# Work Environment Factors Influencing the Transfer of Learning for Online Learners

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*HRD professionals struggle with why a higher percentage of skills and knowledge acquired through training fail to transfer to the work environment and why transfer appears to diminish over time (Cromwell & Kolb, 2002). With increased investment in technology and professional development, it is imperative to enhance the learners' transfer process particularly concerning their work environment. This study identified critical work environment factors supporting or impeding transfer for participants of an online professional development program.*

Keywords: Professional Development, Training, Online Learning

Many organizations are spending large amounts of money on training with the belief that training will improve their employees' performance as well as overall firm productivity (Yamnill & McLean, 2001). In 2004, US organizations with one hundred or more employees spent $51.4 billion as their total training budget (Dolezalek, 2004). With an increase in technological advances and rising opportunities in education and training, technology-based training and/or electronic training (e-learning) have become a major trend in Human Resource Development (HRD) (Bassi & Van Buren, 1998) in addition to the traditional face-to-face mode of training. According to the 2004 Industry report, instructional media such as internet/intranet/extranet had a frequency usage of 47% (Dolezalek, 2004). Noe (2002) projected that the use of training technologies would increase in the next decade as technology improves.

## Problem Statement

The trend towards the attendance of online learning programs for professional development purposes is prevalent in many professions such as teaching, banking, and healthcare. Individuals or groups are drawn to this type of instruction for various reasons such as "location, lack of time, and multiple family and work commitments" (Lloyd-James, 2000, p. 25). Online learning has also been used for regulatory and mandatory topics, orientation information, and any topics offered in a self-directed learning approach (Benson, 2004). Even with the many advantages and opportunities attributed to online learning and given the considerable investment made by organizations into this form of training, Human Resource Development (HRD) professionals are continually concerned whether skills and knowledge obtained from training have been transferred to the job to enhance performance (Garavaglia, 1993). In essence, HRD professionals struggle with issues such as: (1) why a higher percentage of skills and knowledge fail to transfer to the work environment and why transfer appears to diminish over time (Cromwell & Kolb, 2002); and, (2) individuals who return from their training face challenges when they turn their attention to transfer their new learning to on-the-job performance evidenced by frustration, confusion, and diminished opportunity to apply improved ways of doing their work on the job (Laird, 2003). The work environment generally includes climatic factors such as supervisory or peer support as well as constraints and opportunities to perform learned behaviors on the job (Baldwin & Ford, 1988). According to Elangovan and Karakowsky (1999), environmental factors refer to various aspects in the employee's work environment that either facilitate or impede effective transfer of learning. Little has been done to explore the nature of the transfer of learning work environment as it relates to online learning particularly for professional development purposes. Brinkerhoff and Montesino (1995) assert that it seems Human Resource Development (HRD) practitioners have developed sophisticated delivery devices at the expense of building the critical connection between the training site and the work environment. The purpose of this study is to identify critical factors supporting or impeding transfer of learning for participants of an online professional development program.

## Theoretical Framework

Transfer of learning has been defined as the effective and continuing application of knowledge, skills, and attitudes learned/acquired from training on the job, generalization, and subsequent maintenance of these over a certain period

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of time (Baldwin & Ford, 1988; Broad, 1997; Ford & Weissbein, 1997; Xiao, 1996). Various researchers have developed models to examine the transfer of learning (Baldwin & Ford, 1988; Cornford, 1991; Holton III, 1996; Noe, 1986; Yelon, 1992). As is portrayed by Cheng and Ho (2001), the works of Noe (1986) and Baldwin and Ford (1988) have been among the most influential early works of transfer of learning with the latter prompting the emergence of empirical studies to investigate how trainee characteristics, job attributes and work environment influence the transfer of learning process. According to May & Reilly (1997), "before we can design and test a framework that incorporates the more complex interactions among the inputs of trainee characteristics, training design, and work environment, it would seem appropriate to isolate and document empirically the most important factors in each area of input" (p. 374). Elangovan and Karakowsky (1999) clearly state that issues of trainee and environmental characteristics have received less attention with environmental effects on transfer of learning being the least investigated of the various factors.

