

# Training design in mediating the relationship of participants' motivation, work environment, and transfer of learning

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## Abstract

**Purpose** – The purpose of this paper is to examine the relationship among training design, trainee motivation and work environment on the transfer of learning for teachers enrolled in a continuing professional education (CPE) training program and the confirmation of potential positive, predictive relationships of trainee motivation, work environment and training design to transfer of learning. This study investigated the contribution of training efficiency and relevance as measured by the training design; work environment as measured by work autonomy, work complexity and work variability; and trainee's motivation of training (learning- and job-oriented) to the transfer of knowledge and skills from the training program to their workplace. Both direct and indirect effects of mentioned components on the learning transfer were explored.

**Design/methodology/approach** – This study included 160 teachers working in high-needs schools with large numbers of English learners (ELs) Southwest USA. Teachers in this study primarily needed professional development to empower them and enhance their instructional capacity for ELs and economically challenged students. During the recruitment, participants completed a demographic information (e.g. gender, ethnicity, number of years teaching, age, educational background) survey.

**Findings** – A mediation model with training design as the mediating factor was developed and analyzed. The results revealed that training design fully mediated the relationship between trainees' work environments and the transfer of knowledge, skills and attitude acquired from the training to their workplace. Furthermore, it partially mediated the relationship between learning-oriented motivation and the transfer of learning. These findings further amplify the significance of CPE program training design and foster important considerations for future research regarding the isolation of specific training design aspects that significantly contribute to the mediation of these relationships.

**Research limitations/implications** – Considering the significance of learning transfer in developing professional knowledge and skills for target employees and trainees, confirming the mediating effects of



training design on training transfer holds critical implications for future research. Specific and purposeful attention needs to be given to the design of CPE training. Investigations into the effects of training design and successful elements such as the training platform (online, hybrid or in-person), sample size, group structure, facilitation and participant demographics are warranted.

**Practical implications** – The finding of this research provides a preliminary guide for scholar-practitioners. Results of the study confirmed the role that learning-oriented motivation, job-oriented motivation, work variability or flexibility, work complexity and training design play in transfer of learning. In practice, training professionals will be more comfortable pinpointing the factors that lead to the transfer of learning or the lack of it.

**Originality/value** – Learning transfer has been found to be imperative for target employees and trainees to develop professional knowledge, skills and attitudes. Results of this study reveal variables that promote the positive transfer of learning to the workplace.

**Keywords** Training design, Training effectiveness, Work environment, Work flexibility, Transfer of learning, Learning motivation

**Paper type** Research paper

## Introduction

For all educators to be successful in their work, learning how to learn and the need to commit to learning for lifetime is not only a sufficient condition but, a necessary condition hence the importance of continuing professional education (CPE). There is an urgent need to understand how effective CPE transfers to improved student learning and teaching practices as influenced by national reform and current research on learning (Gilbert, 2020). In recent years, there is a special attention paid to teachers' CPE. Thus, learning and development in the workplace is now an important strategy used by organizations to reskill and retool their employees to achieve the set mission and priority goals (Garavan *et al.*, 2021). In the case of the field of education, the importance of the quality of teaching practice for the overall learning of students has also raised the value of CPE especially in the USA. To ensure the success of schools' mission, which is aimed at providing meaningful and powerful learning to students, teachers must be offered high-quality learning opportunities through a well-designed, a well-structured and well facilitated CPE programs (Tannehill *et al.*, 2021). Every Student Succeeds Act (2015) emphasized an ongoing commitment to improving teacher effectiveness by using methods that strengthen school programs and meet all children's needs. Avalos (2011) in her review of the literature published between the years 2000 and 2010 explored the topic of professional development (PD) of teachers. It became evident from the review that there are different types and forms of CPE. In this study, it was recognized that teachers' CPE is a complex process that is affected by various factors. Avalos (2011) proposed that CPE is about "teachers learning, learning how to learn, and transforming their knowledge into practice for the benefit of their students' growth" (p. 10). Thus, perceptions on teachers' CPE have shifted from merely attending courses and training to a lifelong learning journey (Fraser *et al.*, 2007). Fraser *et al.* (2007) presented CPE as "an ongoing process of reflection and review that articulates with development planning that meets corporate, departmental and individual needs" (p. 156). Moreover, the learning that takes place within CPE programs is considered "a process of self-development leading to personal growth as well as development of skills and knowledge that facilitates the education of young people" (p. 156).

Numerous researchers agree on the importance of transfer of learning for the success of CPE programs (Nafukho *et al.*, 2017; Avalos, 2011; Daley and Cervero, 2016; Fraser *et al.*, 2007; Webster-Wright, 2009). Noe (2020) defines transfer of learning as "trainees effectively and continually applying what they have learned in training to their jobs" (p. 160). The topic of transfer of learning has occupied the minds of researchers in education and psychology for decades. The literature leaned toward the view that learning transfer is a dynamic

process that is governed by complexity. Transfer of learning definition has taken different shapes throughout the years (Blume *et al.*, 2010).

