the extant literature on training transfer has very little value to practitioners to maximize positive transfer. Most of the training programs that were studied at the time focused on interpersonal or human-relations, which were very difficult to operationalize and relied on a self-reported measure of effort to transfer. The next section is a review of relevant transfer studies that examine the affects of the work environment factors (situational or task constraints and social support) on transfer of training.

Work Environment Factors

Although trainees may be able to apply the learned knowledge and skills during a training program, elements of the trainees' work environment may impact their ability to transfer these learned KSAs to the job. Noe (1986) argues that environmental favorability is an important variable impacting the subsequent transfer of training. Noe proposes that environmental favorability was comprised of both situational or task constraints (lack of resources) and the perceived social support for training. Individuals may be motivated to transfer learned KSAs back to the job, but may be discouraged, inhibited, or prevented from doing so by circumstances in their work environment (Tannenbaum & Yukl, 1992).

Several studies demonstrate that transfer of training is complex and involves multiple factors and influences (Cheng & Ho, 2001; Holton & Baldwin, 2003; Rouiller & Goldstein, 1993). However, significantly less has been done to understand how transfer-related factors present themselves in organizations and how these factors can be effectively changed or managed (Holton et al., 2003). A review of the literature suggests that work environment factors that most affect training transfer can be classified into two categories: factors related to the work system and people-related factors (Hawley & Barnard, 2005; Lim & Morris, 2006). Some researchers (Facteau et al., 1995; Holton et al., 2000; Rouiller & Goldstein, 1993; Tracey et al., 1995) have well-defined work environment variables separating the physical and social aspects of the work environment. Measuring these variables separately makes it easier to

delineate the specific factors in the work environment that impact transfer. This section provides an overview of the research on the work environment variables as it relates to social support and situational or task constraints.

Situational or Task Constraints

Situational constraints are defined as characteristics of the work environment that promote, reduce, or prevent an individual from performing on the job (Peters & O'Connor, 1980). Peters and O'Connor (1980) identified eight situational variables that adversely affect performance. These variables are: 1) *job-related information* – information from supervisors, peers, customers needed to do the job assigned; 2) *tools and equipment* – specific tools, equipment and machinery needed to do the job assigned; 3) *materials and supplies* – materials and supplies need to do the job assigned; 4) *budgetary support* – financial support and budgetary resources, such as money for hiring personnel that are a part of the job assigned; 5) *required services and help from others* – the services and help from others needed to do the job assigned; 6) *task preparation* – previous personal preparation through previous education and experience needed to do the job assigned; 7) *time availability* – the available time taking into consideration both time limits imposed and interruptions, to the job assigned; and 8) *work environment* – physical aspects of the work environment that facilitate the ability to do the work assigned, such as comfortable lighting, temperature, noise and other distractions. Peters and O'Connor argue that employees confronted with situational

constraints become frustrated when they cannot translate work motivation into performance.

In three separate studies, Mathieu, et al. (1992), Noe and Schmidt (1986), Ford, et al. (1992) found empirical support for trainees' perceived situational constraints having a significant negative impact on trainees' motivation to learn and motivation to transfer training. However, Facteau et al. (1995) conclude that task constraints were not significantly related to perceived training transfer. These authors contribute their findings to the fact that managers did not believe that severe task constraints were present in their work environments, which is the case in most organizations (Clarke, 2002; Facteau et al., 1995).

Additionally, more recent studies on work system factors found support for: 1) trainees who receive information prior to the training program and recognize that they will be accountable for the learning reported greater intentions to transfer learning to the workplace (Baldwin & Magjuka, 1991); 2) opportunities for trainees to apply what they have learned (Bennett, Lehman, & Forst, 1999; Clarke, 2002; Ford et al., 1992; Lim & Morris, 2006; Mathieu et al., 1992; Seyler et al., 1998); 3) autonomy/freedom to carry out the duties of the job, a low workload pressure, and an environment that promotes creativity (Awoniyi et al., 2002); 4) availability of sufficient resources (Awoniyi et al., 2002; Mathieu et al., 1992; Rouiller & Goldstein, 1993); 5) workplace design and physical attributes of the work environment (Kupritz, 2002); and 6) reward systems (Elangovan & Karakowsky, 1999). These studies suggest that situational constraints

can limit the extent to which trainees transfer learned KSAs to the job. The research on situational constraints can impact transfer at many critical points and may act as moderators between learning and transfer back to the job. Although many factors influence transfer, the period after training seems to be most critical in facilitating transfer (Hawley & Barnard, 2005).

Social Support Factors

The supports-in-organization variables are derived from the concept of social support. According to Noe (1986), the extent to which the supportive social context (supervisors and peers) of the work environment provides reinforcement and feedback, the more likely the trainee will use the learned skills and knowledge on the job. The social support system plays a central role in facilitating the transfer of training (Tracey et al., 1995). This line of inquiry is necessary to understand how transfer-related factors present themselves in organizations and how these factors can be effectively changed or managed.

Facteau et al., (1995) identified four major sources of social support: subordinate, peer, supervisor, and top management. Their study is designed to examine the independent and differential effects of subordinate support, peer support, supervisor support, and top management support on training transfer of nine hundred sixty-seven managers and supervisors. Their study concludes of the four forms of social support, only subordinate and peer support are positively related to perceived transfer, supervisor support is negatively related to transfer, and top management support shows no

significant relationship (Facteau et al., 1995). Therefore, managers who believe that their subordinates and peers are supportive of their training efforts are more likely to perceive greater transfer of their training skills. In an effort to understand the negative relationship between supervisor support and perceived transfer, Facteau et al., (1995) strongly cautions that future research should better understand the manner in which social support variables operate in combination with other types of support to influence training motivation and transfer.

In addition, studies on social support factors found support for: 1) the critical role of peer support in facilitating training transfer (Bates et al., 1999; Hawley & Barnard, 2005; Seyler et al., 1998); 2) openness to change (Bates & Holton, 2004; Bates et al., 1999; Holton et al., 2000; Lim & Morris, 2006); 3) norms and group pressure, which support performance improvements and encourage transfer (Elangovan & Karakowsky, 1999); 4) feedback (Holton et al., 2000; Lim & Morris, 2006; Rouiller & Goldstein, 1993); 5) upper management or organizational support (Hawley & Barnard, 2005); and 6) intervention strategies and transfer enhancement activities that improve the probability of transfer (Brinkerhoff & Montesino, 1995; Gaudine & Saks, 2004; Huint & Saks, 2003; Machin & Fogarty, 2003; Richman-Hirsch, 2001; Thayer & Teachout, 1995; Wexley & Baldwin, 1986).

Although there is a variety of social supports in an organization, supervisor's support has received the most attention in the literature on transfer. Hawley and Barnard (2005) define supervisor support as providing reinforcement for learning on the

job, including setting goals with trainees, modeling behaviors, and providing positive reinforcement for the transfer of new skills. Supervisor support comes in many forms, such as encouragement to use newly learned KSAs, assistance in identifying situations where learned knowledge and skills can be used, guidance and feedback on properly applying newly learned skills, sufficient practice, holding trainees accountable to apply new KSAs, and rewarding for performance.

If management does not support what was learned in training, one can't expect the training to have much of an impact on job performance (Cascio, 1998). Managers play a critical role as transfer agents when they use their managerial skills and abilities to support and influence employee learning and transfer, help training generate the outcomes for which it was intended, and enhance the return their organization realizes from the training investment (Bates, 2003). In addition, the manager should provide a supportive environment for teamwork by involving other managers and other team members (Bates, 2003; Cannon-Bowers, Salas, & Milham, 2003).

Supervisor's support has clearly been established in the literature as a critical work environment factor influencing the transfer process. However, there continues to be mixed results and gaps in the literature regarding the specific supervisor factors that influence transfer (Clarke, 2002; Hawley & Barnard, 2005). Some studies lend support to the hypothesis that supervisor's support is significant in the transfer of learned behaviors to the work setting (Bates et al., 1999; Brinkerhoff & Montesino, 1995; Ford et al., 1992; Hawley & Barnard, 2005; Seyler et al., 1998). Other studies did not find a

significant positive relationship between supervisor's support and transfer (Awoniyi et al., 2002; Facteau et al., 1995; Van der Klink et al., 2001).

Tracey et al. (1995) conclude that various training-related cues in the work environment can facilitate or hinder transfer of newly learned KSAs. Additionally, the social support components in both the climate and culture measure had the strongest relationships with the underlying constructs being measured. This indicates that the degree to which supervisors and peers encourage the use of learned KSAs to the job setting may be the crucial elements in the transfer environment (Machin & Fogarty, 2004). The relationship of the social support factors to transfer lends support to the research hypothesis that social support is positively related to motivation to transfer. The next section presents the relevant literature that examines the motivation to transfer.

Motivation to Transfer

The degree of effort or intent to transfer learned skills has been described as the motivation to transfer. Noe (1986) describes the motivation to transfer as the trainees' desire to use the knowledge and skills mastered in the training program on the job. Trainees are motivated to transfer new skills to the job when they: 1) are confident in using the skills, 2) are aware of work situations in which the use of the new skills is appropriate, 3) perceive the use of new skills results in improved job performance, and 4) believe that the learned knowledge and skills are useful in solving frequent work-related problems (Noe, 1986). According to Noe (1986), motivation to transfer is believed to moderate the relationship between learning and behavior change and the

motivation to transfer is influenced by the environmental favorability. Trainees' perceptions regarding work group support for the use of new skills and environmental favorability influences motivation to transfer.

Baldwin and Magjuka (1991) tested a model where motivation to learn and transfer was influenced by trainees' perceptions of organizational importance. Management's actions send signals to employees that affect perceptions and influence behavior. Their study hypothesizes that trainees will have greater intentions to transfer training (likelihood to transfer) to the job when they received information prior to the training program, recognized that they would be accountable for their learning by their supervisor, and perceived a program as mandatory (Baldwin & Magjuka, 1991).

Baldwin and Magjuka (1991) used intent to transfer as their post-training measure. At the conclusion of the training program, they asked trainees to respond to four items concerning their evaluation of the program and the likelihood that they would use what they learned in training back to the job. The reliability (Cronbach's alpha) for this measure was .80. Baldwin and Magjuka's (1991) study indicates trainees interpret these actions as management's encouragement for transfer and that trainees reported greater intentions to transfer learned KSAs to the workplace when they: 1) received prior information about the training program, 2) recognized that they would be accountable to their supervisor, and 3) perceived a program as mandatory. Baldwin and Magjuka (1991) identify these as signals from managers that indicate to trainees that their transfer of new learning is important to the organization and heightens trainees'

intentions to transfer. Furthermore, their study found that over 80 percent of trainees reported that their previous experience with training programs in their organization had been either favorable or very favorable (Rouiller & Goldstein, 1993).

In another study, Naquin and Holton (2003) examined a higher order construct called motivation to improve work through learning (MTIWL). The primary outcome of organizational training is improvements in work outcomes or productivity. Thus, the MTIWL focuses on motivational influences that will lead to improved work outcomes from training. It is defined as the motivation to improve work outcomes by engaging in training or learning activities (motivation to train) and using what is learned to perform job functions differently (motivation to transfer) (Naquin & Holton, 2003). Using the Learning Transfer System Inventory (LTSI) (Holton et al., 2000) to measure motivation to transfer, their study found support for the higher order construct MTIWL. Naquin and Holton (2003) suggest that motivation should encompass both motivation to learn and motivation to perform using that learning.

In summary, previous research has demonstrated that motivation to transfer is a pre-cursor to the outcomes: transfer and improved performance (Noe, 1986). Thus, if trainees master the learning objectives and possess the ability to transfer, performance will still be low if motivation is low or absent (Noe, 1986). Although very few studies have focused directly on motivation to transfer, researchers and practitioners have a need to understand motivation to transfer in organizational contexts (Egan et al., 2004). The next section will examine the literature known as the transfer climate and transfer

system, which relates the work environment, the motivation to transfer, and the employees' perception of the work environment.

Transfer Climate

One conceptualization of the influence of the work environment variables on the transfer of training to the job is through a transfer climate (Bates, Holton, & Seyler, 1996). The transfer climate is defined as those situational cues and consequences that either inhibit or help to facilitate the transfer of what has been learned in training into the job situation (Rouiller & Goldstein, 1993). The transfer climate is not the work environment per se, but rather the interpretation through which the work environment affects job behaviors and attitudes. Schneider & Rentsch (1988) argue that transfer climate is described as a "sense of imperative" (as cited in Holton, et al., 1997) that arises from a person's perceptions of the work environment, and that influences the extent to which a person applies learned skills to the job (Holton et al., 1997). Climate refers to an individual's perceptions about a defined set of organizational elements, such as policies, rewards, and managerial behaviors. In effect, climate emerges from aspects of the organizational context that individual employees perceive to be important and influential in their work (Bates & Khasawneh, 2005). Therefore, climate is seen as a more salient feature of an organization to the degree that different beliefs and meanings influence individual expectations, perceptions, and interpretations of the organizational environment that have a major impact on behavior (Bates & Khasawneh, 2005). Furthermore, transfer climate refers to an individual's perception about characteristics

of the work environment that facilitate or inhibit the use of learned KSAs to the job (Holton et al., 1997; Tracey et al., 1995). Even when learning occurs during a training program, the transfer climate may either support, inhibit, or prevent its application on the job (Baldwin & Ford, 1988; Mathieu et al., 1992; Tannenbaum & Yukl, 1992). Several studies concur that transfer climate can significantly influence an individual's ability and motivation to transfer learned KSAs to the job (Ford et al., 1992; Mathieu et al., 1992; Rouiller & Goldstein, 1993; Thayer & Teachout, 1995; Tracey et al., 1995).

Rouiller and Goldstein (1993) conducted an empirical study to assess the relationship between climate and posttraining behaviors, which is a specific, training-related dependent variable. They examine the "transfer of training climate," which consists of "those situations and consequences which either inhibit or help to facilitate the transfer of what has been learned in training into the job situation" (p. 379). They define climate as "the practices and procedures used in an organization that connote or signal to people what is important" (p. 379). They propose a framework for operationalizing the transfer climate construct, which consists of two general types of workplace cues comprising eight dimensions of transfer climate.

The first set, situational cues, serves to remind trainees of their training or provide them with an opportunity to use their training once they return to their jobs. Situational cues consist of: 1) goal cues, which serve to remind trainees to use their training on the job and managers can set these; 2) social cues, which arise from group

membership; 3) task cues, which are the design and nature of the job; and 4) self-control cues, which permit trainees to use what has been learned (Rouiller & Goldstein, 1993).

The second set, consequence cues, influence trainees' further application of learned KSAs to the job. Consequence cues consist of: 1) positive feedback, where trainees are given positive information about their use of learned KSAs; 2) negative feedback, where trainees are told about the negative consequences of not using their learned KSAs; 3) punishment, where trainees are ridiculed for using learned KSAs; and 4) no feedback, where trainees are not given any information about their use or importance of learned KSAs (Rouiller & Goldstein, 1993).

Rouiller and Goldstein (1993) conducted a study of 102 trainees, of a large franchised fast-food restaurant, that attended a nine-week assistant manager training program. They hypothesize that the more positive the organizational transfer climate, the more likely it is that trainees will transfer key behaviors to the job that were learned in the training program (Rouiller & Goldstein, 1993). In their conceptual model, transfer climate is seen as a mediating variable in the relationship between the organizational context and an individual's attitude toward the job and work behavior (Bates et al., 1996; Holton et al., 1997). Rouiller and Goldstein (1993) found that the organizational transfer climate (as measured by situational cues and consequences) is directly related to transfer of training. In other words, the more positive the transfer climate, the more the assistant manager trainee will demonstrate transfer behaviors (Rouiller & Goldstein, 1993).