In past research studies (Baldwin & Ford, 1988; Elangovan & Karakowsky, 1999; Holton III et al., 1997; Lim, 1998), various work environment factors have been identified which, when applied well, facilitated transfer of learning back on the job. These factors include a continuous-learning culture within the organization (Tracey, Tannenbaum, & Kavanagh, 1995); open climate for communication (Rainey, 1983); match between training and organizational goals (Montesino, 2002); opportunity to perform or use training (Ford, Quinones, Sego, & Sorra, 1992); technological support (Stevens & Stevens, 1996); tools available on the job (Richey, 1990); reward or incentive for training (Willard, 1992); acceptance of mistakes (O'Connell, 1990); matching goals of department to training (Ford et al., 1992); contract between trainer and manager to commit to transfer (Sevilla & Wells, 1998); pace of work flow (Ford et al., 1992); management or supervisory support (Broad & Newstrom, 1992; Cusimano, 1996; Maddox, 1987; Noe, 2002); recognition from peers, work group or peer support (Ford et al., 1992); availability of a mentor (Richey, 1990); management style (Ranade & Clark, 1992); and subordinate support (Facteau, Dobbins, Russell, Ladd, & Kudisch, 1995). In various studies, the impact of these factors in relation to transfer of learning has been identified and/or examined individually or as a combination of factors when applied to different organizational contexts. The framework for this study constitutes a combination of the work environment factors identified in previous research studies and their application to participants of an online professional development purposes.

**Research Questions**

In the context of learners who have participated in an online professional development program:

1. What support factors related to the work environment do these learners perceive as most critical in facilitating transfer of learning in their jobs?
2. What barriers related to the work environment do these learners perceive as most critical to the transfer of learning in their jobs?
3. What are the relationships between age, gender, employee position title, and type of organization to work environment support factors and barriers critical to the transfer of learning for these trainees?

**Research Methods**

Both descriptive and correlational research designs were employed. The descriptive part of the study was used to identify the critical work environment support factors and barriers. The correlational part of the study was used to examine the relationship (if any) between age, gender, employee position title, and type of organization as demographic factors with each of the critical work environment support factors and barriers identified.

The site selected for this research was the Curriculum, Technology, and Education Reform (CTER) Online program because it provided a suitable link between online learning for professional development and teachers as well as administrators who are practicing their profession in their respective schools and districts. CTER Online is a Master of Education program developed in 1998 aimed at pre-college teachers and administrators interested in issues concerning curriculum, technology, and education reform. The goal of CTER is to provide practicing teachers and administrators with the opportunity to earn a masters degree at home or at their local schools through computers and Internet connections. The courses in the program have been specifically designed to bridge theory and practice through the use of technology. Practicing teachers and administrators draw upon their current classroom or district experience in their schools and examine how they can improve their own teaching and their students' learning through dialogue, reflections, and project-based assignments. Since its inception, CTER has had seven cohorts.

The data collection instrument was a custom-made email survey. Various measures obtained from the transfer of learning literature comprised the list of work environment support factors and barriers used in this study. Participants reviewed and rated factors in the work environment that were considered to be supportive or inhibitive to the transfer of learning process. The survey was developed and distributed using a web-based survey tool and comprised of 32 questions. It was pilot-tested for a week for question validity on a group of 15 randomly selected on-campus students and graduates from cohort 3 CTER Online program. Revisions were made to the instrument and an email survey sent out to all CTER Online program graduates except those who had responded to the pilot study. Three weekly email reminders containing the email survey link were issued to all non-respondents over a four-week period. The survey was closed after 6 weeks.

The participants of this study included five cohorts comprised of 126 graduates of the CTER Online program practicing their profession in various organizational settings. Once the survey was sent out to all graduates, 28 email addresses were found to be invalid leaving a net population of 98 graduates. In total, the response rate was calculated at 47.96% (47/98). Of these, 43 responded to the survey while 4 declined to participate in the study. The participant age range was between 26 and 56 years for the 35 respondents who provided usable data (excluding those who completed demographic information only). 74.3% of the 35 respondents were female. A variety of employee positions were represented ranging from teachers (71.4%), technology coordinators (11.4%), to others such as dean, website designer, grant reader or research programmer. The respondents also worked in settings such as elementary school (34.3%), high school (25.7%) among others which included district units and corporate environments. From the 43 respondents, only 35 had usable data upon which statistical analysis of this study is based. Data were analyzed using the SPSS statistical program and presented in tables following the research questions addressed in this study.