The previous researchers showed multiple factors affecting transfer of learning. Some of the variables that were identified in the literature include degree of mastery of the original content, time spent on learning, amount of practice and the design of the learning activity (Galoyan and Betts, 2021). Donovan and Darcy (2011) surveyed human resource development (HRD) practitioners in Ireland to determine the factors that affect transfer of learning. The study yielded factors such as training design, trainees' motivation, organizational and peers' support, etc. These factors are some of the factors that the researchers deemed relevant and important in the eyes of HRD practitioners to achieve transfer of learning. In addition, individual factors are critical for learning transfer, such as training design, which moderated the relationship of learner readiness and motivation to transfer (Dreer *et al.*, 2017).

### **Problem statement**

There is extensive research on transfer of training in the past three decades that enriched our understanding of the concept. However, the gap between practice and research when it comes to transfer of learning is still significant. Practitioners are still not able to apply the findings of research to their practice. Training providers are calling for research that will inform the design and execution phase of training initiative that would eventually lead to transfer of learning (Baldwin *et al.*, 2017). Banks *et al.* (2016) conducted a study on the science–practice gap. They found that there is a need for dialogue and collaboration between researchers and practitioners. Research has uncovered that the majority of organizational leaders are not satisfied with the results of training and development efforts pursued by their organizations (Beer *et al.*, 2016). Baldwin *et al.* (2017) call for the collaboration of researchers and practitioners in defining the pressing issues in learning transfer. This paper is an answer to that calling. The authors of this paper recognize the lack of evidence-based research on the factors that affect transfer of learning in CPE programs. The research at hand investigates the most prevalent factors in the literature that affect transfer of learning. The results of the study should help researchers, as well as practitioners, understand factors that affect transfer of learning in CPE programs and get them a step closer to designing and executing effective CPE programs.

### *Purpose of the study and research questions*

We examined the impacts of training design, trainee motivation and work environment on the transfer of learning for teachers enrolled in a CPE training program. We investigated the contribution of training efficiency and relevance as measured by the training design; work environment as measured by work autonomy, work complexity and work variability; and trainee's motivation of training (learning- and job-oriented) to the transfer of knowledge and skills from the training program to their workplace. Both direct and indirect effects of mentioned components on the training transfer were explored. The research questions addressed in this study were:

- RQ1. Is there a relationship between trainee motivation, work environment, training design and transfer of learning?
- RQ2. Is the positive, predictive relationships of trainee motivation, work environment and training design to transfer of learning confirmed?
- RQ3. Does training design mediate the effects of trainee motivations (learning- and job-oriented) and work environment (work variability, work autonomy and work complexity) on the transfer of learning occurring from the training?

## Review of literature

### *Transfer of learning*

Transfer of learning refers to the application of the knowledge, skills and attitudes gained in the training environment to the job context (Nafukho *et al.*, 2017; Baldwin and Ford, 1988; Burke and Hutchins, 2007; Macaulay and Cree, 1999). The positive transfer of training emphasizes:

- effective generalization of learned materials to the job environment; and
- maintenance of applying learned content over a period of time (Baldwin and Ford, 1988; Baldwin *et al.*, 2009; Burke and Hutchins, 2007).

Considering the significance of training transfer for target employees and trainees to develop professional knowledge and skills, extensive research has been conducted to identify key components of promoting the positive transfer of training.

Baldwin and Ford (1988) conducted one of the first literature reviews synthesizing findings of training transfer and providing a theoretical framework of its process. Specifically, training outcomes were defined as training generalization and maintenance. Three major constructs, including training design, trainee characteristics and work environment, influenced the training outcomes directly and indirectly. Nafukho *et al.* (2017) not only provided a critique of existing research findings based on the aforementioned framework but also identified research gaps for future directions. Following the conceptual model by Baldwin and Ford (1988), Burke and Hutchins (2007) provided an updated review of literature to investigate the impacts of the three primary constructs on training transfer outcomes. More specifically, Nafukho *et al.* (2017) synthesized research findings on specific components in training design (e.g. training goals, content and strategies), trainee characteristics (e.g. self-efficacy and motivation) and work environment (e.g. transfer support and climate):

- to investigate their contributions to the transfer of training; and
- to suggest future research directions.

For instance, most research identified training objectives and content were two significant training design factors. Additionally, a cross-sectional qualitative study (Iqbal and Alsheikh, 2018) examined the factors preventing or assisting the transfer of training to the workplace. The results from the interviews with program developers and faculty trainers showed that transfer of training to instructional practices is influenced by mainly three factors, including “trainee characteristics, training design features, and environmental factors” (Iqbal and Alsheikh, 2018, p. 3292). Both cognitive ability and self-efficacy were trainee characteristics strongly associated with training transfer.

In a study conducted by Dixit and Sinha (2022), the researchers were able to identify tools and techniques that promoted transfer of learning. Training design through its efficiency and effectiveness had a strong correlation with transfer of learning. In addition, the work environment in the form of organizational support had an influence on transfer of learning. Motivation was at the forefront of the factors studied by Dixit and Sinha (2022). Learning motivation had a high impact on transfer of learning.

### *Training design*

Training design was identified as one significant construct in the training transfer process. According to Chow *et al.* (2010), training design factors play essential roles in creating the

architecture of the training program. Research has been conducted to explore the direct and indirect impacts of two major training design factors on the transfer of training:

- (1) content design (Burke and Hutchins, 2007; Seeg *et al.*, 2021; Lim and Morris, 2006; Russ-Eft, 2002; Velada *et al.*, 2007; Yunus and Yasin, 2014); and
- (2) instruction design (Fauth and González-Martínez, 2021; Burke and Hutchins, 2007; Taylor *et al.*, 2005; Tonhauser and Buker, 2016; Yunus and Yasin, 2014).

