

# **A Conceptual Model of Training Transfer That Includes the Physical Environment**

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*The study presents the physical environment as an emerging factor impacting training transfer and proposes to position this variable in the Baldwin and Ford (1988) model of the training transfer process. The amended model positions workplace design, one element of the physical environment, as a part of organizational context in the work environment that impacts transfer. Results indicate a need for further testing of the model to determine its appropriateness.*

Keywords: Training Transfer, Workplace Design, Conceptual Model

Thousands of U.S. companies operating domestically and internationally spend billions of dollars annually on training initiatives for their workforces (Hodgetts & Luthans, 2003). However, few organizations currently possess training programs that effectively transfer training received by employees to on-the-job performance (Broad & Newstrom, 1992; Foxon, 1993). Some researchers estimate that as much as 90 percent of the training provided by organizations to their employees does not transfer to improved performance in the workplace (Holton & Baldwin, 2000). While much of the earlier human resource development (HRD) research focused primarily on formal training contextual factors, more recent studies have elevated the importance of organizational factors to the forefront of training transfer theory (Rouillier & Goldstein, 1993; Tracey, Tannebaum, & Kavanaugh, 1995; Holton & Baldwin, 2000). Understanding organizational factors such as management support, training relevance, transfer climate, and availability of resources and technology to support transfer is recognized as paramount to examining problems surrounding the transfer of training in today's organization (Holton & Baldwin, 2000).

The changing nature of work in today's global economy makes knowledge management one of the most salient issues facing human resource development researchers and practitioners. Technology-based industries such as health care and engineering have an expected half-life of knowledge of less than four years (Swanson & Holton, 2001). This means that a medical technician completing training today would only retain about 50 percent of the relevant knowledge gained in four years. Swanson and Holton (2001) suggest that business and other professions are not immune to this erosion of knowledge. The constant turnover of knowledge in today's changing workplace compounded by some 90% of training that fails to transfer places training transfer at the forefront of HRD concerns (Kupritz, In press.).

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

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

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

One organizational factor that has been largely overlooked as a potential contributor to training transfer theory is workplace design (Kupritz, 2002). Workplace design was not examined in any of the 58 studies that were a part of the most comprehensive reviews of the organizational-training literature (Baldwin & Ford, 1988; Ford & Weissbein, 1997). Yet elements of the physical environment have been a part of human resource development efforts for decades. Darlene Russ-Eft, past editor of Human Resource Development Quarterly, states: "...Workplace design and redesign has been an integral part of TQM [Total Quality Management], Six Sigma, and reengineering processes that HRD professionals have been a part of over the past decade or more" (D. Russ-Eft, personal communication, 2002).

The purpose of this study is to propose an additional variable, the physical environment, to the Baldwin and Ford (1988) model of the training transfer process as another organizational factor in the work environment that impacts training transfer.

### Conceptual Model of Training Transfer

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

Six linkages are critical to understanding the transfer process. Working backwards through the model, these linkages are: (6) Training Outcomes of Learning and Retention has a direct effect on the Conditions of Transfer; (5&4) Trainee Characteristics and Work-Environment Characteristics are hypothesized to have direct effects on transfer regardless of initial learning during the training program or retention of the training material. (3, 2, & 1) Training Outcomes (Learning and Retention) are viewed as directly affected by the three training inputs of training design, trainee characteristics, and work environment characteristics.