**Results and Discussion**

The purpose of this study was to identify critical factors supporting or impeding transfer of learning for learners who have participated in an online professional development program. A four-point Likert Scale was used where: 1=not critical, 2=somewhat critical, 3=critical, and, 4=extremely critical. Given the means calculated, each factor was classified as either most or least critical among CTER graduates using the midpoint of the 4-point Likert scale (2.5) as the dividing line.

*Research Question 1: Support Factors Most Critical in Facilitating Transfer of Learning*

In looking at the support factors, the following emerged as most critical: (1) availability tools (3.11); (2) opportunity to perform (3.00); (3) technological support (2.74); (4) open climate for communication (2.66); and, (5) supervisory support (2.62). The availability of tools emerged with the highest mean among the most critical support factor. The availability of tools such as computers, software, and other resources may constitute the work tools needed to facilitate transfer of learning on the job. One would expect to have their work environment possessing equipment and resources commensurate to what is found in the training environment. Evidently, this was not the case. On the other hand, supervisory support had the lowest mean among other critical support factors for this audience. Previous studies have often found the support of one's supervisors as having a critical influence if not being the single most important condition for successful transfer of learning (Huczynski & Lewis, 1980; Lim & Johnson, 2002). In view of the particular audience used for this study, it is understandable that most work autonomously in classroom situations and hence the close supervisory interaction is minimally present. However, it is no doubt that the results of this study resonate with findings from other studies in identifying a relationship between supervisor support and the transfer of learning (Brinkerhoff & Montesino, 1995; Noe & Wilk, 1993; Orpen, 1999; P. Taylor, 1992). Having an open climate for communication also emerged as a critical supporting factor for transfer of learning. According to Rainey (1983), a supportive, open climate facilitates accuracy in communication not only where leaders are able to listen, empathize, understand, handle their personal feelings, express themselves, and be accepting, but also where by identifying, developing, and utilizing the resources of each member of a group in the work environment enhances team management. Hence, training managers or leaders of work groups can create an internal environment that not only motivates individual workers to achieve organizational excellence but in the long run also helps them make quality products (Ranade & Clark, 1992). Technological support was one of the most critical support factors to the transfer of learning. Noe (2002) argues that while employees are being trained to use resources using state-of-the-art technology, they often become frustrated because comparable technology is often not available to them in their job environment. He states that the placement of systems in the work place can provide valuable information about transfer of learning problems trainees may be experiencing in the work environment such as the inability to find resources or equipment to complete a particular assignment. Means and standard deviations of support factors influencing transfer for CTER graduates are found in Table 1.

Table 1 *Means and Standard Deviations of Support Factors*

| *Support factors* | *M* | *SD* |
|---|---|---|
| Availability of tools | 3.11* | 0.796 |
| Opportunity to perform or use training | 3.00* | 0.840 |
| Technological support | 2.74* | 0.980 |
| Open climate for communication | 2.66* | 0.998 |
| Management or supervisory support | 2.62* | 0.817 |
| Continuous-learning culture | 2.46 | 0.817 |
| Pace of work flow within a work group | 2.45 | 0.938 |
| Match between CTER and organizational goals | 2.26 | 0.950 |
| Matching goals of department to training | 2.15 | 0.892 |
| Acceptance of mistakes | 2.06 | 0.933 |
| Subordinate support | 2.00 | 0.853 |
| Recognition from peers, work group or peer support | 1.79 | 0.770 |
| Reward or incentive for training | 1.79 | 0.914 |
| Availability of a mentor | 1.61 | 0.899 |
| Contract between trainer and manager to commit to transfer | 1.41 | 0.701 |

*Note*. * Support factors that emerged as most critical.