Content design refers to the relevance of training content, including training perspectives, materials and practices (Burke and Hutchins, 2007). According to Lim and Morris (2006), the training content should be generally relevant to the transfer task as well as the job context. Over the past decade, an increasing amount of research has been conducted to investigate the contribution of content relevance to the training transfer process. For instance, Velada *et al.* (2007) examined the roles of training design, trainee characteristics and work environment in promoting the transfer of learning among employees in a large grocery organization. Specifically, Nafukho *et al.* (2017) defined training design as both training effectiveness and relevance. The results from hierarchical regressions demonstrated that training design was a significant predictor for the transfer of learning. Yunus and Yasin (2014) investigated critical constructs, including trainee characteristics, training design and work environment, that influence the training transfer process through face-to-face interviews. The training design construct consisted of six components, including personal capacity to transfer training, training content, opportunities of applying knowledge, transfer design, training curriculum and transfer effort performance. Qualitative findings revealed that providing training content similar to trainees' working environment was highlighted by participants. The findings indicated that relevant content was significant to promote the ability of training transfer.

Instruction design refers to the application of instructional strategies and practices during the training. Designing and providing effective training experiences were significantly associated with the training quality (Burke and Hutchins, 2007; Tonhauser and Buker, 2016). For instance, the review by Burke and Hutchins (2007) examined the impacts of training design, trainee characteristics and work environment on the transfer of learning. Nafukho *et al.* (2017) identified that, in addition to the content relevance, specific training strategies such as practice and feedback, behavioral modeling and error-based examples were strongly associated with the training transfer. An updated literature review by Tonhauser and Buker (2016) further identified effective training strategies and practices for the positive transfer of learning such as instruction of error management (Heimbeck *et al.*, 2003), real-word examples and practice-oriented tasks (Seidel, 2012). On the other hand, literature indicates that there are a number of different factors that can affect trainees' application of their learning to the workplace (Burke and Hutchins, 2007; Sitzmann and Weinhardt, 2019). Therefore, it is essential to investigate all such factors that can leverage the transfer of training to the job (Kodwani and Prashar, 2021).

Training design that links learning with individual performance provides high transfer of learning among individuals. The design and the delivery of the training proved to increase the likelihood of trainees to apply what they learned on the job (Muduli and Raval, 2018). Fauth and González-Martínez (2021) studied the effect of instruction design on transfer of learning among teachers participating in continuous online training. The use of a transfer-oriented design led to higher transfer of learning. Teachers responded positively to this type of design and were able to practice what they have learned in their classrooms.

Seeg *et al.* (2021) conducted a longitudinal study on leadership training and transfer of learning. The purpose of their study was to examine the factors that lead to transfer of

learning. The authors found a positive and significant impact of training design on learning, transfer motivation and transfer opportunity. Managers in a large public company in India were surveyed to determine the factors that affect transfer of learning in management training. The results of the study showed a significant positive impact of training design on managers applying the skills they acquired from training programs (Yaqub *et al.*, 2021).

### *Trainee's motivation*

Trainees' motivation has been considered as one of the factors that influence transfer of learning. The skills, knowledge and abilities acquired through training will not be applied to work if the motivation is not there (Gegenfurtner, 2009). Kiwanuka *et al.* (2020) in their study of transfer of learning among farmers in Uganda were able to pinpoint trainees' characteristics that contribute to the transfer of agronomical training. The study showed a significant influence of both trainees' motivation and trainees' self-efficacy on training transfer. The motivation to transfer improved the likelihood of transfer of training among the studied group. In addition, the trainees who displayed a high confidence in their ability to transfer training were able to apply the knowledge to their practice. Kodwani and Prashar (2021) highlighted the importance of voluntary enrollment in training for transfer of learning. The researchers found a significantly positive influence of voluntary enrollment in the training on the transfer of training. Moreover, the researchers confirmed that trainees with high motivation tend to transfer the learning to their practice (Kodwani and Prashar, 2021).

A trainee's motivation level is considered as one of the essential trainee-related factors that influences the process of training transfer. According to Noe (1986), a trainee's motivation refers to the level of motivation to learn in the training program and the desire of transferring acquired knowledge and skills from training. The motivation level is associated with other factors in trainee characteristics, training design and work environment (Nafukho *et al.*, 2017; Na-nan *et al.*, 2017). The findings from existing research identified:

- significant impacts of trainee's motivation on the transfer of learning; and
- the mediating effect of motivation on the relationship between other factors and the training transfer.

Quratulain *et al.* (2021) examined the effects of organizational, individual and training-related factors on the training transfer process in public organizations. They identified that training motivation was a strong predictor of training transfer, and it partially mediated the relationships of training transfer with supervisor support and self-efficacy. Furthermore, Ismail *et al.* (2015) investigated the relationship between training administration, training motivation and training transfer in a training program for employees at a military-oriented health organization. The results from the path analyses indicated that training motivation was a significant component in predicting the training transfer. Additionally, Ismail *et al.* (2015) reported the mediation effect of the training motivation on the relationship between training administration and the transfer of training.