Rouiller and Goldstein (1993) suggest that the organizational transfer climate may be a tool that should be investigated as a potential facilitator for enhancing positive transfer of training into the work environment. Their findings led Tracey, Tannenbaum, and Kavanagh (1995) to question whether or not organizational climate factors were important variables in transfer of newly trained supervisory skills for supermarket managers. Tracey et al. (1995) conducted a study, that was based on the research of Rouiller and Goldstein (1993), which hypothesizes that there will be a direct relationship between transfer of training climate and posttraining behaviors and that the transfer of training climate and continuous-learning culture will moderate the relationship between knowledge gained in training and posttraining behaviors (Tracey et al., 1995).

The climate scales generated from Tracy et al.'s (1995) study are similar, but not identical to Rouiller and Goldstein (1993). Rouiller and Goldstein (1993) derived their scales through expert sorting judgments, whereas Tracy et al.'s (1995) use factor analytic techniques. Their studies found similar results. The transfer of training climate is significantly related to posttraining behaviors. Both studies found that the work environment influences the application of newly acquired behavior and skills and that various training-related cues in the work environment can facilitate or hinder the application of learned behaviors (Rouiller & Goldstein, 1993; Tracey et al., 1995).

In summary, organizational transfer climate consists of those factors that either inhibit or help to facilitate the transfer of what has been learned in training to the job

situation (Rouiller & Goldstein, 1993). Cheng and Ho (2001) found that a supportive environment alone does not influence trainees' use of trained skills. In addition, some authors' results indicate that a positive transfer climate encourages transfer of behavior on the job. Other studies show that support from supervisors and peers significantly influences perceived transfer of training (Cheng & Ho, 2001). Specifically, there is a relationship between organizational transfer climate and training transfer behavior. Positive organizational transfer climate is a very important aspect in determining whether training will transfer into the organization (Rouiller & Goldstein, 1993).

Transfer System

Several studies have established that transfer climate can significantly influence a trainee's ability and motivation to transfer learning to job performance (Lim & Morris, 2006; Rouiller & Goldstein, 1993; Tracey et al., 1995). These studies led Holton, Bates, Seyler, and Carvalho (1997) to develop a conceptual framework that suggests that trainees perceive climate according to referents in the organization rather than according to psychological cues, as Rouiller and Goldstein (1993) suggest.

Transfer climate is one of a few factors that influence transfer. Other factors such as training design, personal characteristics, opportunity to use training, and motivational influences also influence transfer. Therefore, Holton et al. (2000) suggest the term "transfer system," which is defined as all factors in the person, training, and organization that influence transfer of training to job performance (Holton et al., 2000). This model (see Figure 1.1) takes a holistic approach by considering many factors,

including employee motivation, relevance of training and, notably, the work environment (Donovan, Hannigan, and Crowe, 2001).

Holton et al. (2000) argue there is a lack of a well-validated comprehensive set of scales to measure factors in the transfer system and what is needed in research is a valid and generalizable set of transfer system scales with validated constructs and psychometric qualities (Holton, 2003). The field is in need of a diagnostic general transfer system instrument to measure factors affecting transfer. These authors had several concerns about past studies, such as the: 1) tendency toward customized scales for each study made the generalization of the results difficult and draw conclusions about the latent construct structure of transfer climate; 2) studies often did not include factor analyses to validate hypothesized scale constructs; and 3) scales used in these studies have questionable psychometric qualities (Holton et al., 2000). Without minimally validated scales, the incorrect assessment of models, the misinterpretation of findings, and measurement error may increase and thus may explain the mixed results of past studies. By defining and accurately measuring factors affecting transfer, the field can move from whether training is effective to how transfer-related factors present themselves in organizations, and how these factors can be effectively changed or managed (Holton et al., 2000; Holton et al., 2003).

These authors moved towards operationalizing and measuring these constructs reliably and validly by developing the Learning Transfer System Inventory (LTSI) (Holton et al., 2000; Ruona, Leimbach, Holton, & Bates, 2002). The instrument's

theoretical framework is derived from Holton's (1996) HRD Research and Evaluation Model and Noe and Schmitt's (1986) macrostructure that HRD outcomes are a function of ability, motivation, and environmental influences at three outcome levels: learning, individual, and organizational performance (Holton, 2003; Ruona et al., 2002). Clarke (2002) purports that many of the discrepancies in the transfer studies (situational or task constraints and social support) are likely due to the different ways in which the construct of environmental climate has been both conceptualized and subsequently measured.

In a study conducted by Holton, Chen, and Naquin (2003) they document that transfer systems are significantly different across organizational types, organizations, and training types. They found the following results from private sectors: 1) employees perceive that changing their performance is more likely to lead to valued outcomes, 2) employees have more opportunity to use their learning, and 3) employees have more capacity for applying new learning. In contrast, employees in the public sector perceive that: 1) their supervisor is more likely to oppose their application of new KSAs, 2) they are more likely to encounter resistance to change, and 3) they will experience negative personal outcomes if they do not apply their training. Furthermore, employees in nonprofit organizations tend to have a strong transfer system with higher motivation to transfer and more supervisor support (Holton et al., 2003).

Holton et al. (2003) conclude that transfer systems are not uniform and stable but rather vary depending on the type of organization, the culture of the organization,

and the type of training. This study supports that participants' perception of transfer systems differ due to situational variables. Therefore, practitioners need to diagnose their transfer system strategically and identify the key factor or factors that will have an influential effect on trainees' transfer of learning (Holton et al., 2003).

In another study, Bates and Holton (2004) examine the relationship between different mastery levels of workplace literacy skills and their perceptions of learning transfer system factors. Their results indicate that individuals with lower literacy levels tend to perceive a less supportive environment for the transfer of training and greater levels of active resistance, such as lower levels of openness to change, peer support, and higher levels of supervisor sanctions (Bates & Holton, 2004). However, the lower literacy group has high expectations about the value of training because they recognize training can help them perform better on the job. Furthermore, they are less likely to transfer new skills and knowledge effectively perhaps because of difficulties and barriers that lower skilled workers may encounter (Bates & Holton, 2004). This study suggests that differences in skill levels are associated with potentially meaningful differences in perceptions across a variety of LTSI factors, including transfer support and motivation.

Holton (2003) states that studies have not determined if there is an optimal level for the sixteen learning transfer system factors, but theory suggests that the most conducive transfer systems are those with high levels on all factors. However, transfer system factors operate together to influence transfer. Some elements might be

interchangeable or compensate for missing elements. For example, a strong reward system may compensate for a poor peer support or transfer design. In addition, cultural differences may explain why certain work environment factors (supervisor support) are more salient in a government agency while peer support is less salient (Holton et al., 2003). Cultural variations across organizations suggest that not all organizations will or should build the same types of transfer systems (Holton et al., 2003). A fit perspective might be more appropriate, whereby certain cultures require certain elements of a transfer system to be stronger than in other organizational cultures (Holton et al., 2003).

Summary

Based on the literature, the motivation theories, expectancy, equity and goal setting, help under gird transfer studies by providing a theoretical framework and showing that systems congruence is essential for transfer (Kozlowski & Salas, 1997). In addition, the literature has demonstrated that transfer of training is complex and has not provided practitioners with useful applications to deal with the complexities of transfer.

More recent studies have been focused on the work environment factors as supports-in-organizations and learning organizations (Cheng & Ho, 2001). In addition, recent work has focused on developing instruments to measure transfer and its antecedent factors in the workplace (Holton et al., 2003). Research suggests that identifying the individual and situational factors, which influence transfer of training, is important in helping practitioners know the effects beyond the immediate training

course (Kozlowski & Salas, 1997; Mathieu & Martineau, 1997; Rouiller & Goldstein, 1993; Tannenbaum & Yukl, 1992). If learning is an internal behavior and performance is an external behavior, then training outputs should emphasize performance, not just learning (Yamnill & McLean, 2001).

Organizations have shifted their views about training as a one time event to a fully integrated and strategic component of human resources development to support the organization. In addition, researchers are adopting a systems view of training and are more concerned with the organizational context (Christoph, Schoenfeld, & Tansky, 1998; Salas & Cannon-Bowers, 2001). For many years, training researchers have ignored the fact that training cannot be isolated from the system it supports and therefore, the organization context matters in a significant way (Rouiller & Goldstein, 1993; Salas & Cannon-Bowers, 2001).

Therefore, this study will examine: 1) the employees' perception of the importance of the work environment variables in the context of transfer, 2) whether the employees' perception of the importance of the work environment variables predicts the employees' motivation to transfer, 3) whether employees perceive that transfer was achieved, and 4) whether employees perceive their job performance improving when they transferred their newly learned knowledge and skills.

CHAPTER III: METHODOLOGY

Overview

This research study involved testing the relationships proposed in the model of the importance of the work environment variables and transfer (Figure 1.2). A correlation research design was selected to allow the researcher to study the degree of the relationships that naturally exist and measure the naturally occurring variables and to analyze the relationships among a large number of variables in this single study (Gall et al., 1996; Hatcher & Stepanski, 1994). The proposed relationships were: 1) the employees' perception of the importance of the work environment variables in the context of transfer, 2) the relationship between trainees' motivation to transfer and perceived performance improvement, 3) whether employees perceive that transfer was achieved, and 4) the predictive ability of the importance of each the seven work environment variables to predict the trainees' motivation to transfer their training to practice.

This chapter presents the research design and methodology used in the study. Included in the chapter are descriptions of the population and sample, training program design, research design, instrumentation, data collection, and data analysis.

Population and Sample

The target population for this study is service engineers (technicians) who are full-time employees, from two high-tech industries, that are responsible for troubleshooting and servicing their high-tech products for their customers. For this

study, service engineers are responsible for the proper configuration, administration, and troubleshooting of the product's software, hardware, network, and systems. Company A has 1,425 total employees in 30 countries, which includes approximately 500 service engineers. Company B has 9,000 total employees in 146 countries, which includes 4,500 service engineers.

The single-stage, convenience sample was drawn from the population who consented to participate in this research. Participants were full-time employees of Company A and B, participated and completed an instructor-led, classroom-based technical training program (Babbie, 1990). Table 3.1 shows the first questionnaire was completed by 146 participants. Of the 146 participants, 28 (19%) participants were from Company A and 118 (81%) participants were from Company B. The recruitment letter and consent form are shown in Appendix A.

Table 3.1: Sample Sizes and Percentages

	Company A	**Company B**	**Totals**
Number of participants who completed questionnaire one	28	118	146
Percentage of participants who completed questionnaire one	19%	81%	100%
Number of participants who completed questionnaire two	24	91	115
Percentage of participants who completed questionnaire two	21%	79%	100%

Table 3.1 shows that out of a possible 146 total participants who completed the first questionnaire, 115 (79%) completed questionnaire number two. Of the 115 participants who completed questionnaire number two, 24 (21%) were from Company A and 91 (79%) were from Company B. The recruitment letter for questionnaire two is shown in Appendix C. Difficulties in getting the training program participants to respond and complete the second questionnaire affected the final sample size for some of the analyses. Further demographic analysis is discussed in the next chapter.

Training Program Background

Transfer system factors vary depending on the training program or display a different profile of supportive transfer factors (Bates & Holton, 2004). Therefore, technical training was selected because it exhibits strong transfer, while interpersonal skills may not (Bates & Holton, 2004). For this study, the number of participants per technical training program is shown in Table 3.2. The technical training programs are designed to train and develop service engineers on specific technical knowledge and skills that are needed to properly conduct their job. Each technical training program has a course description, learning objectives, targeted audience, topics, and prerequisites.

Table 3.2: Training Program Groups Participating in Study

Company A		**Company B**	
Courses	**Number Participating**	**Courses**	**Number Participating**
030	5	AX	31
110	8	CN	4
145	6	CT	25
149	9	IM	6
		MI	20
		MR	15
		SP	17

Company A's technical training programs are hands-on training sessions that provide instruction and exercises to experience the configuration, administration, and troubleshooting of the product's software, hardware, network, and systems. The duration of the technical training programs are two to five business days with a range of four to ten participants. At the end of each chapter, there are end of chapter questions and a course evaluation is given at the end of each class. Company A is TL9000 compliant and they follow Telcordia (Bellcore) Generic Requirements for GR-839-CORE.

Company B's technical training programs are hands-on training sessions that provide instruction and exercises to experience the configuration, administration, and troubleshooting of the product's software, hardware, network, and systems. The duration of the technical training programs are four to fifteen business days with a range of ten to twenty participants. All training programs have an exam and a course evaluation at the end of each class. In addition, Company B has a systems certification requirement and is ISO9001:2000 certified.

Research Design

The research is a correlation design and uses quantitative questionnaire methodology of two questionnaire instruments to collect data at two points in time. A quantitative questionnaire approach was the preferred type of data collection procedure for this study because of the advantages of identifying attitudes, attributes, or behaviors

of a large population from a small group of individuals and the time required to collect data was minimal (Babbie, 1990; Gall et al., 1996).

The purpose of this study was to test the relationships proposed in the model of the importance of the work environment variables and transfer (Figure 1.2) to determine: 1) the employees' perception of the importance of the work environment variables in the context of transfer, 2) whether the employees' perception of the importance of the work environment variables predicts the employees' motivation to transfer, 3) whether employees perceive that transfer was achieved, and 4) whether employees perceive their job performance improving when they transferred their newly learned knowledge and skills.

The proposed model (Figure 1.2) was developed based on Holton, et al.'s (2000) conceptual model (Figure 1.1) and transfer factors found in the review of the literature. As shown in the proposed model, the seven work environment variables (independent variable: feedback, peer support, supervisor support, openness to change, personal outcomes positive, personal outcomes negative, and supervisor sanctions) are suggested to influence the motivation to transfer (dependent variable). This study will explore the predictive ability of the importance of each the seven work environment variables to predict the trainees' motivation to transfer their training to practice. Simple correlation techniques and multiple regression analysis were used to test the suggested relationships and determine the strength of these relationships (Gall et al., 1996).

Instrumentation

Two questionnaires were used to collect data at two points in time and measure the independent and dependent variables. Permission for use of the Learning Transfer System Inventory (LTSI) instrument and the use of the work environment questions from the LTSI for the second questionnaire were obtained from one of the authors Dr. Reid Bates, Louisiana State University.

The two questionnaires used a continuous, 5-point Likert-scale, which ranged from strongly disagree to strongly agree, and not at all important to extremely important for assessing the variables and statements were worded both positively and negatively. The following descriptions of the two instruments used in the study provide detailed information on prior use, tests of validity and reliability, variables measured by each questionnaire, and the related research questions. The individual instruments are shown in Appendices B and C and the scale key is shown in Appendix D.

Demographic Information

Demographic information was added as the first section of the LTSI questionnaire instrument. Demographic information includes items relating to age, gender, full-time employee status, years in present position, years at present company, title of present position, and if the training was mandatory. The demographic information from questionnaire number one is located on the LTSI instrument which is shown in Appendix B and the next chapter will further explore the participants' demographics.

Learning Transfer System Inventory (LTSI)

The first questionnaire, Learning Transfer System Inventory (LTSI) created by Holton and Bates (2002), is a fourth-generation instrument that is based on extensive research, which is grounded in the work of Noe (1986), Mathieu, Tannenbaum, and Salas (1992), and Rouiller and Goldstein (1993) (Holton et al., 2003). According to Noe (2000), Holton, Bates, and Rouna (2000) achieved to confirm a diagnostic tool, the LTSI, which can measure the transfer environment. The LTSI is used to diagnose strengths and weaknesses of an organizational transfer system by assessing a set of 16 factors that influence learning transfer (Bates & Khasawneh, 2005; Holton et al., 2003). As mentioned earlier, for the purposes of this study, the focus is on assessing the seven work environment variables and the motivation to transfer. The LTSI is shown in Appendix B.