*Research Question 2: Barriers Most Critical to Transfer of Learning*

Two barriers emerged as critical to transfer of learning for CTER Online program graduates: (1) inadequacy of tools, equipment, materials, and/or resources (2.65); and (2) heavy workloads on the job (2.55). Given the dynamic school environment in which most participants of this study were found, it is explicable that these factors should emerge as major constraints to the transfer process. In his study on job/work environment factors influencing training transfer within a human service agency, Clarke (2002) identified both heavy workloads and time pressures as significant barriers to implementing any training to the work environment. Gregoire (1994) found that the lack of time and resources and daily demands of child welfare practice as major impediments to the use of training on the job. For Peters, O'Connor, and Eulberg (1985), the lack of materials, supplies, and times allowed to complete tasks were among eleven features of the work environment that constrain individuals' work performance. The presence of these situational conditions often builds feelings of frustration which in turn affect the level of motivation employees need to engage in higher performance (Peters & O'Connor, 1980). Means and standard deviations of barriers of transfer for CTER graduates are found in Table 2.

Table 2. *Means and Standard Deviations of Barriers*

| *Barriers* | *M* | *SD* |
|---|---|---|
| Inadequate tools, equipment, materials, and/or resources | 2.65* | 1.125 |
| Heavy workloads | 2.55* | 0.905 |
| Time pressures | 2.48 | 1.004 |
| Few opportunities to use skills | 2.03 | 1.058 |
| Management unwilling to provide reinforcement | 1.67 | 0.890 |
| Management does not provide feedback on performance | 1.64 | 0.742 |
| Management does not accept ideas or suggestions learned | 1.48 | 0.712 |
| Opposition from management to use of skills | 1.47 | 0.803 |
| Peers view learning experience as a waste of time. | 1.27 | 0.674 |
| Discouragement from peers | 1.26 | 0.511 |
| Negative feedback from my peers | 1.24 | 0.431 |

*Note.* * Barriers that emerged as most critical.

*Research Question 3: Relationship Between Age, Gender, Employee Position Title, and Type of Organization to Critical Work Environment Support Factors and Barriers*

In the analysis of this question, yet another dividing line was used to define the extent of the relationship between the variables. A small to no correlation was ±0 to 0.39; a small to moderate correlation, ±0.4 to 0.69; and, a moderate to high correlation, ±0.7 to 1.0. The analysis for this question was also taken a step further to identify variables that were significant at the 0.05 alpha level.

*Gender.* In view of the most critical support factors identified in the first research question, the shift in the order was observed in the relationships between these factors and gender. The management or supervisory support factor was found to have a negative correlation to gender (r = -0.263). Given that gender is a categorical variable, it was difficult to infer that the increase in a particular support factor will increase or decrease gender. Another surprising result was the opportunity to perform support factor ranking lowest when correlated with gender. This may refer to that there is a less than likely relationship across gender when it comes to opportunities to use training skills on the job. Overall, since no differentiation between male and female could be done in this analysis, one can say that there

was a small relationship found between gender and the most critical support factors. In addition, none of the relationships between gender and the support factors were deemed significant at the 0.05 level. In terms of the critical barriers influencing the transfer of learning, there was a small relationship found between the barriers and gender. A significant relationship was observed between gender and heavy workloads at the 0.05 level perhaps inferring the importance laid upon heavy loads as a barrier to the transfer of learning across gender. Although a positive relationship (0.346) was identified between gender and heavy loads, it would be interesting to find out which gender, whether male or female, experiences the heaviest workloads.

*Age.* The correlation between the support factors and age revealed the existence of a small relationship between the variables. Among the five most critical support factors identified, only the availability of tools support factor portrayed a significant relationship with age possibly inferring that the availability of tools may have been considered a critical element to transfer for the age range of 26 to 56 years examined in this study. Another significant relationship that emerged even though not considered as a critical support factor in the first research question included the acceptance of mistakes ($r = - 0.397$, $p < 0.05$). According to O'Connell (1990), while setting the tone for making new technologies work in the job environment, the supervisor has the responsibility to ensure that an environment is present where it is alright to make some mistakes in the learning process. In essence, the supervisor has the responsibility to ensure that while attempting to transfer newly learned material on the job, there should be a provision for error within this transfer environment. For both the acceptance of mistakes and availability of tools support factors that were identified as significant with age, the relationship was identified with a negative correlation. In looking at the correlation between the critical barriers with the age, again, there were small relationships found between the variables. Also, no significant relationships were found at the 0.05 level.