### *Work environment*

The work environment influences the transfer of training both directly and indirectly (Govaerts *et al.*, 2018; Hawley and Barnard, 2005; Tracey and Tews, 2005). The relationship between the work environment and training transfer has been investigated with specific factors, including organizational support, supervisor support and peer support (Chiaburu, 2010; Govaerts *et al.*, 2018; Hua, 2013; Na-nan *et al.*, 2017). The findings from earlier studies

revealed a supportive work environment would promote trainee's self-efficacy, motivation and the transfer of learned knowledge and skills (Ismail *et al.*, 2015).

According to Na-nan *et al.* (2017), organizational support is offered based on organization culture, management, system and policy. Thus, a supportive organization provides employees with opportunities for PD and knowledge/skills application. Additionally, Cromwell and Kolb (2004) conducted a quantitative research study to explore the effects of work environment support factors such as organization support, supervisor support and peer support on training transfer. The findings indicated that work environment factors significantly influence the transfer of training. Organizational management was found to be a significant component in promoting training transfer. In another study, Daffron and North (2006) examined how training and work environment contributed to knowledge transfer in the corporate setting. Specifically, they explored the effects of the components of training preparation, training delivery, work environment, organizational support and peer support on the likelihood of training transfer. The results from qualitative data revealed that organizational support, combined with training preparation and transfer, was a significant component for the training transfer.

Moreover, support from supervisors was also considered a significant work environment factor for training transfer. According to Chen *et al.* (2006), supervisors and managers may provide various means of support such as accessibility, facilitating the training transfer, addressing the needs of employees, setting goals for training transfer and modeling of solving problems. Dermol and Cater (2013) proposed a model regarding the relationship between training transfer factors, supervisor support, peer support and training quality. The results from the structure equation modeling revealed that supervisor support was significantly associated with both training quality and training transfer. The findings indicated that the supervisor support was a significant component in predicting knowledge learning and application among trainees. Schindler and Burkholder (2016) conducted a mixed-design research study to explore the impact of supervisor support on the transfer of training. Four dimensions of supervisor support were investigated: mentoring, coaching, social support and task support. The findings from both quantitative and qualitative data demonstrated that all four dimensions of supervisor support facilitated the training transfer process.

Peer support was defined as building and developing the network of employees (Na-nan *et al.*, 2017). Specifically, establishing a peer network provides opportunities of discussing and sharing training knowledge and experiences. Chiaburu (2010) examined the contributions of organization support, supervisor support and peer support to the training outcomes. Nafukho *et al.* (2017) identified that, compared with organization and supervisor support, peer support might be more significant in promoting training maintenance and training transfer. The possible significance of peer support was also examined by Hua (2013), who investigated the impact of supervisory support and peer support on the transfer of learning in a Malaysian state health department. The results revealed that peer support was significantly associated with the transfer of knowledge and skills from training, while supervisor support was not strongly associated with the training transfer.

#### *Transfer of training and professional development in education*

The significance of training design, trainee characteristics and work environment in promoting training transfer has been also examined and highlighted in educational PD. Rijdt *et al.* (2013) conducted a literature review on significant variables and moderators of the training transfer. The researchers followed the conceptual models of the transfer of training by Baldwin and Ford (1988) and synthesized findings of 134 studies on staff

development in higher education. Baldwin and Ford highlighted that the training motivation and motivation to transfer were significant trainee characteristics components for the ability to transfer training. In terms of the training design construct, training relevance and training strategies were significantly associated with the transfer of training in staff development programs. As for the working environment, a supportive or positive transfer environment (e.g. peer support) contributed significantly to the training transfer. Nafukho *et al.* (2017) provided a critique of existing research on the transfer of learning in PD in higher education, but also addressed research gaps for future study.

Nafukho *et al.* (2017) examined the predictive capacity of training design, trainee's motivation and work environment for training transfer in a CPE training program for adult learners. The results from the multiple regression analyses demonstrated that training efficiency and relevance were strong components in predicting the ability to transfer knowledge and skills from the PD program. Additionally, two work environment components of working complexity and working variability were significantly associated with the training transfer profession. Moreover, trainee's motivation for training, measured as learning-oriented motivation and job-oriented motivation, was positively related to training transfer. Jackson *et al.* (2019) conducted a mixed-methods research study to explore the impact of variables of the training transfer for adult learning in a work integrated learning program. Jackson *et al.* identified significant roles of training design and work environment in promoting trainees' training transfer abilities. Nafukho *et al.* (2017) suggested that training design was significant for bridging the connection between learning and working practices with specific strategies to facilitate the transfer of knowledge and skills learned from training. With respect to the work environment, providing a supportive environment and transfer climate promoted the transfer of training.

## Method

### *Research context*

This study was part of a federal project titled *Accelerated Preparation of Leaders for Underserved Schools: Building Instructional Capacity to Impact Diverse Learners* (A-PLUS; Nafukho *et al.*, 2017) under the US Department of Education SEED Program. In the A-PLUS project, we aimed to promote diversity in the Texas educator workforce and support personalized learning environments in working and understanding the diverse needs of English learners (ELs) and economically challenged students (EC) students.

### *Participants*

This study included 200 teachers working in high-needs schools with large numbers of EL and EC students across the state of Texas. Of the 200 teachers who participated in the PD program and who were invited to complete the Transfer of Learning Questionnaire, 80% ( $n = 160$ ) responded to the questionnaire. Teachers in this study primarily needed PD to empower them and enhance their instructional capacity for EL and EC students. During the recruitment, participants completed a demographic information (e.g. gender, ethnicity, number of years teaching, age, educational background) survey. Participant background information is provided in Table 1.