Validity

The fourth-generation instrument has shown evidence of construct- and criterion-related validity (Bates & Holton, 2004). The external validity of the instrument is further enhanced by the use of samples from multiple industries and research studies. Factor analysis and other psychometrics establish the construct validity and reliability of the measures used in the studies (Noe, 2000). By 2005, the LTSI instrument was used in more than 11 published research studies and administered to 7,000 participants, representing a wide variety of countries, industries, jobs, company types, and job status (Holton, 2004).

The constructs of the LTSI were established based on a conceptual model and previous research constructs validated the instrument by common factor analysis and oblique rotation (Holton et al., 2000). To provide evidence for construct validity, the authors conducted exploratory common factor analysis to determine if the variables were moderately or highly correlated with each other. This analysis confirmed that the variables were not highly correlated. A convergent and divergent validity study showed that most of the constructs had only low correlations with other related variables, reinforcing the uniqueness of the transfer system constructs (Holton et al., 2003). In addition, some scales have shown initial evidence of criterion validity in predicting motivation to transfer, learner perceptions of the training utility , and operating procedure use on the job (Holton et al., 2003).

Reliability

The LTSI measured the seven work environment variables (feedback, peer support, supervisor support, openness to change, personal outcomes positive, personal outcomes negative, and supervisor sanctions) and motivation to transfer. Table 3.3 shows the corresponding questionnaire item number and corresponding Cronbach's alpha coefficients, which are published in Holton's research studies and on Holton's website (Holton, 2004). The Cronbach's alpha coefficients for the Supervisor/ Management Sanctions (.63), Personal Positive Outcome (.69) and Feedback (7.0) all have lower than expected reliabilities (Holton, 2004). This may be a limitation of the LTSI instrument, however, the authors are exploring further reliability testing.

Table 3.3: LTSI Scale Details

Training Specific Scales				
Scale Name	**Scale Definition**	**Sample Question**	**Item on Survey**	**Cronbach's Alpha**
Motivation To Transfer Learning	Direction, intensity, and persistence of effort toward utilizing in a work setting skills and knowledge learned.	I get excited when I think about trying to use my new learning on my job.	2, 3, 4, 5	.83
Personal Outcomes Positive	The degree to which applying training on the job leads to outcomes that are positive for the individual.	Employees in this organization receive various 'perks' when they use newly learned skills on the job.	6, 16, 17	.69
Personal Outcomes Negative	The extent to which individuals believe that applying skills and knowledge learned in training will lead to outcomes that are negative.	If I do not utilize my training, I will be cautioned about it.	14, 21, 23, 24	.76
Supervisor/Manager Support	The extent to which managers support and reinforce the use of learning on-the-job.	My supervisor sets goals for me, which encourages me to apply my training on the job.	32, 33, 37, 39, 40, 43	.91
Supervisor/Manager Sanctions	The extent to which individuals perceive negative responses from managers when applying skills learned in training.	My supervisor opposes the use of the techniques I learned in training.	38, 44, 45	.63
Peer Support	The extent to which peers reinforce and support use of learning on-the-job.	My colleagues encourage me to use the skills I have learned in training.	28, 29, 30, 31	.83
General Scales				
Scale Name	**Scale Definition**	**Sample Question**	**Item on Survey**	**Cronbach's Alpha**
Resistance/Openness To Change	The extent to which prevailing group norms are perceived by individuals to resist or discourage the use of skills and knowledge acquired in training.	People in my group are open to changing the way they do things.	73, 74, 75, 76, 77, 78	.85
Feedback/ Performance Coaching	Formal and informal indicators from an organization about an individual's job performance.	After training, I get feedback from people about how well I am applying what I learned.	79, 86, 87, 89	.70

The 34 total question items on the LTSI are divided into two sections representing two construct domains, which are the training-specific scale and the general scale, see Table 3.3. The training specific construct contains 24 total questions: 20 questions measuring five work environment variables (personal outcomes positive, personal outcomes negative, peer support, supervisor support, and supervisor sanctions) and four questions measuring motivation to transfer, which corresponds to the specific training attended. Participants were directed to think about the "specific training program." This section was program specific because transfer system factors vary depending on the training program. The general construct contains a total of ten questions measuring two work environment variables (feedback and resistance/openness to change) that are not program-specific, but that represent general factors that may influence any training program. Participants were directed to think about "training in general in their organization."

Importance, Transfer Achieved, and Performance Improvement (ITAPI)

The second questionnaire, Importance of the Work Environment, Transfer Achieved, and Performance Improvement (ITAPI), had two sections. The first section of the questionnaire was created by taking the related work environment items from the LTSI instrument and changing the stems to each question to determine the importance of the work environment variables in regards to participants' transfer. For example, "It is important to me that…" and then the work environment question from the LTSI would follow this stem sentence. The researcher used the LTSI items in order to

conduct a one-to-one comparison of the work environment variables measured by instrument one and instrument two and to maintain its original validity and reliability.

The second section of the questionnaire contained six questions to measure the perceived transfer achieved and perceived improvement in performance. The questions were developed by the researcher and the committee chair. Table 3.4 provides the scale name, scale definition, sample question, and questionnaire items. The ITAPI is shown is Appendix C.

Pilot Testing

According to Creswell (2003), when an instrument is modified or is combined with another instrument, the original validity and reliability may not hold for the new instrument. Pilot testing is important to establish the content validity of the instrument, and to improve questions, format, and the scales (Creswell, 2003). Therefore, to determine validity and reliability, the second questionnaire was piloted to a group of 20 participants, which included three NC State professors, three doctoral students, one master student and thirteen business consultants to verify accurate interpretation of questions and to receive consistent responses. This feedback did not lead to any substantive changes to the second instrument.

Validity

A pilot test was conducted to establish content validity of the instrument. Exploratory factor analysis was planned to be conducted to further test for validity, however, the recommended sample size was not achieved for this study. The researcher

had to rely on the questions from the LTSI, which is a validated instrument through previous research by the authors, Holton and Bates. Only the stems to the questions were modified by the researcher.

Reliability

The ITAPI measured the: 1) importance of the seven work environment variables (feedback, peer support, supervisor support, openness to change, personal outcomes positive, personal outcomes negative, and supervisor sanctions), 2) perceived transfer achieved, and 3) perceived improvement of job performance. To test for reliability, the researcher used Cronbach's coefficient alpha, which is a widely used method for computing reliability (Gall et al., 1996). The corresponding scale name, sample question, and questionnaire item are located in Table 3.4. The next chapter will discuss the data analysis for reliability testing using Cronbach's alpha.

Table 3.4: ITAPI Scale Variables, Sample Question, Questionnaire Item

Scale Name	Sample Question	Questionnaire Item
Importance Of Personal Outcomes Positive	It is important to me if employees in this organization receive various 'perks' when they utilize newly learned skills on the job.	1, 3, 4
Importance Of Personal Outcomes Negative	It is important to me if I do not utilize my training, I will be cautioned about it.	2, 5, 6, 7
Importance Of Peer Support	It is important to me that my colleagues appreciate me using my new skills I have learned in training.	8, 9, 10, 11
Importance Of Supervisor Support	It is important to me that my supervisor shows interest in what I learn in training.	12, 13, 14, 16, 17, 18
Importance Of Supervisor Sanctions	It is important to me if my supervisor thinks I am being ineffective when I use the techniques taught in training.	15, 19, 20
Importance Of Resistance/Openness To Change	It is important to me that people in my group are open to changing the way they do things.	21, 22, 23, 24, 25, 26
Importance Of Feedback/Performance Coaching	It is important to me when I try new things I have learned, I know who will help me.	27, 28, 29, 30
Perceived Transfer Achieved Dependent Variable	I frequently apply my newly acquired knowledge and skills to my job.	31, 32, 33
Perceived Improvement Of Job Performance Dependent Variable	My job performance has improved as a result of applying what I've learned.	34, 35, 36

Related Variables, Research Questions, And Questionnaire Items

The Learning Transfer System Inventory (LTSI) and Importance of the Work Environment, Transfer Achieved, and Performance Improvement (ITAPI) questionnaires, measured the independent and dependent variables that pertain to the research questions identified in this study. The following research questions are guiding this study:

1. What are the trainees' perceptions of the existing work environment variables in supporting transfer immediately after training?
2. What are the trainees' perceptions of the importance of the work environment variables in supporting transfer two months after training?
3. What is the relationship between trainees' motivation to transfer (immediately after training) and perceived transfer achieved (two months after training)?
4. What is the predictive ability of the importance of each the seven work environment variables to predict the trainees' motivation to transfer their training to practice?

Data Collection

The two questionnaires were administered at two data collection points. The LTSI (questionnaire one) was administered as immediate post-training and the Importance of the Work Environment, Transfer Achieved and Performance Improvement (questionnaire two) was administered sixty days following completion of the training program. The first questionnaire was administered by the researcher in paper format either a day before the training program ended or on the last day of the training program. For Company A, the researcher sent emails to the training administrator and personally informed the instructors of the procedure and time to ensure they were prepared for the research study in the months of August through October 2006. For Company B, the training administrator informed the instructors of the procedure via email and scheduled the appointments to ensure they were prepared for the research study in the months of December 2006 and January 2007.

At each visit, the researcher verbally stated to all learners and instructor in the training classroom the information that was explained in the informed consent form (approved by the Institutional Review Board at North Carolina State University), cover letter, and the purpose of the research study. The researcher answered all questions and offered the participants a document that contained the variables being measured and a brief definition of each variable.

Then the participants who volunteered to participate in the research study were given both the informed consent form and questionnaire one (LTSI with demographics) to complete. The participants completed both the informed consent form and questionnaire one and handed both documents to the researcher. The researcher offered to all participants a copy of the signed consent form and provided a copy of the signed consent form to all the participants who wanted a signed copy. The participants completed the first questionnaire in fifteen to thirty minutes. See Appendices A and B for informed consent form, recruitment letter, brief description of the variables document, demographics, and LTSI (questionnaire one).

The second questionnaire was an online electronic questionnaire that was emailed sixty days later to the participants who completed the first questionnaire. Many studies in the literature provided the guideline of sixty days after training as ample time for trainees to apply their newly learned KSAs back to the job and measure transfer (Awoniyi et al., 2002; Brinkerhoff & Montesino, 1995; Gaudine & Saks, 2004; Richman-Hirsch, 2001; Rouiller & Goldstein, 1993; Wexley & Baldwin, 1986).

The email that was sent to participants provided instructions, informed them that they could decline participation at any time, their record number for confidentiality, and a link to the second online questionnaire which was hosted by Free Online Surveys.com, a company located in the United Kingdom. The researcher created and paid for a secure account with user id and password security. The participants completed the second questionnaire in five to ten minutes.

Participants, who did not complete their questionnaire within the instructed one week, were sent email reminders to complete their questionnaire every two weeks during a two-month timeframe. The original email containing the instructions, information regarding participation, their record number for confidentiality, and a link to the second online questionnaire were emailed to participants as reminders to complete the questionnaire. See Appendix C for recruitment letter two (email) and Importance of the Work Environment, Transfer Achieved and Performance Improvement (questionnaire two). Responses received from the reminder emails were compared to earlier respondents to determine if there were any significant differences that would impact on the research results. As questionnaires were completed and submitted, the researcher examined the responses to look for response bias. Difficulties in getting the training program participants to respond and complete the second questionnaire affected the final sample sizes for some of the analyses. Table 3.5 provides a summary of response rates per company and questionnaire.

Table 3.5: Respondents and Nonrespondents

	Nonrespondents	Final Number of Q2 Respondents	Final Number of Q1 Respondents	Total Number of Q1 Administered
Company A	4	24	28	36
Company B	27	91	118	118
Total	31	115	146	154

For Company A, a total of 36 number one questionnaires (LTSI) were administered, however, due to participants selecting customer as a demographic or not responding to a whole page(s) of items, the final count of 36 questionnaires was reduced by eight questionnaires for a total of 28 participants from Company A who completed questionnaire number one. Of the 28 final participants from Company A, who completed questionnaire number one, the same 28 participants were sent the second questionnaire and 24 (86%) returned questionnaire number two and 4 (14%) did not return questionnaire number two.

For Company B, a total of 118 number one questionnaires (LTSI) were administered, and all participants selected employee as a demographic and completed whole pages of items. Therefore, the total 118 LTSI questionnaires from Company B were usable. Of the 118 final participants from Company B, who completed questionnaire number one, the same 118 participants were sent the second questionnaire and 91 (77%) returned questionnaire number two and 27 (23%) did not return questionnaire number two.

The total participants (Company A plus Company B) who completed questionnaire number one was 146 (100%), the total participants who completed questionnaire number two was 115 (79%) and 31 (21%) participants did not complete questionnaire number two. The next section, data analysis, will provide an overview of the steps involved in analyzing the data.

Data Analysis

After the participants completed the questionnaires, the questionnaires were reviewed to ensure participants were employees of either Company A or Company B. If the employee box was checked then the participant's data were keyed into a spreadsheet and reversed questions were recoded by the researcher (Hatcher & Stepanski, 1994). As the data was recorded from the first questionnaire, the researcher reviewed the questionnaire for missing data. When a participant's LTSI questionnaire was missing data for the dependent and independent variables, the researcher estimated the missing data by imputing the mean into each empty cell to estimate the missing value (Gall et al., 1996; Yuan, 2000). The participant's questionnaire was omitted from further analysis if the majority of the responses were missing for a scale or if the participant did not complete a whole page. This resulted in two participants being omitted from the study.

Then the spreadsheet was imported into SAS software, version 8.2 for analysis. First, simple descriptive statistics were computed to review the data to ensure that all responses were correctly keyed into the spreadsheet (Hatcher & Stepanski, 1994).

Second, the data screening process is needed to explore the shape or distribution of the data as some procedures require that sample data be drawn from a normally-distributed population or at least that the sample data do not display a departure from normality (Hatcher & Stepanski, 1994). The details and results of this process are presented in the next chapter.

After the simple descriptive statistics were computed, exploratory factor analysis was planned for each measurement scale to test for validity. Based on the rule of thumb, it was determined that this study needed 255 samples for survey one (5 x 51=255) and 180 samples for survey two (5 x 36=180). Exploratory factor analysis is a large-sample procedure, so it is important to use guidelines to choose the sample size which will be minimally adequate for an analysis (Hatcher, 1994).

For reliability testing, Cronbach's alpha was conducted on each measurement scale to test for internal consistency. The scales that achieved a Cronbach's alpha of .70 or higher were kept intact, which is sufficient reliability estimates (Hatcher & Stepanski, 1994). The scales that achieved a Cronbach's alpha below the recommended .70 had items omitted to increase the alpha to .70 or higher and if the scale was reduced to only two items remaining, the whole scale was omitted from further analysis. The next chapter will discuss the details and results of the omitted items and scales based on the Cronbach's alpha coefficients.

The variables were tested for multicollinearity to ensure that each measurement scale was measuring a distinct variable. Multicollinearity exists where there are high

correlations between the independent variables and can present a significant problem for a research using multiple regression. Multicollinearity is likely to exist when a correlation between two variables exceeds .80 (Hatcher & Stepanski, 1994). The next chapter will present the results of the multicollinearity testing among the independent variables for this study.

After completing the preliminary analysis as described above, the individual research questions were tested using bivariate correlation techniques in SAS version 8.2. This process involved obtaining the mean and standard deviation for each variable as well as calculating t-tests, ANOVA, and the Pearson product moment correlation coefficients to determine the direction and magnitude of the relationships between the independent variables being tested.

Finally, after reviewing the results from the research questions, multiple regression analysis techniques were used in order to provide answers to the research questions guiding the study. Multiple regression allows the researcher to look at naturally occurring combinations of independent variables and to determine whether there is a significant relationship between the dependent and the multiple independent variables, when taken as a group. In addition, it determines whether a given independent variable accounts for a significant amount of variance in the dependent, beyond the variance accounted for by other independent variables and which independent variables are relatively important predictors of the dependent variable (Hatcher & Stepanski, 1994).