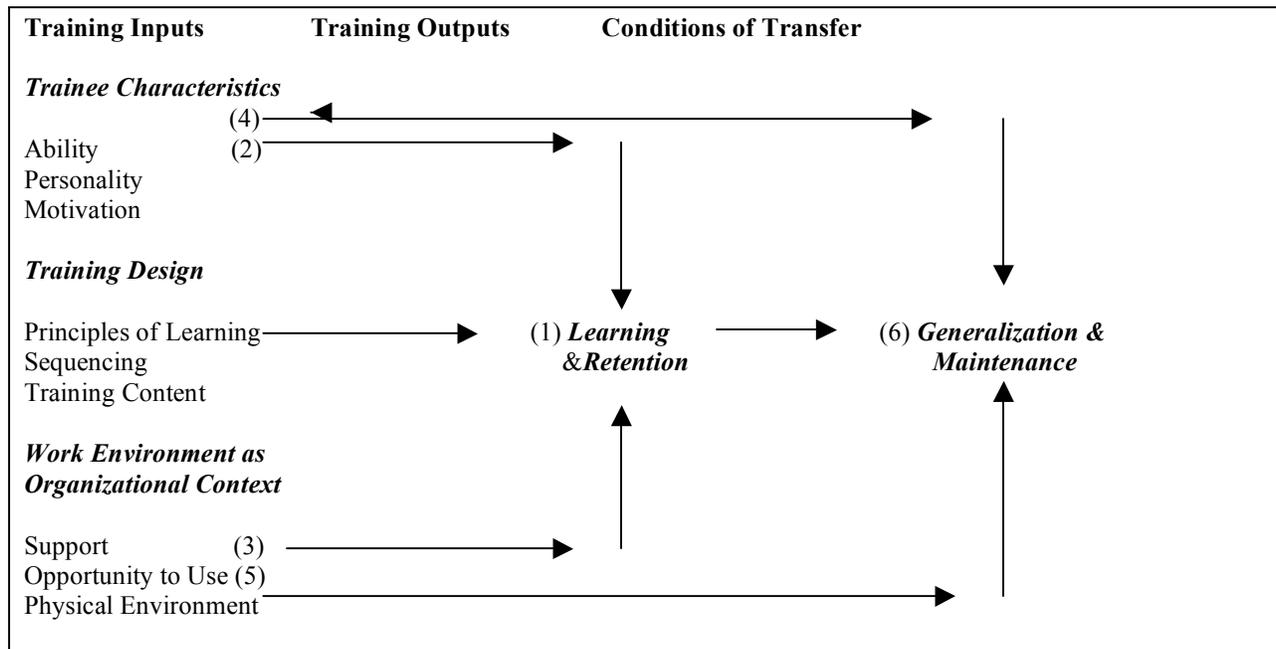


Figure 1. Model of the training transfer process proposed for the current study.

### *Trainee Characteristics*

A wealth of empirical research focused on trainee characteristics. Researchers primarily used retention as the criterion measure for trainee characteristic studies (Baldwin & Ford, 1988). Some of the earliest studies of this type asked trainees to recall training content soon after the completion of a training intervention (Wexley & Baldwin, 1986). Other researchers collected information relative to the application and maintenance of learned skills in the work environment (Huczynski & Lewis, 1980). Initially, the researchers asked the participants about their intent to transfer their trained skills to the work environment. After four months, the researchers asked the participants about their perceptions of how successful they believed they were in transferring skills from the training intervention to their work environment. Noe (1986) also analyzed trainee characteristics and determined that the trainee motivation is a primary factor when considering training transfer.

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

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

### *Training Program Design*

Training program design received an extensive amount of attention from training and development researchers in the 1950s and 1960s. These studies generally focused on increasing training transfer by improving the design of training content. Thorndike & Woodworth (1901) were two of the first researchers to advocate the use of identical elements--incorporating identical stimulus-response elements in the learning and transfer environments. Crafts (1935) and Underwood (1951) also recommended this approach to improving training content design. McGehee & Thayer (1961) suggested teaching general principles, the rules underlying training content, as a method of improving training design. Many other researchers examined this method as well (see, for example, Cominsky, 1982; Crannel, 1956; Forgas & Schwartz, 1957;). Some researchers examined the use of stimulus variability—the presentation of salient training stimuli in a variety of ways—to increase training transfer through improved training content (Baldwin, 1987; Duncan, 1958; Ellis, 1965).

Another empirically researched principle for improving training content included utilizing various conditions of practice (Briggs & Naylor, 1962; Naylor & Briggs, 1963; Wexley & Thornton, 1972). Specifically, this technique included using distributed sessions, effective feedback, and overlearning in the training environment. Baldwin and Ford (1988) identified two basic limitations in these types of studies: (1) the tasks used limited the researcher(s)' ability to generalize beyond short-term, basic motor tasks and information recall training; and (2) the researchers in these studies used learning and short-term retention as criterion measures and they did not examine the direct effect of training-design factors on training outcomes and relate those outcomes to conditions of transfer.