### *Measures*

The Transfer of Learning Survey used in this study is designed to predict transfer of learning to the workplace among adult learners who are enrolled in a CPE training program. Exploratory factor analysis revealed a seven-factor solution of 42 items, evaluated with a sample-size of  $n = 160$  adult learners.

EJTD 47,10	Variable	<i>n</i>	(%)
<b>120</b>	<i>Gender</i>		
	Female	149	93.1
	Male	9	5.6
	Others	2	1.3
	Total	160	100
	<i>Experience teaching (in years)</i>		
	More than 10	54	33.8
	5 to less than 10	34	21.3
	3 to less than 5	29	18.1
	1 to less than 3	33	20.6
	0 to less than 1	8	5
	N/A	2	1.3
	Total	160	100
	<i>Highest degree earned</i>		
	Associate's or GED	9	5.6
	Bachelor's	77	48.1
	Master's	68	42.5
	Doctorate	3	1.9
	N/A	3	1.9
	Total	160	100

**Table 1.**  
Background  
information of  
participants

The Transfer of Learning factor significantly loaded five items adopted from the [Nafukho et al. \(2017\)](#) and [Renta-Davids et al. \(2014\)](#) studies that describe behavior change at work after the training. The items measured the trainees' direct application of newly acquired skills and knowledge or the new work responsibilities and activities that resulted from training.

Trainees' motivation to participate in training was measured through job- and learning-oriented motivation. Items (five per each factor) used to measure this factor was adopted from [Nafukho et al. \(2017\)](#) and [Daahlen and Ure's \(2009\)](#) studies that focused on work- and non-work-related motives to participate in continuing professional training and development.

Training design included 11 items adopted from [Nafukho et al. \(2017\)](#) and [Renta-Davids et al. \(2014\)](#) studies to investigate how the design of training helps determine its successful delivery as measured by training efficacy and relevance. The present research focuses on training efficiency as an indicator for training design.

The work environment has been recognized as a factor that influences the transfer of learning. A complex work environment coupled with autonomy and flexibility can inspire employees to pursue continuous professional training and development ([Nafukho et al., 2017](#)). Work autonomy (five items), work variability (four items) and work complexity (seven items) loaded independently onto three factors and were believed to be reflective of aspects of one's work environment ([Frieling, 2006](#)). [Frieling \(2006\)](#) Learning Dimension Inventory (LDI) was used in this study to determine the role of the work environment in the transfer of learning.

Each factor demonstrated adequate to good reliability (Cronbach's  $\alpha = 0.33$  to  $0.939$ ) and all items loaded significantly onto their respective factors. Seven of these factors and their related items were used as the primary measurement instruments for this study.

### Data and analysis

To investigate the research questions of this study, structural equation modeling was used as the primary statistical tool for analysis. Each variable under consideration was measured

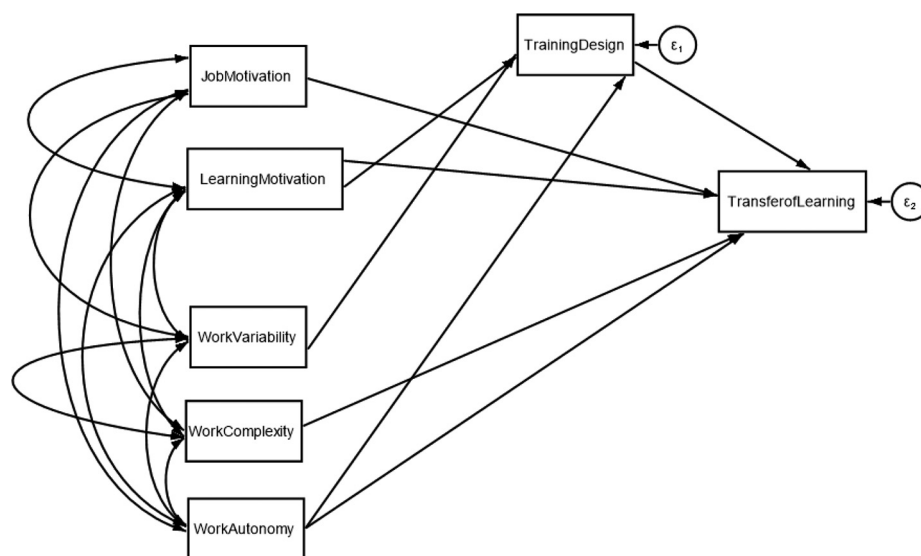
as a composite score of their related items. The corresponding measurement error of the composite variable was taken into account by the reliability-adjusted method (Hsiao *et al.*, 2018), in which the composite score was regressed on the underlying latent factor, while the error variance was fixed to the product of the observed score variance and one minus the sample reliability. This allows for a more accurate measurement of the path coefficients.

A mediation model with training design as the mediating factor was developed and used first in the investigation of the research questions. This model is presented in Figure 1. If the model did not demonstrate significant predictive paths from job-oriented motivation (Job Mot), learning-oriented motivation (Lear Mot), work variability (Wk Var), work autonomy (Wk Auto), work complexity (Wk Comp) or training design (Tr Des) to transfer of learning (T.Transfer), then individual models were evaluated with a single predictor of interest to substantiate the significance or non-significance of that predictive relationship.