A .05 level of statistical significance was selected as educational researchers generally select a significance level of .05 (Hatcher & Stepanski, 1994). According to Hatcher and Stepanski (1994), the test of significance helps the researcher to determine how probable it is that the difference found between samples will also be found in the populations from which they were drawn. In addition, with a p-value of <.05 there is one chance in twenty that the null hypothesis will be rejected when it is correct, resulting in a Type I error. Specifically, when researchers obtain a p-value larger than .05, they will fail to reject the null hypothesis and will instead conclude that the differences or relationships being studied were not statistically significant. When the p-value is smaller than .05, researchers will reject the null and conclude that differences or relationships being studied were statistically significant (Hatcher & Stepanski, 1994).

Summary

The proposed model of training transfer (Figure 1.2), which relates the employees' perceived importance of the work environment variables to transfer of training within an organizational work setting, was developed based on the existing relationships found in the research literature. The instruments used in this study were based on extensive research, which is grounded in the work of Noe (1986), Mathieu, Tannenbaum, and Salas (1992), and Rouiller and Goldstein (1993) (Holton et al., 2003). The demonstrated validity and reliability of the LTSI in previous research helped to ensure that the instrumentation, the ITAPI that was developed for this study, was sufficiently reliable and valid. Once the measurement scales were amended as

necessary, bivariate correlation techniques and multiple regression analysis were conducted in order to test the individual research questions guiding the study. A more detailed and thorough description of the research methods and results are presented in the next chapter.

CHAPTER IV: RESULTS

This chapter presents the demographic data of the research participants, the descriptive statistics, Cronbach's coefficient alphas, multicollinearity, and the research results of statistical analysis for the tested relationships in the proposed model of training transfer (Figure 1.2), which relates the employees' perceived importance of the work environment variables to transfer of training within an organizational work setting. Specifically, this study's purpose is to answer the following four research questions that guide this study:

1. What are the trainees' perceptions of the existing work environment variables in supporting transfer immediately after training?
2. What are the trainees' perceptions of the importance of the work environment variables in supporting transfer two months after training?
3. What is the relationship between trainees' motivation to transfer (immediately after training) and perceived transfer achieved (two months after training)?
4. What is the predictive ability of the importance of the work environment variables to predict the trainees' motivation to transfer their training to practice?

Demographic Data

The demographic data for this study were collected during the administration of questionnaire one and are recorded in Table 4.1. The demographic data included: 1) age, 2) gender, 3) years at present company, 4) years in present job, 5) current job title, and 6) if the training was mandatory or not.

Table 4.1: Participant Demographics

Demographic	**Company A**		**Company B**		**Full Sample**	
	N	%	N	%	N	%
Age (years)						
18 – 25	0	0	5	4.27	5	3.45
26 – 35	16	57.14	37	31.62	53	36.55
36 – 45	5	17.86	38	32.48	43	29.66
46+	7	25.00	37	31.62	44	30.34
Gender						
Male	24	85.71	109	92.37	133	91.10
Female	4	14.29	9	7.63	13	8.90
Years in Present Job						
0 – 1	7	25.00	30	25.42	37	25.34
2 – 4	12	42.86	25	21.19	37	25.34
5 – 7	3	10.71	11	9.32	14	9.59
8 – 10	2	7.14	3	2.54	5	3.42
11+	4	14.29	49	41.53	53	36.30
Years at Present Company						
0 – 1	8	28.57	28	23.73	36	24.66
2 – 4	12	42.86	31	26.27	43	29.45
5 – 7	5	17.86	11	9.32	16	10.96
8 – 10	2	7.14	2	1.69	4	2.74
11+	1	3.57	46	38.98	47	32.19
Current Job Title						
Executive Tier	0	0	0	0	0	0
Middle Management Tier	4	14.29	1	0.85	5	3.42
Non-Mgt/Technical Tier	24	85.71	117	99.15	141	96.58
Mandatory Training						
Yes	8	28.57	84	73.04	92	64.34
No	20	71.43	31	26.96	51	35.66

Company A had 16 out of 28 (57.14%) of its service engineers respond that they are 26 to 35 years old, with 24 (85.71%) males and four (14.29%) females. Twelve (42.86%) service engineers indicated that they have been in their current position and with their current company two to four years. The majority of the participants (24)

indicated that their current title was the technical tier or non-management tier and the participants felt that the training class was not mandatory for them (20).

In comparison, Company B had 38 out of 118 (32.48%) of its service engineers respond that they are 36 to 45 years old, with 109 (92.37%) males and nine (7.63%) females. Forty-nine (41.53%) service engineers indicated that they had eleven or more years in their current position and 46 (38.98%) service engineers had eleven or more years with their current company. Company B's service engineers have extensive experience with their current job and company. The nearly all of the participants (117) indicated that their current title was the technical tier or non-management tier and 84 of the participants felt that the training class was mandatory for them (73.04%).

Cronbach's Coefficient Alpha

The first questionnaire, LTSI, measured the participants' perceptions of the existing work environment variables (feedback, peer support, supervisor support, openness to change, personal outcomes positive, personal outcomes negative, and supervisor sanctions) and the motivation to transfer learning. For reliability testing, Cronbach's alpha was conducted on each measurement scale to test for internal consistency. The scales that achieved a Cronbach's alpha of .70 or higher were kept intact, which is sufficient reliability estimates (Hatcher & Stepanski, 1994). The scales that achieved a Cronbach's alpha below the recommended .70 had items omitted to increase the alpha to .70 or higher and if the scale was reduced to only two items remaining, the whole scale was omitted from further analysis. The corresponding

questionnaire item number and corresponding Cronbach's alpha coefficients are located in Table 4.2. Holton's published Cronbach's alpha and the Cronbach's alpha for this study are located in Table 4.2 for comparison.

Table 4.2 LTSI Scale Variables, Sample Question, Questionnaire Item and Alphas

Training Specific Scales					
Scale Name	**Sample Question**	**Questionnaire Item**	**Holton's Cronbach's Alpha**	**Cronbach's Alpha**	**After Deleting Item**
Motivation to Transfer Learning Independent Variable Dependent Variable	I get excited when I think about trying to use my new learning on my job.	2, 3, 4, 5	.83	.78	
Personal Outcomes Positive Independent Variable	Employees in this organization receive various 'perks' when they use newly learned skills on the job.	6, 16, 17	.69	.62	Scale omitted
Personal Outcomes Negative Independent Variable	If I do not utilize my training, I will be cautioned about it.	14, 21, 23, 24	.76	.78	
Supervisor/Manager Support Independent Variable	My supervisor sets goals for me, which encourages me to apply my training on the job.	32, 33, 37, 39, 40, 43	.91	.88	
Supervisor/Manager Sanctions Independent Variable	My supervisor opposes the use of the techniques I learned in training.	38, 44, 45	.63	.58	Scale omitted
Peer Support Independent Variable	My colleagues encourage me to use the skills I have learned in training.	28, 29, 30, 31	.83	.82	
General Scales					
Scale Name	**Sample Question**	**Questionnaire Item**	**Holton's Cronbach's Alpha**	**Cronbach's Alpha**	**After Deleting Item**
Resistance/openness to Change Independent Variable	People in my group are open to changing the way they do things.	73, 74, 75, 76, 77, 78	.85	.80	
Feedback/ Performance Coaching Independent Variable	After training, I get feedback from people about how well I am applying what I learned.	79, 86, 87, 89	.70	.74	

In comparison to Holton's published Cronbach alphas, this study received higher Cronbach alphas for feedback/performance coaching (difference .04) and personal outcomes negative (difference .02) (Holton, 2004). This study did not achieve equal or higher Cronbach alphas for resistance/openness to change (difference 0.5), peer support (difference .01), supervisor/manager sanctions (difference .05), supervisor/manager support (difference .03), personal outcomes positive (difference .07) and motivation to transfer learning (difference .05). As mentioned in the previous chapter, the Cronbach's alpha coefficients that Holton's research achieved for Supervisor/Management Sanctions (.63), Personal Positive Outcome (.69), and Feedback (7.0) all have lower than expected reliabilities (Holton, 2004). This may be a limitation of the LTSI instrument and therefore, supervisor/manager sanctions (.58) and personal outcomes positive (.62) were omitted from further analysis due to their low reliability for this study.

The second questionnaire, ITAPI, measured the: 1) importance of the seven work environment variables (feedback, peer support, supervisor support, openness to change, personal outcomes positive, personal outcomes negative, and supervisor sanctions), 2) perceived transfer achieved, and 3) perceived improvement of job performance. To test for reliability, the researcher used Cronbach's coefficient alpha, which is a widely used method for computing reliability (Gall et al., 1996). The corresponding questionnaire item number and corresponding Cronbach's alpha coefficient are located in Table 4.3.

Table 4.3: ITAPI Scale Variables, Sample Question, Questionnaire Item and Alphas

Scale Name	Sample Question	Questionnaire Item	Cronbach's Alpha	After Deleting Item
Importance Of Personal Outcomes Positive	It is important to me if employees in this organization receive various 'perks' when they utilize newly learned skills on the job.	1, 3, 4	.66	Scale omitted
Importance Of Personal Outcomes Negative	It is important to me if I do not utilize my training, I will be cautioned about it.	2, 5, 6, 7	.84	
Importance Of Peer Support	It is important to me that my colleagues appreciate me using my new skills I have learned in training.	8, 9, 10, 11	.87	
Importance Of Supervisor Support	It is important to me that my supervisor shows interest in what I learn in training.	12, 13, 14, 16, 17, 18	.92	
Importance Of Supervisor Sanctions	It is important to me if my supervisor thinks I am being ineffective when I use the techniques taught in training.	15, 19, 20	.76	
Importance Of Resistance/Openness To Change	It is important to me that people in my group are open to changing the way they do things.	21, 22, 23, 24, 25, 26	.63	Item 23 Scale omitted
Importance Of Feedback/Performance Coaching	It is important to me when I try new things I have learned, I know who will help me.	27, 28, 29, 30	.90	
Perceived Transfer Achieved Dependent Variable	I frequently apply my newly acquired knowledge and skills to my job.	31, 32, 33	.74	
Perceived Improvement Of Job Performance Dependent Variable	My job performance has improved as a result of applying what I've learned.	34, 35, 36	.86	Item 36 Scale omitted

The Cronbach's alpha coefficients for importance of personal outcomes positive (.66), importance of resistance/openness to change (.63), and perceived improvement of job performance (.64) all have lower than expected reliabilities. The rule of thumb is a coefficient alpha reliability of .70 or higher. However, the social science literature has reported studies employing variables with coefficient alphas under .70 (Hatcher & Stepanski, 1994). The Cronbach's alpha for the perceived improvement of job performance (.64) could increase to .86 if item 36 were omitted, however, three items are needed to support the scale. Perceived improvement of job performance (.64), importance of resistance/openness to change (.63), and importance of personal outcomes positive (.66) were omitted from further analysis due to their low reliability for this study.

In summary, the researcher omitted from further analysis the following variables: personal outcomes positive, importance of personal outcomes positive, supervisor/manager sanctions, importance of supervisor/manager sanctions, resistance/openness to change, importance of resistance/openness to change, and perceived improvement of job performance. A comparison was needed for multiple regression of the variable and the importance of the variable.

Independent-Samples *t* Test

To test for significant differences between the responses of Company A and Company B, an analysis was conducted with respect to the various independent variables. The analysis consisted of an independent-samples *t* test to see if there were

differences between the two companies with respect to the various independent variables in the study. The results are shown in Table 4.4.

Table 4.4: Independent-Samples *t* Test for Company A and Company B

Variables	N	Mean	SD	t Value	Pr > |t|
Personal Outcomes Negative				1.64	0.10
Company A	28	2.45	0.78		
Company B	118	2.71	0.77		
Peer Support				1.45	0.15
Company A	28	3.77	0.61		
Company B	118	3.95	0.59		
Supervisor/Mgr Support				0.55	0.58
Company A	28	3.10	0.86		
Company B	117	3.20	0.80		
Feedback/Performance Coaching				2.35*	0.02
Company A	28	2.92	0.74		
Company B	118	3.26	0.68		
Importance of Personal Outcomes Negative				0.28	0.78
Company A	24	2.57	0.86		
Company B	91	2.63	0.89		
Importance of Peer Support				0.02	0.99
Company A	24	3.37	0.93		
Company B	91	3.37	0.86		
Importance of Supervisor/Mgr Support				-1.26	0.21
Company A	24	3.66	0.84		
Company B	91	3.22	0.92		
Importance of Feedback/Performance Coaching				-0.84	0.40
Company A	24	3.50	0.81		
Company B	91	3.32	0.93		
Importance of Perceived Transfer Achieved				2.35*	0.02
Company A	24	3.42	0.89		
Company B	91	3.84	0.75		

*significant at p<.05

Results were analyzed using an independent-samples *t* test. This analysis revealed a significant difference between Company A and Company B in relation to two independent variables in the study. The analysis revealed a significant difference between Company A and Company B in relation to feedback/performance coaching, *t*

(144) = 2.35; p<.02. The sample means are displayed in Table 4.4, which shows that Company B scored significantly higher on feedback/performance coaching than did participants in Company A (for Company B, M = 3.26, SD = 0.68; for Company A , M = 2.92, SD = 0.74).

In addition, this analysis revealed a significant difference between Company A and Company B in relation to importance of perceived transfer achieved, *t* (113) = 2.35; p<.02. The sample means are displayed in Table 4.4, which shows that Company B scored significantly higher on importance of perceived transfer achieved than did participants in Company A (for Company B, M = 3.84, SD = 0.75; for Company A , M = 3.42, SD = 0.89).

Finally, this analysis failed to reveal a significant difference between Company A and Company B with respect to the remaining independent variables: personal outcomes negative, *t* (144) = 1.64, p = 0.10; peer support, *t* (144) = 1.45, p = 0.15; supervisor/manager support, *t* (143) = 0.55, p = 0.58; importance of personal outcomes negative, *t* (113) = 0.28, p = 0.78; importance of peer support, *t* (113) = 0.02, p = 0.99; importance of supervisor/manager support, *t* (113) = -1.26, p = 0.21; and importance of feedback/performance coaching *t* (113) = -0.84, p = 0.40.

The sample means are displayed in Table 4.4, which shows that participants in Company A demonstrated scores which were quite similar to those shown by participants in Company B for the following independent variables: personal outcomes negative (for Company A, M = 2.45, SD = 0.78; for Company B, M = 2.71, SD = 0.77);

peer support (for Company A, M = 3.77, SD = 0.61; for Company B, M = 3.95, SD = 0.59); supervisor/manager support (for Company A, M = 3.10, SD = 0.86; for Company B, M = 3.20, SD = 0.80); importance of personal outcomes negative (for Company A, M = 2.57, SD = 0.86; for Company B, M = 2.63, SD = 0.89); importance of peer support(for Company A, M = 3.37, SD = 0.93; for Company B, M = 3.37, SD = 0.86); importance of supervisor/manager support (for Company A, M = 3.66, SD = 0.84; for Company B, M = 3.22, SD = 0.92); and importance of feedback/performance coaching (for Company A, M = 3.50, SD = 0.81; for Company B, M = 3.32, SD = 0.93).

Data Analysis of Research Questions

The following section provides the results of the statistical analysis used to test this study's four research questions. Each research question is followed by the rationale for the choice of statistical test and the statistical analysis.

Research Question One

The first research question was what are the trainees' perceptions of the existing work environment variables in supporting transfer immediately after training? The data were collected by the first questionnaire using a Likert scale of 1 (strong disagree) to 5 (strongly agree). The variables measured for this research question were the four work environment variables (independent variables): feedback/performance coaching, peer support, supervisor support, and personal outcomes negative and motivation to transfer (dependent variable). The level of measurement for both the independent and the dependent variables were assessed as interval scales (Hatcher & Stepanski, 1994).