While Ford and Weissbein (1997) acknowledged that progress has been made in these areas in their updated review of the relevant organizational-training literature, the use of overall measures of effectiveness in lieu of analyzing specific dimensions of transfer remained a serious problem that needs to be address in the literature. [They cite Baldwin (1992) as an example of a study that began using more complex tasks, diverse samples, and longer time intervals between training intervention and criterion assessment to more effectively demonstrate transfer.]

### *Work Environment*

The work environment has been the subject of many empirical organizational-training studies. Some of the earliest studies used large-scale surveys to examine variables such as leadership climate (Fleishman, 1953), work climate (Baumgartel, Pathan, & Reynolds, 1984), and supervisory support (Huczynski & Lewis, 1980). More recent studies have provided evidence that management support, given prior to and post-training intervention, leads to greater transfer of training (Brinkerhoff & Montesino, 1995). Broad & Newstrom (1992) suggest supervisor support, and transfer partnerships among trainee, trainer, and manager are of central importance in enhancing transfer of learning. Richman-Hirsch (2001) examined the effectiveness of two post-training interventions—goal setting and

self-management training—and their potential in helping trainees avoid inhibitors to transfer in the work environment.

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

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

More recently, Ford and Weissbein (1997) revisited these criticisms of the work environment literature and reported that advancements had been made. The more recent literature included several studies that exhibited a greater understanding and measurement of the work environment as well as evidence of interventions in the research design to show a causal relationship between changes in work environment characteristics and impacts to training transfer (for example, Brinkerhoff & Montesino, 1995; Rouiller & Goldstein, 1993).

More recent HRD research has emphasized addressing many of these criticisms. Contemporary HRD studies have sought to improve upon past training transfer research by better exploring the multidimensional nature of transfer constructs (Smith-Jentsch et al., 2001), utilizing longitudinal studies (Cromwell & Kolb, 2004), and examining the effects of post-training and relapse prevention strategies (Gaudine & Saks, 2004). Some HRD researchers are beginning to recognize workplace design as another organizational factor impacting transfer, proposing that “attributes of the physical environment can present substantial obstacles [and opportunities] to learning transfer” (Bates, 2000; see also Kupritz, 2002).

*Physical environment.* The physical environment is proposed in the current study to be a part of organizational context in the work environment impacting training transfer. The physical environment refers to the range of design features associated with the workplace including the exterior and interior design and layout (Kupritz, 2002). Associated ambient conditions such as sound, light, temperature, and air are also elements of the physical environment (Sundstrom, 1985). Sundstrom, De Meuse, and Futrell (1990) describe the organizational context as “relevant features of the organization external to individual work teams or units” (pg. 121) and lists the physical environment as one of eight aspects of organizational context impacting work team effectiveness. The model for the present study also posits the physical environment as an aspect of organizational context, but proposes that it has an impact on training transfer as a part of the work environment first proposed in the Baldwin and Ford (1988) study.

A search of the extant HRD/organizational development literature for the current study finds that HRD researchers and practitioners are beginning to recognize the physical environment as a salient issue in today’s workplace. For example, recent HRD research exploring the physical work environment has highlighted the importance of understanding spatial density and its effect on employee reactions to their work (Carlopio, 1996). Research findings have revealed that spatially dense workspaces are generally viewed unfavorably by employees (Oldham, Cummings, and Zhou, 1995). These findings have been linked to social interference theory, which attributes these negative employee reactions to perceived lack of control and difficulty performing regular work tasks (Evans, Johannson, & Carere, 1994; Oldham et al., 1995). Omara (1999) considers physical facility and property planning to be some of the most visible, expensive, and confining decisions made by organizational leadership. Yet, recent HRD research examining the physical environment’s role as a possible facilitator or inhibitor of training transfer has been minimal.