Descriptive statistics, correlational studies and reliability statistics measured as Cronbach's  $\alpha$  were calculated using STATA 16.1 (STATA Corp, 2019). Mediation and path analyses were conducted using Mplus 8.4 (Muthen and Muthen, 1998-2020). The maximum likelihood robust estimator was used due to the small sample size and slight deviations in normality. The mediation model and individual models were just-identified with zero degrees of freedom. Thus, the commonly used fit statistics including, RMSEA, SRMR and CFI were expected to produce saturated global fit results with respective values of 0.00 or 1.00 (Hu and Bentler, 1999). More attention was given to the path coefficients and outcome variable  $R^2$  values, which signifies the amount of variance in the outcome variable explained by the predicting factors in the model. Paths were evaluated based upon significance at the standard  $\alpha = 0.05$  significance level.

## Results

A simple correlation matrix and descriptive statistics of the variables used in this study are provided in Table 2. Table 2 shows the levels of  $\alpha$  coefficient obtained from the test. The levels of  $\alpha$  fall in the acceptable range, which confirms the reliability of the instrument used



**Figure 1.**  
Mediation model  
investigating the  
potential mediating  
effect of training  
design using  
reliability-adjusted  
variables

**Table 2.**  
the Results of  
descriptive statistics  
and Pearson  
correlation coefficient

Variable	M	SD	A	Pearson correlation	1	2	3	4	5	6	7
1. Learning motivation	4.57	0.44	0.807	0.59	1.00						
2. Job motivation	3.17	0.80	0.71	0.67	0.19	1.00					
3. Work variability	4.34	0.73	0.939	0.60	0.29	-0.06	1.00				
4. Work complexity	3.66	0.64	0.788	0.65	0.11	0.08	0.12	1.00			
5. Work autonomy	2.98	0.56	0.338	0.67	-0.02	0.12	0.28	0.04	1.00		
6. Training design	4.06	0.48	0.87	0.53	0.42	0.04	0.48	0.22	0.15	1.00	
7. Transfer of learning	3.91	0.97	0.79	0.54	0.47	0.15	0.30	0.21	0.05	0.69	1.00

in this study. Moreover, the results did not show the presence of multicollinearity. Learning motivation ( $M = 4.57, SD = 0.44$ ) and work variability ( $M = 4.34, SD = 0.73$ ) had the highest mean among the variables. Whereas, work autonomy ( $M = 2.98, SD = 0.56$ ) and job motivation ( $M = 3.17, SD = 0.80$ ) had the lowest mean scores. The correlation matrix shows a positive strong correlation between job motivation and transfer of learning ( $r = 0.67, p < 0.05$ ). Work variability was found to have the correlation of ( $r = 0.60, p < 0.05$ ) with transfer of learning followed by work complexity ( $r = 0.65, p < 0.05$ ). Table 2 shows the levels of Pearson correlation coefficient obtained from the test. The levels of  $\alpha$  fall in the acceptable range, which confirms the reliability of the instrument used in this study. Moreover, the results did not show the presence of multicollinearity.

*Multiple mediation model*

Table 3 shows the direct effects from the following indicators to “Transfer Total.” Training design had a significant direct effect on transfer total ( $\beta = 0.58, z = 10.52, p < 0.05, 95\% CI [0.477, 0.696]$ ). Job orientation had a significant direct effect on transfer total ( $\beta = 0.120, z = 2.16, p < 0.05, 95\% CI [0.011, 0.230]$ ). Learning orientation had a significant direct effect on transfer total ( $\beta = 0.200, z = 3.23, p < 0.05, 95\% CI [0.078, 0.321]$ ).

The model enjoys a good fit. The  $\chi^2$  badness of fit was not significant ( $\chi^2(3) = 4.283, p > 0.05$ ). The ratio of  $\chi^2$  over the degree of freedom, i.e.  $4.283/3 = 1.42$  was lower than 3. These results supported the fit of the model. The RMSEA index of 0.052 was between 0.05 and 0.08 (Byrne, 2010, Bowen and Guo, 2011, Kline, 2016; Schumacker and Lomax, 2016), which supported the fit of the model. Although the lower limit of 90% confidence interval of RMSEA, i.e. 0.000 was between 0.05 to 0.08, its upper limit of 0.152 was higher than 0.08. The probability of close fit (PCLOSE) of 0.390 was 0.05, which supported the fit of the model.

The CFI and TLI indices of 0.993 and 0.974 were higher than 0.95. They supported the fit of the model; finally, the SRMR index of 0.028 was lower than 0.05. To summarize the results, it can be claimed that except for the upper limit of the 90% confidence interval of RMSEA, all other indices supported the fit of the model. The squared multiple correlations for each endogenous variable showed that the model could explain 53% of the variance in transfer of learning. The full model results investigating the mediation effect of training design are provided in Figure 2.