To determine the participants' perceptions of the existing work environment variables and the participants' motivation to transfer their learning immediately after training, descriptive statistics were calculated. The descriptive statistics are shown in Table 4.5.

Table 4.5: Descriptive Statistics for Continuous Variables

Variable	N	Mean	Std Dev	Minimum	Maximum
Motivation to Transfer Learning	146	4.046	.647	1.5	5
Personal Outcomes Negative	146	2.661	.777	1	5
Peer Support	146	3.913	.592	1	5
Supervisor/Manager Support	146	3.177	.813	1	5
Feedback/Performance Coaching	146	3.195	.700	1	4.50

The mean for motivation to transfer learning is 4.046, which describes participants as agreeing with the extent they are motivated to utilize learning in their work. This includes the degree to which they feel better able to perform, and to use new skills and knowledge, and believe new skills will help them to more effectively perform on the job (Holton, 2004). On average, they agree that their direction, intensity, and persistence of effort toward utilizing in a work setting their skills and knowledge learned in training do exist.

The mean for personal outcomes negative is 2.661, which describes participants as disagreeing with the extent they believe that if they do not apply new skills and knowledge learned in training that it will lead to outcomes that are negative. Negative

outcomes include: reprimands, penalties, peer resentment, too much new work, or the likelihood of not getting a raise if newly acquired skills are utilized (Holton, 2004).

The mean for peer support was 3.913, which describes participants as neutral to almost agreeing to the extent peers reinforce and support use of learning on the job. This includes the degree to which peers mutually identify and implement opportunities to apply skills and knowledge learned in training, encourage the use of or expect that application of new skills, display patience with difficulties associated with applying new skills, or demonstrate appreciation for the use of new skills (Holton, 2004).

The mean for supervisor/manager support was 3.177, which describes participants as neutral to the extent their managers support and reinforce the use of learning on the job. This includes managers' involvement in clarifying performance expectations after training, identifying opportunities to apply new skills and knowledge, setting realistic goals based on training, working with individuals on problems encountered while applying new skills, and providing feedback when individuals successfully apply new abilities (Holton, 2004).

The mean for feedback/performance coaching is 3.195, which describes participants as neutral to the extent they receive constructive input, assistance, and feedback from people in their work environment (peers, employees, colleagues, managers) when applying new abilities or attempting to improve work performance. Feedback may be formal or informal cues from the workplace and includes formal and

informal indicators from an organization about an individual's job performance (Holton, 2004).

Research Question Two

The second research question was what are the trainees' perceptions of the importance of the work environment variables in supporting transfer two months after training? The data were collected by the second questionnaire using a Likert scale of 1 (Not at all important) to 5 (extremely important) for the importance of the work environment variables and 1 (strongly disagree) to 5 (strongly agree) for the perceived transfer achieved. The variables measured for this research question were the importance of the four work environment variables (independent variables): importance of feedback/performance coaching, importance of peer support, importance of supervisor support, and importance of personal outcomes negative and perceived transfer achieved (dependent variable). The level of measurement for both the independent and the dependent variables were assessed as interval scales (Hatcher & Stepanski, 1994).

To determine the participants' perceptions of the importance of the work environment variables and the participants' perceived transfer achieved, descriptive statistics were calculated. The descriptive statistics are shown in Table 4.6.

Table 4.6: Descriptive Statistics for Continuous Variables

Variable:	N	Mean	Std Dev	Minimum	Maximum
Perceived Transfer Achieved	115	3.751	.798	1	5
Importance of Personal Outcomes Negative	115	2.617	.875	1	5
Importance of Peer Support	115	3.367	.873	1	5
Importance of Supervisor/Manager Support	115	3.084	.907	1	5
Importance of Feedback/Performance Coaching	115	3.361	.906	1	5

The mean for perceived transfer achieved was 3.751, which describes participants as neutral to almost agreeing that they had transferred their newly acquired knowledge and skills after two months of being back on the job. The mean for importance of personal outcomes negative was 2.617, which describes participants as it is some what important to them that if they do not apply new skills and knowledge learned in training, that it will lead to outcomes that are negative. Negative outcomes include: reprimands, penalties, peer resentment, too much new work, or the likelihood of not getting a raise if newly acquired skills are utilized.

The mean for importance of peer support was 3.367, which describes participants as it is important to them that peers reinforce and support use of learning on the job. This includes the degree to which peers mutually identify and implement opportunities to apply skills and knowledge learned in training, encourage the use of or expect that application of new skills, display patience with difficulties associated with applying new skills, or demonstrate appreciation for the use of new skills.

The mean for importance of supervisor/manager support was 3.084, which describes participants as it is important to them that managers support and reinforce the

use of learning on the job. This includes managers' involvement in clarifying performance expectations after training, identifying opportunities to apply new skills and knowledge, setting realistic goals based on training, working with individuals on problems encountered while applying new skills, and providing feedback when individuals successfully apply new abilities.

The mean for importance of feedback/performance coaching was 3.361, which describes participants as it is important to them that they receive constructive input, assistance, and feedback from people in their work environment (peers, employees, colleagues, managers, etc..) when applying new abilities or attempting to improve work performance. Feedback may be formal or informal cues from the workplace and includes formal and informal indicators from an organization about an individual's job performance.

Research Question Three

The third research question was what is the relationship between trainees' motivation to transfer and perceived transfer achieved? The data were collected by the first and second questionnaires using a Likert scale of 1 (strongly disagree) to 5 (strongly agree) for motivation to transfer and the perceived transfer achieved. The variables measured for this research question were the motivation to transfer (dependent) and the perceived transfer achieved (independent). The level of measurement for both variables were assessed as interval scales, each variable can assume five values, and it is assumed that the samples are normally-distributed (Hatcher

& Stepanski, 1994). To determine the relationship between participants' motivation to transfer (immediately after training) and perceived transfer achieved (two months after training), Person product-moment correlation coefficient (*r*) was calculated. The correlation coefficient (*r*) results are shown in Table 4.7.

Table 4.7: Correlation Between Motivation to Transfer and Perceived Transfer Achieved

Variable:	N	Mean	Std Dev	Minimum	Maximum	*r*
Motivation to Transfer	115	4.01	.657	1.5	5.0	0.41597*
Perceived Transfer Achieved	115	3.75	.798	1.0	5.0	

*significant at p<.0001

The correlation coefficient (*r*) was 0.41597, results in a positive relationship and a moderate correlation (approximately .50 for moderate) between motivation to transfer and perceived transfer achieved, which the observed correlation is statistically significant at p<.0001 (Hatcher & Stepanski, 1994). Therefore, if participants are more motivated to transfer their newly acquired knowledge and skills after the training, the higher the transfer achieved by participants two-months after training.

Research Question Four

The final research question was what is the predictive ability of the importance of the work environment variables to predict the trainees' motivation to transfer their training to practice? The data were collected by the first and second questionnaires using a Likert scale of 1 (strongly disagree) to 5 (strongly agree) for motivation to transfer and the importance of each the work environment variables. The variables

measured for this research question were the motivation to transfer (dependent) and the importance of the work environment variables (independent). The level of measurement for both variables were assessed as interval scales, each variable can assume five values, and it is assumed that the samples are normally-distributed (Hatcher & Stepanski, 1994).

Multiple regression was used to answer the research question because it determines whether there is a significant relationship between the dependant variable and the multiple independent variables, when taken as a group (Hatcher & Stepanski, 1994). Additionally, multiple regression is appropriate to explore whether the multiple regression coefficient for a given predictor variable is statistically significant. This coefficient represents that amount of weight given to a specific predictor, while holding constant the other predictors and whether a given predictor accounts for a significant amount of variance in the dependent variable, beyond the variance accounted for by other predictor variables (Hatcher & Stepanski, 1994).

Results were analyzed using multiple regression. As shown in Table 4.8, all the independent variables (importance of personal outcomes negative, importance of peer support, importance of supervisor/manager support, and importance of feedback/performance coaching) correlated with the overall rating of motivation to transfer (.17, .32, .10 and .26 respectively). Correlations between the independent and dependent variables can present a significant problem for a research using multiple regression when a correlation between two variables exceeds .80 (Hatcher & Stepanski,

1994). The correlations between the independent and dependent variables are shown in Table 4.8.

Table 4.8: Intercorrelations Among Dependent and Independent Variables

	Means	SD	1	2	3	4	5
1. Motivation to Transfer	4.0462	0.6466	1.000				
2. Importance of Personal Outcomes Negative	2.6174	0.8450	0.1689	1.0000			
3. Importance of Peer Support	3.3674	0.8732	0.3203*	0.4740**	1.0000		
4. Importance of Supervisor /Manager Support	3.0841	0.9065	0.1024	0.3938**	0.4760**	1.00000	
5. Importance of Feedback/ Performance Coaching	3.3609	0.9064	0.2562*	0.4715**	0.6796**	0.4725**	1.0000

1. N=146; 2. through 5. N=115
*significant at p<.05
**significant at p<.0001

The highest correlation is between the two independent variables peer support and feedback/performance coaching at .68, which is below the acceptable level of .80. The bivariate correlations revealed two predictor variables that were significantly related to motivation to transfer: importance of peer support (r = .32) and importance of feedback/performance coaching (r = .26). These two correlations were significant at p < .05, and all were in the positive direction. The correlations between motivation to transfer and importance of personal outcomes negative (r = .17) and importance of supervisor/manager support (r = .10) were nonsignificant.

Using multiple regression, motivation to transfer scores were then regressed on the linear combination of importance of personal outcomes negative, importance of peer support, importance of supervisor/manager support, and importance of feedback/performance coaching. Results of the multiple regression are shown in Table 4.9. The model including importance of personal outcomes negative, importance of peer support, importance of supervisor/manager support, and importance of feedback/performance coaching explained 11.1% of the variance in the overall rating of motivation to transfer, $F(4, 110) = 3.43$, $p < .05$, adjusted $R^2 = .078$. Beta weights (standardized multiple regression coefficients) were then reviewed to assess the relative importance of the four variables in the prediction of motivation to transfer. Beta weights for the independent variables are shown in Table 4.9.

Table 4.9: Betas Obtained in Regression Predicting Motivation to Transfer

Independent Variables	**Beta**	***t* Value**	**VIF**	**TOL**	**Squared Semi-partial**
Importance of Personal Outcomes Negative	0.02378	0.22	1.405	0.712	0.02854
Importance of Peer Support	0.28980	2.25*	2.049	0.488	0.07440
Importance of Supervisor/Manager Support	- 0.08697	- 0.82	1.408	0.710	0.00391
Importance of Feedback/Performance Coaching	0.08913	0.68	2.037	0.491	0.00390

*significant at p<.05
R^2=11.1%

Table 4.9 shows that only importance of peer support (Beta=.29) made a statistically significant contribution (p<.05) to the overall rating. The remaining

variables importance of personal outcomes negative, importance of supervisor/manager support, and importance of feedback/performance coaching were nonsignificant. Variance inflation factor (VIF) values for all predictors were well below a cut-off value of 10, indicating no violation of the multicollinearity assumption (Pallant, 2005). The tolerance values are another measure of the correlation between the predictor variables and can vary between 0 and 1. As a rule of thumb, if tolerance is less than .20, a problem with multicollinearity is indicated. When tolerance is close to 0 there is high multicollinearity of that variable with other independents and the *b* and beta coefficients will be unstable; the more the multicollinearity, the lower the tolerance, the more the standard error of the regression coefficients (Statistics Solutions, 2007).

Summary of Results

The analysis addressed four research questions to determine the influence of the work environment variables, the importance of the work environment variables, the relationship between trainees' motivation to transfer and perceived performance improvement, and if the importance of the work environment variables predicted the motivation to transfer. Table 4.10 shows a summary of the analysis and result for each research question. The next chapter is a discussion of these research findings.

Table 4.10: Summary of Analysis for Research Questions

Item	Analysis	Result
Company A vs. Company B	Independent samples *t* Test	Significant difference in relation to: Feedback/Performance Coaching, t (144) = 2.35; p<.02 Perceived Transfer Achieved, t (113) = 2.35; p<.02
Research Question One	Means	Motivation to Transfer Learning, M=4.046 Personal Outcomes Negative, M=2.661 Peer Support, M=3.913 Supervisor/Manager Support, M=3.177 Feedback/Performance Coaching, M=3.195
Research Question Two	Means	Perceived Transfer Achieved, M=3.751 Importance of Personal Outcomes Negative, M=2.617 Importance of Peer Support, M=3.367 Importance of Supervisor/Manager Support, M=3.084 Importance of Feedback/Performance Coaching, M=3.361
Research Question Three	Pearson product-moment correlation coefficient (r)	Correlation Coefficient: r=0.41597, positive relationship, moderate correlation between Motivation to Transfer and Perceived Transfer Achieved, correlation is statistically significant at p<.0001
Research Question Four	Multiple regression	Two predictor variables were significantly related to Motivation to Transfer: Importance of Peer Support (r = .32) and Importance of Feedback/Performance Coaching (r = .26) at p < .05. Variables accounted for 11.1% of the variance in Motivation to Transfer, F(4, 110) = 3.43, p < .05 Importance of Peer Support displayed a significant beta weight at .2898 (p < .05) and was in the positive direction

CHAPTER V: CONCLUSIONS AND RECOMMENDATIONS

Introduction

This chapter begins with a summary of the research and the findings directly related to the research questions. Next, the limitations address the issues that may have occurred in the sampling procedures, instrumentation, flaws in the research design, or problems in the execution of the study. Finally, this chapter ends with recommendations for future research, recommendations to practitioners and final comments. The purpose of this study was to test a proposed model of training transfer (Figure 5.1), which relates the employees' perceived importance of the work environment variables to transfer of training within an organizational work setting. As proposed by the model, the employees' perception of the importance of the work environment variables may influence their motivation to transfer learning.

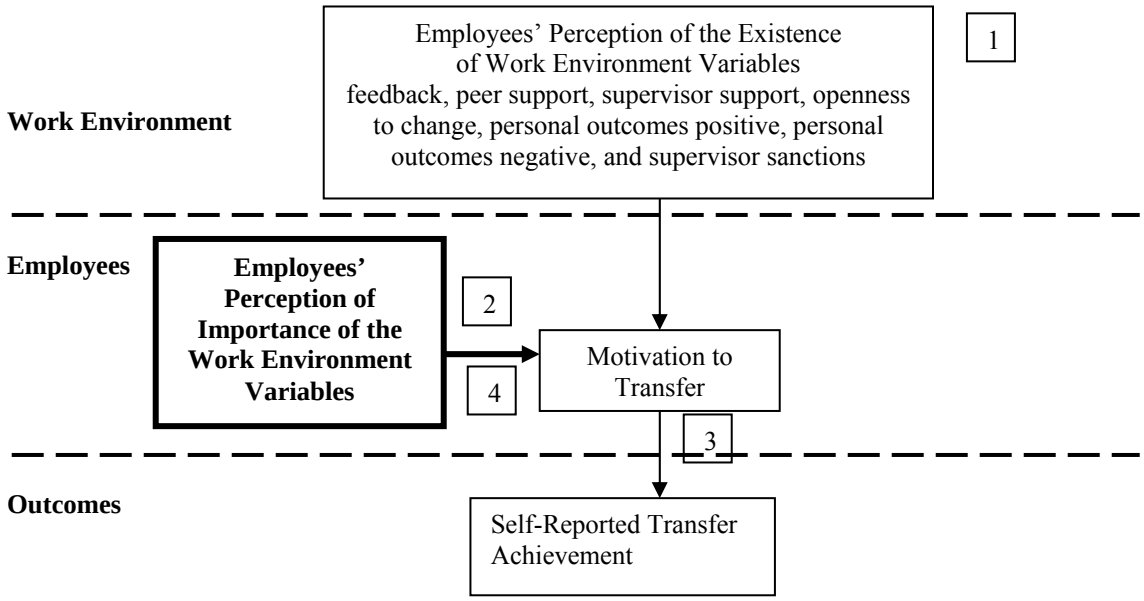

Figure 5.1 Proposed Model: Importance of Work Environment Variables

For example, if the work environment variable (supervisor support) exists at a high level in the organization and the employee perceives that work environment variable is extremely important in the context of transfer (employee perceives supervisor support is very important in order for him/her to transfer learned KSAs to the job), then it is proposed that the individual's motivation to transfer will be significant and he/she will perceive the achievement of transfer to the job and perceive the improvement of his/her performance. The analysis of employees' perception of the work environment variables as being important in their transfer of training may influence if they transfer their acquired knowledge and skills and if they believe their job performance will improve if they transfer knowledge and skills to the job.