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

Kupritz (2002) examined trainee perceptions of organizational factors impacting newly acquired supervisory skills. The study determined that office workers perceived workplace design to be an important organizational factor affecting their ability and opportunity to perform newly acquired supervisory skills. Physical enclosure, layout,

furniture, flexibility, ergonomic design, and acoustical privacy were some of the design features identified by study participants as impacting transfer. Workplace design perceived to impede transfer and workplace design perceived to facilitate transfer ranked first and second, respectively, in cumulative frequencies for elicited responses regarding organizational factors impacting transfer.

The contemporary view of the physical environment as part of organizational context can be described as strategic (Becker, 1981; Stokols, 1986). Buildings and other physical structures of organizations are identified as critical assets for implementing organizational strategies and achieving corporate goals. Other researchers have investigated the cost benefit of supportive physical environments and determined that there are significant productivity gains and paybacks, as much as 5 percent of the average worker's annual salary, which can be associated with supportive workplace design (Brill, Margulis, Konar, & BOSTI Associates, 1985; Brill, 1993). This estimate is supported by 30 years of environment and behavior (EB) research and theory that supports workplace design as an essential element of organizational context and its role in facilitating or impeding all levels of individual and organizational performance (Brookes & Kaplan, 1972; Brill, Margulis, Konar, & BOSTI Associates, 1984, 1985; Becker & Steele, 1995; Brill, Weidemann, & BOSTI Associates, 2001; Kupritz, 2000; O'Neil & Evans, 2000). Brill (1993) identifies physical enclosure, furniture, acoustical and visual privacy, and ergonomic design as common workplace design features impacting employee performance and satisfaction.

The investigators for the present study believe that the broad range of design features identified in the environment and behavior literature as influencing employee performance and satisfaction could also facilitate or impede the training transfer process in organizations as well. While the environment and behavior literature rarely distinguishes among the various training modes or environments, it stands to reason that workplace design's influence on employees' abilities and performance would include knowledge, skills, and abilities acquired through workforce training as well (Kupritz, In-press).

## **Conclusions and Recommendations**

The amended model of training transfer proposed in this study identifies another organizational factor that may contribute to the ultimate success or failure of a training intervention. Research is needed to measure the validity of this addition to the model. To this end, Hillsman (2006) is conducting transfer research that extends the work of the Kupritz (2002) study by further examining the impact of workplace design on training transfer.

Kupritz (2002) argued that workplace design may enhance or inhibit the ultimate success of a training intervention. For example, employees implementing recently completed teamwork training may find their efforts stymied by unsupportive workplace design characteristics, such as cubicles or lack of group meeting space. The importance of effective group-organization boundary and territorial control management, relative to work team effectiveness, has been well documented in the EB literature (Sundstrom and Altman, 1989; Sundstrom, DeMeuse, and Futrell, 1990).

The physical environment plays a vital role in worker performance, with potential contributions to transfer. Matt Lawer, a training specialist at a major university, points to performance difficulties attributable to workplace design: "Quite frequently, in at least half of the [training and development] workshops I present, the discussion turns to difficulties attributable to workplace design. For instance, in a recent workshop on delegation skills, a supervisor cited her office's physical layout as an obstacle; in her opinion, the extremely open nature of the office makes it difficult to give effective feedback to employees, as other employees as well as students can hear all that is said. Similar stories, detailing the effects of physical design on routine work activities, are recounted weekly" (M. Lawer, personal communication with the author, September 30, 1998).

Training transfer continues to be one of the most important issues facing U.S. companies primarily because of the billions of dollars they spend annually on training initiatives for their workforces (Hodgetts and Luthans, 2003). Baldwin and Ford (1988) estimate that only ten percent of these expenditures actually resulting in tangible gains in employee performance. This makes the identification of new organizational factors impacting transfer and development of new models of the transfer process critical future research needs for the academy of HRD.

Omara (1999) considers physical facility and property planning to be some of the most visible, expensive, and confining decisions made by organizational leadership. Yet, recent HRD research examining the physical environment's role as a possible facilitator or inhibitor of training transfer has been minimal. The modification of this conceptual model adds to the growing body of knowledge regarding workplace design's effect on training transfer. However, future studies are needed to test this addition to the Baldwin and Ford (1988) model for varying work practices and settings. It may be that the physical environment is an important organizational factor affecting transfer for some work practices but not others, or it may be important for transfer across the board.

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