A slightly different approach was used to analyze the relationship between transfer of learning support factors and barriers with the position title and organization type demographic factors. For the position title, data obtained in four categories was combined to form two categories namely: teacher and non-teacher. The non-teacher category included position titles such as the administrator, technology coordinator and any others. For the organization type, since data for the organization type was first collected in five categories, these were combined to form two categories namely: school and non-school. The school category included elementary, middle, and high school environments with the non-school including the university or community college and others such as business or district level. Results for employee position title and organization type demographic factors are described below.

*Employee position title.* Small to no relationships were found between support factors and the position title. Overall findings showed that there were no significant relationships at the 0.05 alpha level observed when employee position title was correlated with critical support factors. Most of the critical support factors had a weak relationship with the position title possibly implying that there is really a negligible relationship (if any) between the variables. When the barriers impeding transfer of learning were correlated with employee position title, there were small relationships found. Again, these results confirm a weak relationship between the variables and the possibility that the two may not really have an impact on the transfer of learning. There were no significant relationships observed at the 0.05 alpha level.

*Organization type.* Small relationships were found between support factors and the organization type. There were no significant relationships observed at the 0.05 alpha level. From the results, there was a weak or even less than likely relationship between the various support factors with the organization type. In looking at the correlation results for critical barriers identified with the organization type, there was a small to moderate relationship found between time pressures and the organization type ($r = -0.421$). In addition, a closer to moderate relationship was observed between the heavy workloads and organization type ($r = -0.346$). Significant relationships were observed for both time pressures and heavy workloads with the organization type at the 0.05 alpha level.

In sum, there were weak relationships portrayed between demographic factors and the support factors and barriers. A general outlook of the third research question revealed the following: (1) for gender, the presence of heavy workloads emerged as a significant barrier to transfer of learning; (2) for age, the availability of tools was preeminent in addition to having a culture of acceptance of mistakes while transferring newly learned material to one's job; (3) for the position title, no particular relationship with the support factors and barriers emerged; and, (4) relationships emerged between organization type with time pressures and heavy workloads. The correlation results for gender, age, employee position title, and organization type with the most critical support factors and barriers can be found in Tables 3 and 4.

Table 3. *Pearson Correlation Results for Gender, Age, Position Title, and Organization Type With Support Factors*

| *Support factors* | *Gender* | *Age* | *Position title* | *Organization type* |
|---|---|---|---|---|
| Availability of tools** | 0.086 | -0.345* | -0.012 | -0.007 |
| Opportunity to perform or use training** | 0.079 | -0.156 | 0.000 | 0.164 |
| Technological support** | 0.182 | -0.161 | -0.159 | -0.137 |
| Open climate for communication** | -0.139 | -0.228 | -0.101 | -0.018 |
| Management or supervisory support** | -0.263 | -0.235 | 0.066 | 0.263 |
| Continuous-learning culture | 0.172 | -0.118 | -0.123 | 0.029 |
| Pace of work flow within a work group | -0.028 | -0.031 | -0.301 | -0.202 |
| Match between CTER and organizational goals | 0.301 | -0.178 | -0.106 | 0.069 |
| Matching goals of department to training | 0.093 | -0.308 | -0.181 | -0.014 |
| Acceptance of mistakes | -0.193 | -0.397* | -0.114 | -0.115 |
| Subordinate support | -0.248 | -0.112 | -0.077 | 0.083 |
| Recognition from peers, work group or peer support | 0.032 | -0.208 | -0.250 | -0.124 |
| Reward or incentive for training | 0.159 | -0.346 | -0.211 | -0.288 |
| Availability of a mentor | 0.148 | 0.025 | -0.153 | -0.148 |
| Contract between trainer and manager to commit to transfer | 0.030 | -0.061 | -0.198 | -0.230 |

*Note*. * Correlation is significant at the 0.05 level (2-tailed). ** Support factors that emerged as most critical.