The target population was service engineers (technicians) who are full-time employees from high-tech industries and participated in a technical training program designed to train them on specific knowledge and skills that are needed to conduct their job. Two questionnaires gathered data from the training program participants and ere administered at two different points: immediately following completion of the training program and 60 days after completion of the training program.

Existing research instruments used in previous research and shown to be reliable and valid were used to collect the data on all variables. The researcher and chair developed six measurement scales to gather data on the perceived transfer achieved and the perceived improvement to the job. Exploratory factor analysis was planned to

validate the measurement scales, however, the required number of observations was not obtained by the researcher. The researcher relied on past validation of the instruments. Cronbach's alpha was conducted on the measurement scales to test for reliability and variables were deleted as necessary due to low reliability of the measurement scale.

Summary of Findings

Four research questions guided this study and bivariate correlations and multiple regression were used to test the proposed relationships in the model. The research questions and related results are as follows:

1. What are the trainees' perceptions of the existing work environment variables in supporting transfer immediately after training?

The mean for motivation to transfer learning is 4.046, which describes participants as agreeing that they are motivated to utilize learning in their work. The trainees were motivated to transfer their newly acquired knowledge and skills back to the job. The mean for peer support was 3.913, which describes participants as close to agreeing that their peers reinforce and support use of learning on the job. This includes the degree to which peers mutually identify and implement opportunities to apply skills and knowledge learned in training, encourage the use of or expect that application of new skills, display patience with difficulties associated with applying new skills, or demonstrate appreciation for the use of new skills.

2. What are the trainees' perceptions of the importance of the work environment variables in supporting transfer two months after training?

The mean for perceived transfer achieved was 3.75, which describes participants as close to agreeing that they perceived that they transferred their newly acquired knowledge and skills two months after the training and returning to the job. The participants felt it was important to them that peers reinforce and support use of learning on the job (M=3.37), that managers support and reinforce the use of learning on the job (M=3.08), and that they receive constructive input, assistance, and feedback from people in their work environment (peers, employees, colleagues, managers, etc.) when applying new abilities or attempting to improve work performance (M=3.36). Participants thought it was some what important that if they do not apply new skills and knowledge learned in training, that it will lead to outcomes that are negative (M=2.62). Negative outcomes include: reprimands, penalties, peer resentment, too much new work, or the likelihood of not getting a raise if newly acquired skills are utilized.

3. What is the relationship between trainees' motivation to transfer (immediately after training) and perceived transfer achieved (two months after training)?

A positive relationship and a moderate correlation (r = 0.416) between motivation to transfer and perceived transfer achieved was statistically significant at $p<.0001$.

4. What is the predictive ability of the importance of the work environment variables to predict the trainees' motivation to transfer their training to practice?

The linear combination of importance of personal outcomes negative, importance of peer support, importance of supervisor/manager support, and importance

of feedback/performance coaching accounted for 11.1% of the variance in motivation to transfer. Only the importance of peer support (t = 2.25, squared semi-partial = 0.074) displayed a significant beta weight (Beta = 0.2898, $p<.05$) and was in the positive direction. The remaining variables: importance of personal outcomes negative (squared semi-partial = 0.02854), importance of supervisor/manager support squared semi-partial = 0.00391), and importance of feedback/performance coaching squared (semi-partial = 0.00390) were nonsignificant.

Conclusions

The most meaningful factor in evaluating the effectiveness of training is the trainee's work performance and therefore, a better performance indicator maybe in the knowledge and skills employees transfer from the training back to the work environment (Burrow & Berardinelli, 2003). Although trainees may be able to apply the learned knowledge and skills during a training program, elements of the trainees' work environment may impact their ability to transfer these learned KSAs to the job. Individuals may be motivated to transfer learned KSAs back to the job, but may be discouraged, inhibited, or prevented from doing so by circumstances in their work environment (Tannenbaum & Yukl, 1992).

Several studies demonstrate that transfer of training is complex and involves multiple factors and influences (Cheng & Ho, 2001; Holton & Baldwin, 2003; Rouiller & Goldstein, 1993). However, significantly less has been done to understand how transfer-related factors present themselves in organizations and how these factors can be

effectively changed or managed (Holton et al., 2003). This study examined another model to understand how transfer-related factors present themselves in organizations or how those factors might be effectively managed. This study analyzed how to support transfer of training in organizations through: 1) the employees' perception of the importance of the work environment variables in the context of transfer, 2) whether the employees' perception of the importance of the work environment variables predicts the employees' motivation to transfer, 3) whether employees perceive that transfer was achieved, and 4) whether employees perceive their job performance improving when they transferred their newly learned knowledge and skills.

The degree of effort or intent to transfer learned skills has been described as the motivation to transfer. Noe (1986) describes the motivation to transfer as the trainees' desire to use the knowledge and skills mastered in the training program on the job. Trainees are motivated to transfer new skills to the job when they: 1) are confident in using the skills, 2) are aware of work situations in which the use of the new skills is appropriate, 3) perceive the use of new skills results in improved job performance, and 4) believe that the learned knowledge and skills are useful in solving frequent work-related problems (Noe, 1986).

According to Noe (1986), motivation to transfer is believed to moderate the relationship between learning and behavior change and the motivation to transfer is influenced by the environmental favorability. Trainees' perceptions regarding work group support for the use of new skills and environmental favorability influences

motivation to transfer. This study examined the relationship between motivation to transfer, immediately following the training, and the perceived transfer achieved, two months after the training. This study found a positive, moderate correlation (0.42) between motivation to transfer and perceived transfer achieved and it was significant at $p<.0001$. This study agrees with Noe's (1986) motivation to transfer study that found motivation to transfer as a pre-cursor to the outcomes: transfer and improved performance. However, if trainees master the learning objectives and possess the ability to transfer, performance will still be low if motivation is low or absent (Noe, 1986).

Next this study found that the importance of the work environment variables accounted for 11.1 % of the variance in motivation to transfer. Two predictor variables were significantly related to motivation to transfer: importance of peer support (r = 0.32) and importance of feedback/performance coaching (r = 0.26) at $p<.05$. This study found that participants perceived that peer support did exist in the organizations (M=3.9) and that peer support was important to them in regards to transfer (M=3.4). Importance of peer support accounted for 7.44% of the variance in motivation to transfer. Participants were neutral, neither agreeing nor disagreeing to the extent that feedback/performance coaching did exist in the organizations (M=3.2) and they perceived that feedback/performance coaching was important to them in regards to transfer (M=3.4). Importance of feedback/performance coaching accounted for 0.4% of the variance in motivation to transfer.

Of the work environment variables, supervisor support has clearly been established in the literature as a critical work environment factor that influences the ability of participants to transfer their learned knowledge and skills. This study found that participants were neutral, neither agreeing nor disagreeing to the extent that supervisor/manager support did exist in the organizations (M=3.2) and that supervisor/manager support was important to them in regards to transfer (M=3.1). However, the importance of supervisor/manager support in predicting the variance in motivation to transfer was not significant and supervisor/manager support accounted for only 0.4% of the variance in motivation to transfer. This study lends support to the research that did not find a significant positive relationship between supervisor's support and transfer (Awoniyi et al., 2002; Facteau et al., 1995; Van der Klink et al., 2001). However, the other studies in the literature did not sample service engineers and therefore, may not be directly comparable to this study. Work environment variables, such as feedback and coaching, can not be completely isolated, as the service engineer may get feedback from customers or testing equipment, as well as his/her supervisor or peers.

One explanation for this finding may be in the nature of the service engineers work environment. During the administration of the survey at Company B, it was brought to the researcher's attention by a few participants that they rarely see their managers face-to-face. Based on equity theory, as long as a participant perceives that he/she is treated fairly in relation to their peers, they may feel supported by their

manager and may not need strong support or high involvement from their manager to transfer learning. As discussed in the literature review, supervisor/manager support comes in many forms: social and situational or task constraints. Facteau et al., (1995) conclude of the four forms of social support, only subordinate and peer support are positively related to perceived transfer, supervisor support is negatively related to transfer, and top management support shows no significant relationship.

Holton et al., (2003) found that system factors operate together to influence transfer and that some elements might be interchangeable or compensate for missing elements. For example, given that service engineers rarely see their managers, high manager involvement may not be needed in order for participants to transfer learning, but peer support (subject matter expertise and client coverage) is needed.

Finally, this study found that participants disagree that applying skills and knowledge learned in training will lead to outcomes that are negative in their organizations (M=2.7). Participants felt it was some what important to them that the application of skills and knowledge learned in training would lead to outcomes that are negative on the job (M=2.6). The importance of personal outcomes negative accounted for 2.9% of the variance in motivation to transfer. This finding is supported by Vroom's valance-instrumentality-expectancy model of motivation, which assumes that people make choices that maximize pleasure and minimizes pain (Lawson & Shen, 1998). In order for an organization to apply Vroom's 1964 model of motivation, managers need to be certain that positively valent rewards are associated with good job

performance and that their employees perceive the connection between the two conditions; linking rewards with performance.

Limitations

This research study examined the proposed relationships within a model of training transfer, which relates the employees' perceived importance of the work environment variables to transfer of training and improved performance on the job within an organizational work setting. This study involved evaluating basic relationships using correlation and multiple regression techniques. Since this study only focused and tested the proposed relationships in the model, other potential relationships were not evaluated. For example, secondary influences, like performance self-efficacy and learner readiness or ability like content validity or training design, may have a direct correlation with motivation to transfer or individual performance. In addition, using a structural equation model for analyzing the data could reveal more information because all of the possible relationships between the variables in the proposed model could be tested.

A second limitation of this study was that the researcher had to rely on previous validation from the authors of the LTSI instrument as the number of observations (sample size) was not adequate to perform exploratory or confirmatory factor analysis. Factor analysis is a large-sample procedure, so it is important to use guidelines to choose the sample size which will be minimally adequate for an analysis. To conduct exploratory factor analysis, the guideline is the larger of 100 subjects or 5 times the

number of variables being analyzed. To conduct confirmatory factor analysis, the guideline is the larger of 150 subjects or 5 times the number of variables being analyzed (Hatcher, 1994)

A third limitation was the sample size and the convenience sampling. Participation in the study was 100 percent voluntary and, therefore, the number of participants who completed survey two (115) was lower than survey one (146). Some participants informed the researcher that it was not a good use of their free time to continue participation, the questions from the first survey were repetitive and silly, and for some of the participants English was their second language, they were confused by the instructions of the second survey.

Additionally, the purposive sampling procedure decreases the generalizability of research findings. The researcher had ready access to the participants in training at Company A. However, during the data gathering phase, the researcher noted that most of the participants in the class would not meet the requirements of full-time service engineers of Company A. The researcher obtained approval to participate in the study from Company B, which conducted similar training, as Company A did, to their full-time service engineers. Therefore, this study will not be generalizable to all populations in transfer research because the sample is not a true random sample (Gall et al., 1996).

The study results should be interpreted with some caution because it contains all self-report and perception data from the trainees (full-time service engineers and technicians) from a convenience sample. Certainly a true observable measure of

training transfer and improved job performance would be a better measure than the self-reported responses used in this study. If given more resources and financial support, it may have been possible for the researcher to travel to the client sites with 115 service engineers and therefore, have access to direct measures of transfer and improvements to job performance. An actual measurement of transfer and performance improvement would provide a much stronger measure than one that relies on perceptions.

This study reviewed the influence of the seven work environment variables (feedback, peer support, supervisor support, openness to change, personal outcomes positive, personal outcomes negative, and supervisor sanctions) on transfer of training and how this relationship is moderated by the suggested importance of the work environment variables. Work environments are not static, but are constantly changing due to organizational needs, management practices, jobs and roles, access to resources and changes in the industry. This is especially true of the work environment of service engineers who travel to client sites to fix or maintain equipment. For this reason, it may have been helpful to this study to gather and measure background information on both the employers' and the clients' work environment at the completion of training (immediate post) and sixty-days after the completion of the training (long-term post). This would provide a more accurate measure of the context in which the work environment influences transfer and the employees' perceived importance of the work environment variables.

Finally, even though the intent was to analyze the seven work environment variables and the perceived improvement in job performance, due to low reliability, some of the variables were dropped from further analysis: personal outcomes positive, importance of personal outcomes positive, supervisor/manger sanctions, importance of supervisor/manger sanctions, resistance/openness to change, importance of resistance/openness to change, and perceived improvement in job performance. Perhaps a different finding would emerge if the researcher could have analyzed a complete picture of all seven work environment variables and its corresponding importance variable and how participants perceived the importance of all seven work environment variables.

Recommendations for Future Research

To assist researchers in their understanding of the effectiveness of training programs in terms of the knowledge, skills and attitudes that are transferred from the classroom to the work environment and the improvement of job performance, this researcher recommends longitudinal and qualitative studies of transfer should be conducted within organizations. People and work environments are not static, but rather in constant change. By collecting data from a sample at different points in time, researchers can study changes or continuity in the sample's characteristics (Gall et al., 1996). Longitudinal research is essential for exploring problems in human development, which would be useful research for trainees in an organizational work

environment. Therefore, several research questions are suggested for future investigation:

1. How does a work environment and other factors impact on the trainees' ability to maintain the new skills over time?
2. What are the participants' perceptions of the importance of the work environment variables in supporting transfer over time?
3. What are the differences in participants' perceptions of the of work environment variables over time and when do their perceptions change?
4. What is the relationship among the perception of the existence of the work environment variables, perceptions of the importance of the work environment variables, and motivation to transfer over time?

Another recommendation is to conduct qualitative research on transfer of training to understand why people perceive if the work environment variables are important in their ability to transfer. A gap in the literature would be filled by exploring and understanding the meaning of the relationships between the work environment, trainees, and transfer. Qualitative research would explain the why and interpret the meaning between people and their work environment. Additional research questions are suggested for future investigation:

5. Why do work environment variables either support or inhibit transfer?
6. How do employees' relate their perceptions of the work environment to their motivation to transfer?

7. Why do their perceptions of the work environment variables change over time?
8. What triggers changes in their perceptions of the work environment variables over time?

Recommendations for Practitioners

Today's organizational leaders want stronger evidence of training's effectiveness that goes beyond the participants' reactions to training and the numbers trained. They want to know how training is improving their organizational performance and how these changes in knowledge, skills, and attitudes (KSAs) are impacting their bottom-line. This trend has emerged as organizations demand more accountability, data, and results regarding their return on training investments (Salas & Cannon-Bowers, 2001; Salas et al., 1997). It is critical that training professionals understand the link between learning and performance, target learning resources, and measure both the effectiveness of learning and the efficiency of the learning organization in delivering improved performance outcomes.

The most meaningful factor in evaluating the effectiveness of training is the trainee's work performance and therefore, a better performance indicator maybe in the knowledge and skills employees transfer from the training back to the work environment (Burrow & Berardinelli, 2003). The work environment comprises all of the conditions in which an employee has to perform the tasks and duties belonging to his/her function (Gielen, 1996). As the research has confirmed, transfer of training is complex and involves many factors, which is why it is critical that practitioners evaluate

the work environment and what is needed for the trainees to transfer the new KSA's back to the job for their particular work environment.