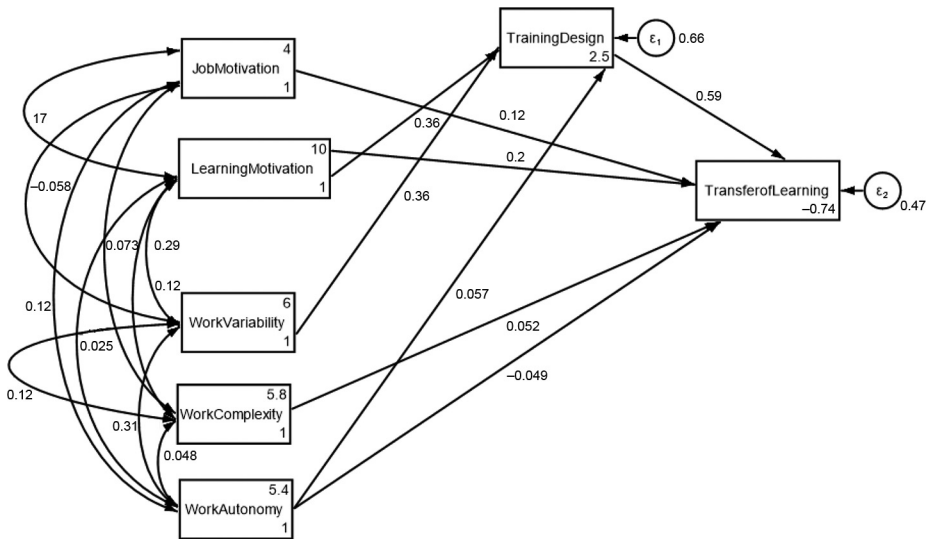
To investigate the study’s primary research questions, a mediation model was first analyzed. We were able to determine the significant paths in the model.

As expected, the model was just-identified yielding saturated global fit statistics. The transfer of learning latent factor yielded a significant  $R^2$  value of 0.754 ( $p < 0.001$ ). Thus, 75.4% of the variance of the transfer of learning factor was explained by the predictive factors in the model. As noted in the model, both learning motivation and training design

Dependent variables	Independent variables	B	SE	z	p	95% CI	R <sup>2</sup>
Transfer of learning	Training design	0.59	0.06	10.52	<0.001	[0.478, 0.697]	0.53
	Job motivation	0.12	0.06	2.16	0.031	[0.011, 0.230]	
	Learning motivation	0.20	0.06	3.23	<0.01	[0.079, 0.322]	
	Work complexity	0.05	0.06	0.93	0.352	[-0.058, 0.160]	
	Work autonomy	-0.05	0.07	-0.87	0.383	[-0.158, 0.061]	
Training design	Learning motivation	0.36	0.06	5.53	<0.001	[0.230, 0.482]	0.35
	Work variability	0.36	0.07	5.31	<0.001	[0.227, 0.492]	
	Work autonomy	0.06	0.07	0.84	0.400	[-0.076, 0.190]	
Overall							0.42

**Table 3.**  
Standardized regression model estimates

**Figure 2.** Standardized full-model results investigating the mediation effect of training design



were positively and significantly related to transfer of learning with standardized path coefficients of 0.22 ( $p = 0.017$ ) and 0.77 ( $p < 0.001$ ), respectively. Job-oriented motivation, work variability and work complexity were positively, but not significantly, associated with transfer of learning. Work complexity did not have any significant direct effect to transfer total ( $\beta = -0.048, z = -0.87, p > 0.05, 95\% \text{ CI} [-0.158, 0.060]$ ). Work autonomy did not have any significant direct effect to transfer total ( $\beta = -0.048, z = -0.87, p > 0.05, 95\% \text{ CI} [-0.158, 0.060]$ ).

These are the direct effects from observed variables to training efficiency. Learning orientation had a significant direct effect on training design ( $\beta = 0.35, z = 5.53, p < 0.05, 95\% \text{ CI} [0.229, 0.481]$ ). Work variability had a significant direct effect on training design ( $\beta = 0.359, z = 5.31, p < 0.05, 95\% \text{ CI} [0.226, 0.492]$ ). Work autonomy did not have any significant direct effect on training efficiency ( $\beta = 0.056, z = 0.84, p > 0.05, 95\% \text{ CI} [-0.075, 0.189]$ ).

Training efficiency had a significant direct effect on transfer total ( $\beta = 0.704, z = 8.41, p < 0.05, 95\% \text{ CI} [0.540, 0.868]$ ). As displayed in Table 4, the total standardized indirect

**Table 4.** Bias-corrected bootstrapping indirect effects

Indirect effects	Independent variables	Observed coefficient	Bootstrap SE	z	p	95% CI
Training transfer	Training design	0	(no path)			
	Job motivation	0	(no path)			
	Learning motivation	0.27	0.06	3.97	0.13	0.40
	Work complexity	0.16	0.04	3.64	0.07	0.25
	Work autonomy	0	(no path)			
Training design	Learning motivation	0.034	0.04	0.73	-0.05	0.12
	Work variability	0	(no path)			
	Work autonomy	0	(no path)			

effect from learning motivation to transfer of learning through training design was 0.27 ( $p < 0.001$ ). Thus, training design partially mediated the effect of learning motivation on transfer of learning. Furthermore, the total standardized indirect effect from work variability to transfer of learning through training design was 0.31 ( $p < 0.001$ ). As work variability did not directly and significantly predict transfer of learning in this model ( $p = 0.141$ ), training design fully mediated the relationship between work variability and transfer of learning. Finally, the total standardized indirect effect from work complexity to transfer of learning through training design was 0.12 ( $p = 0.095$ ). This was a marginally significant result ( $p < 0.1$ ). As work complexity did not significantly predict transfer of learning in the mediation model, training design fully mediated the relationship between these factors. As job-oriented motivation, work variability and work complexity did not significantly predict transfer of learning, each of these was investigated individually to confirm the significance or non-significance of these relationships, noting that their path coefficients could have been suppressed by other relationships in the mediation model.