Table 4. *Pearson Correlation Results for Gender, Age, Position Title, and Organization Type With Barriers*

| *Barriers* | *Gender* | *Age* | *Position title* | *Organization type* |
|---|---|---|---|---|
| Inadequate tools, equipment, materials, and/or resources** | -0.114 | 0.201 | -0.260 | -0.261 |
| Heavy workloads** | 0.346* | 0.345 | -0.299 | -0.346* |
| Time pressures | 0.277 | 0.280 | -0.300 | -0.421* |
| Few opportunities to use skills | 0.082 | 0.100 | -0.142 | -0.149 |
| Management unwilling to provide reinforcement | 0.108 | 0.106 | -0.078 | -0.108 |
| Management does not provide feedback on performance | 0.106 | 0.333 | -0.068 | -0.106 |
| Management does not accept ideas or suggestions learned | -0.012 | 0.155 | 0.062 | 0.012 |
| Opposition from management to use of skills | -0.069 | -0.031 | 0.114 | 0.069 |
| Peers view learning experience as a waste of time | 0.232 | -0.195 | -0.047 | -0.126 |
| Discouragement from peers | -0.122 | -0.062 | 0.045 | -0.016 |
| Negative feedback from my peers | -0.183 | -0.051 | -0.054 | -0.144 |

*Note*. * Correlation is significant at the 0.05 level (2-tailed). ** Barriers that emerged as most critical.

**Limitations of the Study**

According to Laird (2003), transfer of learning can be completely understood and predicted when entire systems of influence are examined. This study examined only one aspect of the transfer of learning process: the work environment. In so doing, it did not provide a wholesome picture of the various facets that may affect transfer for this particular study audience. Additionally, the author stopped "at the point of identifying, describing, or measuring factors that influence transfer without investigating how those factors might be effectively changed or managed" (Holton III, Chen, & Naquin, 2003) – a possible opening for future research to delve into understanding why these factors emerged as critical. Another drawback of this study is that the sample size was too small, consisted mainly of females, and highly tipped to public schooling thus limiting the applicability of this study in other contexts.

**Conclusions, Recommendations, and Implications for HRD**

Following the research questions that guided this study and the emergent findings, the following can be concluded: (a) CTER graduates had difficulty in transferring learned material from the CTER program to their jobs due to lack of appropriate tools in their work environment since findings portrayed the availability of tools as critical; (b) CTER graduates had difficulty in transferring learning due to low fidelity of the learning environment to the work environment, a notion evident from the graduates who experienced a work environment different from what they may have had while going through the CTER Online program thus portraying a dissonance between the two environments; (c) CTER Online program graduates expressed the need for more material support (tools, resources, technology) to facilitate their transfer process in addition to personal support (supervisor, communication) as seen from the rankings of various support factors and barriers examined in this study showing more resources were needed in addition to the human component towards facilitating the transfer process; (d) work environments in which CTER Online program graduates are located are dynamic in nature as was portrayed by the number of times

that barriers such as heavy workloads and time pressures emerged; and, (e) the presence of heavy workloads significantly impeded transfer for both male and female CTER graduates.

Recommendations and implications for HRD professionals derived from this study were as follows. First, CTER Program Developers in collaboration with HRD professionals can: (a) draw upon characteristics of work environments in which CTER graduates are placed in order to use such information to inform and redesign the learning environment and thus ensure higher fidelity between the two environments; and, (b) build liaison between CTER program developers and employers of CTER graduates to enhance fidelity between learning and work environments especially where use of technologies in the work environment is concerned. Secondly, for employers to enhance transferability of learned material to the work environment from an online session, they can: (a) ensure an understanding of the technological support needed by the employee in the work environment. Supervisors can work in partnership with trainers or examine training content before hand to determine tools needed on the job to enhance transfer; and, (b) work with providers of online professional development programs to ensure that the instruction (learning environment) has higher fidelity to the work environment by considering various factors that have been identified as facilitating or hindering the transfer of learning process. Finally, HRD future researchers should: (a) exercise caution towards generalization of results of this study due to small sample size; (b) examine support factors and barriers influencing the transfer with a larger pool of participants; (c) draw data from various organizational settings such as corporate, government and non-profit; and, (d) consider an integrated framework of online learning and various facets of transfer of learning.

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