Knowing that learning is an important investment to the organization, it only makes sense that practitioners would also want to include a transfer strategy into the training program to help trainees be successful back on the job. Practitioners should be aware of the social supports that are in place to help the trainees and which social supports the trainees rely on for help. The comment was made by one of the participants that he rarely sees his manager, which may be the reason why peer support was more important to the service engineers in this study. However, if peer support is more important to these service engineers, perhaps a mentoring program for trainees could be a possible transfer strategy. A mentoring program may be even more effective for those relying on technology, as the more experienced service engineer could help the newly trained service engineer apply what was taught in class and also what was not taught in class (tricks of the trade) and provide immediate and constructive feedback on how well the trainee is performing.

Finally, this study agrees with the research that feedback and coaching on performance was important to the service engineers in this study. The trainee should be in communication with his/her manager to understand expectations of job performance both before and after training. There should be accountability and a partnership formed between the employee and the manager. It may be more motivating if the employee knew how he/she were going to use the training to help him/her perform better and

work towards some pre-established goals and receive the proper rewards for better performance.

Final Comments

This research study examined the proposed relationships within a model of training transfer, which relates the employees' perceived importance of the work environment variables to transfer of training and improved performance on the job within an organizational work setting. The research findings resulting from this study have filled a gap that exists in the transfer literature. When studying human subjects interacting with training programs and work environments, transfer studies will continue to produce conflicting and mixed results. However, by having an understanding of the variables and how these variables inter-relate (work environment, motivation to transfer, and employees' perceived importance of the work environment), which influences transfer of training back to the job site, training practitioners will be better equipped to demonstrate their value to the organization. Training practitioners can design, implement, and evaluate training programs and develop techniques to help trainees' apply transfer strategies before, during, and after training that will facilitate the trainees' improved job performance and organizational effectiveness.

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APPENDICES

Appendix A: Recruitment Letter One and NCSU Informed Consent Form

Dear Technical Training Program Participant:

As a participant in this technical training program, I am asking that you participate in a research study being conducted by a graduate student in Training and Development at North Carolina State University. The purpose of this study is to determine the relationships among work environment variables, motivation, and the application of new skills and knowledge on the job. The knowledge gained from this study will be useful to both professionals in the field of training and development and organizations that invest in training and development programs.

As a member of this study, you will be asked to complete two questionnaires. The first questionnaire is enclosed along with an informed consent form. You are asked to complete the consent form and questionnaire immediately after the technical class is completed. Please place the questionnaire and the informed consent form in the envelop provided. I will collect the questionnaire. The second questionnaire will be mailed or e-mailed to you, which ever you've indicated on the consent form, 60 days after completion of this training program.

The findings reported from this study will not indicate how any one individual responds, but will reflect how a group of training program participants respond. Your individual response will remain confidential. The questionnaire is number coded only to assist in categorizing the data.

Your time and effort in participating in this research endeavor is extremely important and sincerely appreciated. Your participation in this study is voluntary; you may decline to participate without penalty. This study is not a requirement nor is it part of your employment. You are free to decline participation at any time without penalty. If you decide to participate, you may withdraw from the study at any time without penalty and without loss of benefits. If you withdraw from the study before data collection is completed your data will be returned to you or destroyed at your request.

If for any reason you do not wish to participate in the study, please let me know. It should take you approximately 15 minutes to complete the enclosed questionnaire. The second and final questionnaire is much shorter and should take 10 minutes to complete.

Thank you for your support of this research project.

Sincerely,

Lisa Wieland Handy, M.Ed.
Organization Development Consultant
Tekelec HR
919-388-1412
lisa.wielandhandy@tekelec.com

North Carolina State University
INFORMED CONSENT FORM for RESEARCH

The Influence of the Work Environment Variables on the Transfer of Training
Lisa Wieland Handy, Principal Investigator Dr. Brad Mehlenbacher, Faculty Sponsor

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We are asking you to participate in a research study. The purpose of this study is to examine the relationships among certain work environment characteristics, motivation, and transfer of training. You will be asked to assess various aspects of your work environment, such as: supervisor's and peers' support, your motivation to use your skills, and the opportunity for you to use your skills. You are providing your opinion and beliefs, so there is no right or wrong answer. For more information and a complete description of what you will assess, please refer to page two and three of this consent form.

INFORMATION
If you agree to participate in this study, you will be asked to:
complete 2 questionnaires administered: (1) immediately or within one week after your completion of a technical training program, and (2) 60 days after your completion of the technical training program. Each questionnaire will take between 10 and 15 minutes to complete.

RISKS
There are no foreseeable risks to you for participating in the study. If you are uncomfortable with any question, you don't have to answer it. You may also stop participating at any time, without penalty. If you have any questions, please feel free to contact Lisa Wieland Handy at LWHandy@nc.rr.com or 919-387-4902.

BENEFITS
The potential benefit for the study is to help understand how employees perceive their work environment and how the work environment influences their motivation to use their newly acquired knowledge and skills back on the job. The results of the study may help trainers develop more effective training programs for individuals and organizations.

CONFIDENTIALITY
The information in the study records will be kept strictly confidential. Data will be stored securely in a data base with only a record number to identify participants and password protected on the researcher's computer. No reference will be made in oral or written reports which could link you to the study.

CONTACT
If you have questions at any time about the study or the procedures, you may contact the researcher, Lisa Wieland Handy, at lisa.wielandhandy@tekelec.com, or 919-388-1412. If you feel you have not been treated according to the descriptions in this form, or your rights as a participant in research have been violated during the course of this project, you may contact Dr. Matthew Zingraff, Chair of the NCSU IRB for the Use of Human Subjects in Research Committee, Box 7514, NCSU Campus (919/513-1834) or Mr. Matthew Ronning, Assistant Vice Chancellor, Research Administration, Box 7514, NCSU Campus (919/513-2148). You may also contact the Institutional Review Board directly at 919-515-4514.

PARTICIPATION
Your participation in this study is voluntary and is not a requirement nor is it part of your employment. You are free to decline participation at any time without penalty and without loss of any benefits. If you withdraw from the study before data collection is completed, your data will be returned to you or destroyed at your request.

CONSENT
"I have read and understand the above information. I have received a copy of this form. I agree to participate in this study with the understanding that I may withdraw at any time."

Please check the appropriate box below to indicate if you would like to receive the second survey via e-mail or mail.
E-mail the second survey Mail the second survey

Subject's signature_____ Date _____ Record Number_____

Subject's e-mail or mailing address
_____

Investigator's signature_____ Date _____

Please sign the two copies of this form. Keep one for your records and return the other signed form to:
Lisa Wieland Handy, HR/OD Consultant
Tekelec
5200 Paramount Parkway
Morrisville, NC 27560

Learning Transfer System Instrument (LTSI) Definitions

The Learning Transfer System Inventory (LTSI; Holton, E. F. III & Bates, R. A., 1998) is the only validated instrument of learning transfer in the U.S.A., and now has become globally since it has been validated in various countries. The LTSI has been administered to approximately 7,000 people so the experience with it is extensive. The primary purpose of the LTSI is to be used in diagnosing strengths and weaknesses of organizational transfer systems. In other words; to assess what influences a learner to apply or not apply back to his/her job the knowledge and skills that were gained in the training class.

Item	Definition	Sample Item
Learner Readiness	Extent to which individuals are prepared to enter and participate in training	Before the training I had a good understanding of how it would fit my job-related development.
Motivation to Transfer	Direction, intensity, and persistence of effort toward utilizing in a work setting skills and knowledge learned.	I get excited when I think about trying to use my new learning on my job.
Positive Personal Outcomes	Degree to which applying training on the job leads to outcomes that are positive for the individual.	Employees in this organization receive various 'perks' when they utilize newly learned skills on the job.
Negative Personal Outcomes	Extent to which individuals believe that not applying skills and knowledge learned in training will lead to negative personal outcomes.	If I do not utilize my training I will be cautioned about it.
Personal Capacity for Transfer	Extent to which individuals have the time, energy and mental space in their work lives to make changes required to transfer learning to the job.	My workload allows me time to try the new things I have learned.
Peer Support	Extent to which peers reinforce and support use of learning on the job.	My colleagues encourage me to use the skills I have learned in training.
Supervisor Support	Extent to which supervisors/managers support and reinforce use of training on the job.	My supervisor sets goals for me which encourage me to apply my training on the job.
Supervisor Sanctions	Extent to which individuals perceive negative responses from supervisors/managers when applying skills learned in training.	My supervisor opposes the use of the techniques I learned in training.
Perceived Content Validity	Extent to which trainees judge training content to accurately reflect job requirements.	What is taught in training closely matches my job requirements.
Transfer Design	Degree to which 1) training has been designed and delivered to give trainees the ability to transfer learning to the job, and 2) training instructions match job requirements.	The activities and exercises the trainers used helped me know how to apply my learning on the job.
Opportunity to Use	Extent to which trainees are provided with or obtain resources and tasks on the job enabling them to use training on the job.	The resources I need to use what I learned will be available to me after training.

Item	Definition	Sample Item
Transfer Effort–Performance Expectations	Expectation that effort devoted to transferring learning will lead to changes in job performance.	My job performance improves when I use new things that I have learned.
Performance-Outcomes Expectations	Expectation that changes in job performance will lead to valued outcomes.	When I do things to improve my performance, good things happen to me.
Resistance/ Openness to Change	Extent to which prevailing group norms are perceived by individuals to resist or discourage the use of skills and knowledge acquired in training.	People in my group are open to changing the way they do things.
Performance Self-Efficacy	An individual's general belief that they are able to change their performance when they want to.	I am confident in my ability to use newly learned skills on the job.
Performance Coaching	Formal and informal indicators from an organization about an individual's job performance.	After training, I get feedback from people about how well I am applying what I learned.

Appendix B: Learning Transfer System Inventory (LTSI)

Learning Transfer System Inventory

DEMOGRAPHIC DATA FORM for Participants Record #: _____

Information will be kept confidential. Demographic data is for research purposes only. Your name appears only on your consent form, which is referenced to your record number. The record number is needed so that we can correlate this research information with your second survey that you will receive in 60 days after you complete this survey. When this information is entered in the research database, your name will be purged and only the research record number assigned will be used to ensure confidentiality.

Please check the box (□) for the appropriate responses below:

Your Age:
☐ 18 – 25 years
☐ 26 – 35 years
☐ 36 – 45 years
☐ 46+ years

Your Gender:
☐ Male
☐ Female

I am an/a :
☐ Employee
☐ Customer

Years in Present Job:
☐ 0 – 1 year
☐ 2 – 4 years
☐ 5 – 7 years
☐ 8 – 10 years
☐ 11 + years

Years at Present Company:
☐ 0 – 1 year
☐ 2 – 4 years
☐ 5 – 7 years
☐ 8 – 10 years
☐ 11 + years

Was this training mandatory?
☐ Yes
☐ No

Your Current Job:
☐ Executive Tier: SVP, EVP, Directors
☐ Middle Management Tier: Manager, Supervisor, Team Leader
☐ Non-Management /Technical Tier

Please turn the page to finish completing the survey questions.

Please circle the number (1, 2, 3, 4 or 5) to the right of each item that most closely reflects your opinion about training.

Learning Transfer System Inventory

1 - Strongly disagree 2 - Disagree 3 - Neither agree nor disagree

4 - Agree 5 - Strongly agree

For the following items, please think about THIS SPECIFIC TRAINING PROGRAM :

1. Prior to the training, I knew how the program was supposed to affect my performance.	1	2	3	4	5
2. Training will increase personal productivity.	1	2	3	4	5
3. When I leave training, I can't wait to get back to work to try what I learned.	1	2	3	4	5
4. I believe the training will help me do my current job better.	1	2	3	4	5
5. I get excited when I think about trying to use my new learning on my job.	1	2	3	4	5
6. If I successfully use my training, I will receive a salary increase.	1	2	3	4	5
7. If I use this training I am more likely to be rewarded.	1	2	3	4	5
8. I am likely to receive some 'perks' if I use my newly learned skills on the job.	1	2	3	4	5
9. Before the training, I had a good understanding of how it would fit my job-related development.	1	2	3	4	5
10. I knew what to expect from the training before it began.	1	2	3	4	5
11. I don't have time to try to use this training.	1	2	3	4	5
12. Trying to use this training will take too much energy away from my other work.	1	2	3	4	5
13. The expected outcomes of this training were clear at the beginning of the training.	1	2	3	4	5
14. Employees in this organization are penalized for not using what they have learned in training.	1	2	3	4	5
15. If I use what I learn in training, it will help me get higher performance ratings.	1	2	3	4	5
16. Employees in this organization receive various 'perks' when they utilize newly learned skills on the job.	1	2	3	4	5
17. If I do not use my training I am unlikely to get a raise.	1	2	3	4	5

Please turn to the next page

Please circle the number (1, 2, 3, 4 or 5) to the right of each item that most closely reflects your opinion about training.

1 - Strongly disagree 2 - Disagree 3 - Neither agree nor disagree
4 - Agree 5 - Strongly agree

For the following items, please think about THIS SPECIFIC TRAINING PROGRAM :

18. I am more likely to be recognized for my work if I use this training.	1	2	3	4	5
19. My workload allows me time to try the new things I have learned.	1	2	3	4	5
20. There is too much happening at work right now for me to try to use this training.	1	2	3	4	5
21. If I do not use new techniques taught in training I will be reprimanded.	1	2	3	4	5
22. Successfully using this training will help me get a salary increase.	1	2	3	4	5
23. If I do not utilize my training I will be cautioned about it.	1	2	3	4	5
24. When employees in this organization do not use their training it gets noticed.	1	2	3	4	5
25. I have time in my schedule to change the way I do things to fit my new learning.	1	2	3	4	5
26. Someone will have to change my priorities before I will be able to apply my new learning.	1	2	3	4	5
27. I wish I had time to do things the way I know they should be done.	1	2	3	4	5
28. My colleagues appreciate my using new skills I have learned in training.	1	2	3	4	5
29. My colleagues encourage me to use the skills I have learned in training.	1	2	3	4	5
30. At work, my colleagues expect me to use what I learn in training.	1	2	3	4	5
31. My colleagues are patient with me when I try out new skills or techniques at work.	1	2	3	4	5
32. My supervisor meets with me regularly to work on problems I may be having in trying to use my training.	1	2	3	4	5
33. My supervisor meets with me to discuss ways to apply training on the job.	1	2	3	4	5
34. My supervisor will object if I try to use this training on the job.	1	2	3	4	5
35. My supervisor will oppose the use of techniques I learned in this training.	1	2	3	4	5
36. My supervisor thinks I am being less effective when I use the techniques taught in this training.	1	2	3	4	5
37. My supervisor shows interest in what I learn in training.	1	2	3	4	5

Please turn to the next page

Please circle the number (1, 2, 3, 4 or 5) to the right of each item that most closely reflects your opinion about training.

1 - Strongly disagree 2 - Disagree 3 - Neither agree nor disagree

4 - Agree 5 - Strongly agree

For the following items, please think about THIS SPECIFIC TRAINING PROGRAM :

38. My supervisor opposes the use of the techniques I learned in training.	1	2	3	4	5
39. My supervisor sets goals for me that encourage me to apply my training on the job.	1	2	3	4	5
40. My supervisor lets me know I am doing a good job when I use my training.	1	2	3	4	5
41. My supervisor will not like it if I do things the way I learned in this training.	1	2	3	4	5
42. My supervisor doesn't think this training will help my work.	1	2	3	4	5
43. My supervisor helps me set realistic goals for job performance based on my training.	1	2	3	4	5
44. My supervisor would use different techniques than those I would be using if I use my training.	1	2	3	4	5
45. My supervisor thinks I am being ineffective when I use the techniques taught in training.	1	2	3	4	5
46. My supervisor will probably criticize this training when I get back to the job.	1	2	3	4	5
47. The instructional aids (equipment, illustrations, etc.) used in training are very similar to real things I use on the job.	1	2	3	4	5
48. The methods used in training are very similar to how we do it on the job.	1	2	3	4	5
49. I like the way training seems so much like my job.	1	2	3	4	5
50. I will have the things I need to be able to use this training.	1	2	3	4	5
51. I will be able to try out this training on my job.	1	2	3	4	5
52. The activities and exercises the trainers used helped me know how to apply my learning on the job.	1	2	3	4	5
53. It is clear to me that the people conducting the training understand how I will use what I learn.	1	2	3	4	5
54. The trainer(s) used lots of examples that showed me how I could use my learning on the job.	1	2	3	4	5
55. The way the trainer(s) taught the material made me feel more confident I could apply it.	1	2	3	4	5
56. The resources I need to use what I learned will be available to me after training.	1	2	3	4	5

Please turn to the next page

Please circle the number (1, 2, 3, 4 or 5) to the right of each item that most closely reflects your opinion about training.

1 - Strongly disagree 2 - Disagree 3 - Neither agree nor disagree

4 - Agree 5 - Strongly agree

For the following items, please think about THIS SPECIFIC TRAINING PROGRAM :

57. I will get opportunities to use this training on my job.	1	2	3	4	5
58. What is taught in training closely matches my job requirements.	1	2	3	4	5
59. The situations used in training are very similar to those I encounter on my job.	1	2	3	4	5
60. There are enough human resources available to allow me to use skills acquired in training.	1	2	3	4	5
61. At work, budget limitations will prevent me from using skills acquired in training.	1	2	3	4	5
62. Our current staffing level is adequate for me to use this training.	1	2	3	4	5
63. It will be hard to get materials and supplies I need to use the skills and knowledge learned in training.	1	2	3	4	5

Please turn to the next page

Please complete questions 64 - 89 on the following pages.
Note that these items refer to
TRAINING IN GENERAL IN YOUR ORGANIZATION

1 - Strongly disagree 2 - Disagree 3 - Neither agree nor disagree

4 - Agree 5 - Strongly agree

For the following items, please THINK ABOUT TRAINING IN GENERAL in your organization.

64. The organization does not really value my performance.	1	2	3	4	5
65. My job performance improves when I use new things that I have learned.	1	2	3	4	5
66. The harder I work at learning, the better I do my job.	1	2	3	4	5
67. For the most part, the people who get rewarded around here are the ones that do something to deserve it.	1	2	3	4	5
68. When I do things to improve my performance, good things happen to me.	1	2	3	4	5
69. Training usually helps me increase my productivity.	1	2	3	4	5
70. People around here notice when you do something well.	1	2	3	4	5
71. The more training I apply on my job, the better I do my job.	1	2	3	4	5
72. My job is ideal for someone who likes to get rewarded when they do something really good.	1	2	3	4	5
73. People in my group generally prefer to use existing methods, rather than try new methods learned in training.	1	2	3	4	5
74. Experienced employees in my group ridicule others when they use techniques they learn in training.	1	2	3	4	5
75. People in my group are open to changing the way they do things.	1	2	3	4	5
76. People in my group are not willing to put in the effort to change the way things are done.	1	2	3	4	5
77. My workgroup is reluctant to try new ways of doing things.	1	2	3	4	5
78. My workgroup is open to change if it will improve our job performance.	1	2	3	4	5
79. After training, I get feedback from people on how well I am applying what I learn.	1	2	3	4	5
80. People often make suggestions about how I can improve my job performance.	1	2	3	4	5
81. I get a lot of advice from others about how to do my job better.	1	2	3	4	5

Please turn to the last page

Please circle the number (1, 2, 3, 4 or 5) to the right of each item that most closely reflects your opinion about training.

1 - Strongly disagree 2 - Disagree 3 - Neither agree nor disagree

4 - Agree 5 - Strongly agree

For the following items, please THINK ABOUT TRAINING IN GENERAL in your organization.					
82. I am confident in my ability to use new skills at work.	1	2	3	4	5
83. I never doubt my ability to use newly learned skills on the job.	1	2	3	4	5
84. I am sure I can overcome obstacles on the job that hinder my use of new skills or knowledge.	1	2	3	4	5
85. At work, I feel very confident using what I learned in training even in the face of difficult or taxing situations.	1	2	3	4	5
86. People often tell me things to help me improve my job performance.	1	2	3	4	5
87. When I try new things I have learned, I know who will help me.	1	2	3	4	5
88. If my performance is not what it should be, people will help me improve.	1	2	3	4	5
89. I regularly have conversations with people about how to improve my performance.	1	2	3	4	5

END OF SURVEY.

Thank you for participating in this survey. You will receive a follow-up survey in 60 days.

Appendix C: Recruitment Letter Two

Subject line: Please complete final research survey for Lisa W Handy. Your record number is X.

Hello,

YOUR RECORD NUMBER IS: X

Link to Survey: XXX

Sixty days ago you successfully completed the (insert course title here), a technical training program, and you agreed to participate in a research study examining the relationships among work environment variables, motivation, and the application of new skills and knowledge on the job. Immediately upon course completion, you completed a questionnaire as the first part of the research.

This final questionnaire should take you no more than 10 minutes to complete. It is very important to the research project that the questionnaire be completed within one week of receiving this letter. North Carolina State University faculty member Dr. Brad Mehlenbacher is collaborating with me as the lead researcher on this project. Together we hope the research results will assist training and development processionals in developing more effective training programs.

As you were previously advised, the findings reported from this study will not indicate how any one individual responds, but will reflect how a group of training program participants respond. Your individual response will be held in strict confidence. The questionnaire is number coded to assist in categorizing the data.

Your time and effort in participating in this research endeavor is extremely important and sincerely appreciated. Again, thank you for assisting with this research project. If you have any questions about the research study you can reach me at 919-388-1412.

Thank you for your support of this research project.

Sincerely,

Lisa Wieland Handy, M.Ed.
Organization Development Consultant
HR
919-388-1412
lisa.wielandhandy@tekelec.com

Appendix D: Importance of the Work Environment, Transfer Achieved, and Performance Improvement (ITAPI)

Survey Two: Part I
Motivation to Transfer Knowledge and Skills

This is the final survey. As you complete this survey, think back to the technical training that you completed approximately 60 days ago.

This survey consists of Part One and Part Two. Part One will gather your opinions on how important is each statement to you in terms of your motivation to use your new knowledge and skills that you've learned in training. Part Two will measure the actual use of your newly learned knowledge and skills back to the job.

The survey consists of 37 questions and should take 5 - 10 minutes to complete.

Please type your Record Number in the space provided below. Your three digit Record Number is located at the top of your email.
Record Number _____

PART ONE

Please select the number (1, 2, 3, 4, or 5) to the right of each item that most closely reflects your opinion of importance.

Rate each statement on how important is it to you on a scale of 1 to 5:
1 – Not at all important
2 – Some what important
3 – Important
4 – Very important
5 – Extremely important

How important is each statement to you in terms of your motivation to use your new knowledge and skills that you've learned in training?

Please circle the number (1, 2, 3, 4, or 5) to the right of each item that most closely reflects your opinion.

1 – Not at all important 2 – Some what important 3 - Important 4 – Very important 5 – Extremely important	
How important is each statement to you in terms of your motivation to use your new knowledge and skills that you've learned in training? Rate each statement on how important is it to you on a scale of 1 to 5: 1 – Not important to 5 – Extremely important	
1. It is important to me if I successfully use my training, I will receive a salary increase.	1 2 3 4 5
2. It is important to me if employees in this organization are penalized for not using what they have learned in training.	1 2 3 4 5
3. It is important to me that employees in this organization receive various 'perks' when they utilize newly learned skills on the job.	1 2 3 4 5
4. It is important to me if I do not use what I learned in training, I will not get a raise.	1 2 3 4 5
5. It is important to me if I do not use new techniques taught in training, I will be reprimanded.	1 2 3 4 5
6. It is important to me if I do not utilize my training, I will be cautioned about it.	1 2 3 4 5
7. It is important to me when employees in this organization do not use their training, it gets noticed.	1 2 3 4 5
8. It is important to me that my colleagues appreciate me using my new skills I have learned in training.	1 2 3 4 5
9. It is important to me that my colleagues encourage me to use the skills I have learned in training.	1 2 3 4 5
10. It is important to me when at work, my colleagues expect me to use what I learn in training.	1 2 3 4 5
11. It is important to me that my colleagues are patient with me when I try out new skills or techniques at work.	1 2 3 4 5
12. It is important to me that my supervisor meets with me regularly to work on problems I may be having in trying to use my training.	1 2 3 4 5
13. It is important to me that my supervisor meets with me to discuss ways to apply training on the job.	1 2 3 4 5
14. It is important to me that my supervisor shows interest in what I learn in training.	1 2 3 4 5
15. It is important to me if I use the techniques I learned in training, my supervisor is opposed to them.	1 2 3 4 5

Please circle the number (1, 2, 3, 4 or 5) to the right of each item that most closely reflects your opinion.

1 – Not at all important 2 – Some what important 3 - Important 4 – Very important 5 – Extremely important	
How important is each statement to you in terms of your motivation to use your new knowledge and skills that you've learned in training? Rate each statement on how important is it to you on a scale of 1 to 5: 1 – Not important to 5 – Extremely important	
16. It is important to me that my supervisor sets goals for me that encourage me to apply my training on the job.	1 2 3 4 5
17. It is important to me that my supervisor lets me know I am doing a good job when I use my training.	1 2 3 4 5
18. It is important to me that my supervisor helps me set realistic goals for job performance based on my training.	1 2 3 4 5
19. It is important to me if my supervisor would use different techniques than those I would be using if I use my training.	1 2 3 4 5
20. It is important to me if my supervisor thinks I am being ineffective when I use the techniques taught in training.	1 2 3 4 5
21. It is important to me when people in my group generally prefer to use existing methods, rather than try new methods learned in training.	1 2 3 4 5
22. It is important to me if experienced employees in my group ridicule others when they use techniques they learn in training.	1 2 3 4 5
23. It is important to me that people in my group are open to changing the way they do things.	1 2 3 4 5
24. It is important to me that people in my group are not willing to put in the effort to change the way things are done.	1 2 3 4 5
25. It is important to me that my workgroup is reluctant to try new ways of doing things.	1 2 3 4 5
26. It is important to me that my workgroup is open to change, if it will improve our job performance.	1 2 3 4 5
27. It is important to me that after training, I get feedback from people on how well I am applying what I learn.	1 2 3 4 5
28. It is important to me that people often tell me things to help me improve my job performance.	1 2 3 4 5
29. It is important to me when I try new things I have learned, I know who will help me.	1 2 3 4 5
30. It is important to me that I regularly have conversations with people about how to improve my performance.	1 2 3 4 5

Survey Two: Part 2
Questions to Determine Transfer Achieved

To answer the following statements, please think about the specific training program that you completed approximately 60 days ago.

Please select the number (1, 2, 3, 4, or 5) to the right of each item that most closely reflects your opinion about the use of your newly learned knowledge and skills back to the job.

Rate each item on a scale of 1 to 5:
1- Strongly disagree
2- Disagree
3- Neither agree nor disagree
4- Agree
5- Strongly Agree

Please rate each item based on your opinion on the use of your newly learned knowledge and skills that you applied to your job.

To answer the following statements, please think about the specific training program that you completed 60 days ago:	Rating Scale **1. Strongly disagree** **2. Disagree** **3. Neither agree nor disagree** **4. Agree** **5. Strongly Agree**				
31. I had work situations in which I have been able to use what I have learned from the training.	1	2	3	4	5
32. I frequently apply my newly acquired knowledge and skills to my job.	1	2	3	4	5
33. I have not had opportunities to apply my newly acquired knowledge and skills to my job.	1	2	3	4	5
34. My job performance has improved as a result of applying what I've learned.	1	2	3	4	5
35. The skills and knowledge I learned in training were helpful in solving work-related problems.	1	2	3	4	5
36. I haven't found what I learned in training to be very useful in my job.	1	2	3	4	5

Please click the Submit Button to submit your survey. This concludes your participation in my doctoral research.

Thank You for your participation!

Appendix E: Scale Key

Personal Outcomes Positive
6. If I successfully use my training, I will receive a salary increase.
16. Employees in this organization receive various 'perks' when they utilize newly learned skills on the job.
17. If I do not use my training I am unlikely to get a raise.

Personal Outcomes Negative
14. Employees in this organization are penalized for not using what they have learned in training.
21. If I do not use new techniques taught in training I will be reprimanded.
23. If I do not utilize my training I will be cautioned about it.
24. When employees in this organization do not use their training it gets noticed.

Supervisor/Manager Support
32. My supervisor meets with me regularly to work on problems I may be having in trying to use my training.
33. My supervisor meets with me to discuss ways to apply training on the job.
37. My supervisor shows interest in what I learn in training.
39. My supervisor sets goals for me that encourage me to apply my training on the job.
40. My supervisor lets me know I am doing a good job when I use my training.
43. My supervisor helps me set realistic goals for job performance based on my training.

Supervisor/Manager Sanctions
38. My supervisor opposes the use of the techniques I learned in training.
44. My supervisor would use different techniques than those I would be using if I use my training.
45. My supervisor thinks I am being ineffective when I use the techniques taught in training.

Peer Support
28. My colleagues appreciate my using new skills I have learned in training.
29. My colleagues encourage me to use the skills I have learned in training.
30. At work, my colleagues expect me to use what I learn in training.
31. My colleagues are patient with me when I try out new skills or techniques at work.

Motivation to Transfer Learning
2. Training will increase personal productivity.
3. When I leave training, I can't wait to get back to work to try what I learned.
4. I believe the training will help me do my current job better.
5. I get excited when I think about trying to use my new learning on my job.

Resistance/Openness to Change
73. People in my group generally prefer to use existing methods, rather than try new methods learned in training. (R)
74. Experienced employees in my group ridicule others when they use techniques they learn in training. (R)
75. People in my group are open to changing the way they do things.
76. People in my group are not willing to put in the effort to change the way things are done. (R)
77. My workgroup is reluctant to try new ways of doing things. (R)
78. My workgroup is open to change if it will improve our job performance.

Feedback/Performance Coaching
79. After training, I get feedback from people on how well I am applying what I learn.
86. People often tell me things to help me improve my job performance.
87. When I try new things I have learned, I know who will help me.
89. I regularly have conversations with people about how to improve my performance.

Personal Capacity for Transfer
19. My workload allows me time to try the new things I have learned.
25. I have time in my schedule to change the way I do things to fit my new learning.
26. Someone will have to change my priorities before I will be able to apply my new learning. (R)
27. I wish I had time to do things the way I know they should be done. (R)

Opportunity to Use Learning
56. The resources I need to use what I learned will be available to me after training.
60. There are enough human resources available to allow me to use skills acquired in training.
61. At work, budget limitations will prevent me from using skills acquired in training. (R)
63. It will be hard to get materials and supplies I need to use the skills and knowledge learned in training. (R)

Transfer Effort – Performance Expectations
65. My job performance improves when I use new things that I have learned.
66. The harder I work at learning, the better I do my job.
69. Training usually helps me increase my productivity.
71. The more training I apply on my job, the better I do my job.

Performance - Outcomes Expectations
64. The organization does not really value my performance.
67. For the most part, the people who get rewarded around here are the ones that do something to deserve it.
68. When I do things to improve my performance, good things happen to me.
70. People around here notice when you do something well.
72. My job is ideal for someone who likes to get rewarded when they do something really good.