## Discussion

The results of the study were able to answer our *RQ1*. We were able to determine that there is a relationship between trainee motivation, work environment, training design and transfer of learning. The findings are in line with the previous studies that explored these factors in relation to transfer of learning. In the case of CPE, in accordance with results of this study as well as the literature, increasing employees' motivation to participate in such program has high potential to improve transfer of learning. Moreover, creating and fostering a work environment that favors autonomy and flexibility with the adequate amount of complexity can facilitate the transfer of learning process. Training design proved to have significant role in the transfer of learning process. Careful and thorough considerations must be given to this factor in CPE programs.

From the investigation into *RQ2*, the results of the prior study by [Nafukho et al. \(2017\)](#) were confirmed regarding the positive predictive relationship between learning-oriented motivation, job-oriented motivation, work variability, work complexity and training design with transfer or learning. However, when these variables were analyzed under the scope of a mediation model, these relationships were interestingly altered.

The findings from the investigation of *RQ3* revealed only learning-oriented motivation and training design significantly predicted transfer of learning, as seen from the mediation model in [Figure 2](#). Though each predictive variable used in the analysis showed a positive, significant relationship to transfer of training when examined under individual models, these relationships were seemingly suppressed in the larger mediation model. This is potentially caused by the strength of the training design to transfer of learning relationship that yielded a high standardized path coefficient of 0.77. This is a noteworthy finding for investigators and further enhances the importance of training design in CPE programs.

Furthermore, the results gave reason to conclude that training design has the potential to fully mediate the relationship between work environment (as measured by work variability and work complexity) and transfer of learning. Though independently, both work variability and work complexity showed positive, significant relationships with transfer of learning, neither of these factors accounted for a significant amount of the outcome factor's variance. Indeed, when combined with other factors in the larger mediation model, both of these predictive relationships were non-significant. However, a significant indirect effect of training design from work variability to transfer of learning and partially significant indirect effect from work complexity to transfer of learning was revealed. Thus, the relationship between the trainee's work variability and work complexity, with their transfer

of learning of training-acquired knowledge and skills to their workplace, can be fully mediated by the training design. Thus, training design is an essential component of these relationships.

Training design also partially mediated the relationship between the trainee's learning-oriented motivation for attending training and their transfer of learning from the training to their workplace. Thus, the training design has the potential to mitigate some of the effects of trainee's motivation for attending the training on their actual transfer of knowledge and skills acquired in the training to their workplace.

#### *Implications for future research*

Considering the significance of learning transfer in developing professional knowledge and skills for teachers teaching in a complex and an ever-changing learning environment, confirming the mediating effects of training design on training transfer holds critical implications for future research. Specific and purposeful attention needs to be given to the design of CPE programs. Investigations into the effects of training design elements such as the training platform (online, hybrid or in-person), sample size, group structure and participant demographics are warranted. This will allow scholars to continue enhancing the research base regarding specific aspects of training design that mediate relationships between trainee motivation and workplace environment to their transfer of learning from the training to their workplace. The current study provides a deeper understanding of the factors that influence transfer of learning among educators who participated in this study. The study identified the factors that significantly influence transfer of learning and the factors that were insignificant. We recommend that future studies focus on each factor separately in and in-depth investigation on how and why they affect transfer of learning. The results of this study and similar studies conducted on transfer of learning should provide researchers and practitioners with the appropriate input for theory development to assist in easing the complexity of the process of transfer of learning among CPE programs.

As research focusing on transfer of learning among teachers participating in CPE intervention programs advances, there is an urgent need to demonstrate that CPE programs that are successful in professions such as accounting, medicine and law can also work in the teaching profession. In addition to conducting correlation studies of this nature is the beginning, and more additional questions on the importance of CPE need to be raised and answered. There is a compelling need to conduct randomized controlled studies with the treatment and control groups to determine the effect of CPE intervention programs on transfer of learning to the workplace. There is also need to use mixed-methods research studies aimed at determining the impact of CPE programs, especially for teachers. For instance, qualitative research approaches need to be used together with quantitative research approaches. Gilbert (2020) highlighted the increasing interest in CPE intervention programs for teacher in- and post-service training programs. This is of great importance to HRD and OD researchers and practitioners interested in examining the internal and external efficiency of the complex education industry.

#### **Implications for practice**

In addressing our research questions, the practical implications of the results had been given a thorough consideration. We share Blume *et al.*'s (2010) point of view on the need for providing training professionals with the necessary evidence to apply the results of the study to their practice. The finding of this research provides a preliminary guide for practitioners.

This study was able to confirm the role that learning-oriented motivation, job-oriented motivation, work variability, work complexity and training design play in transfer of learning. In practice, training professionals will be more comfortable pinpointing the factors that lead to the transfer of learning or the lack of it. Our review of the literature showed a large number of factors that affect transfer of learning. This finding will limit the confusion of practitioners. The study at hand was also able to test the significance of the effect of each of the presented factors on transfer of learning. We were able to determine that learning-oriented motivation and training design are the variables that had a significant effect. Furthermore, training design proved to be essential. These findings will inform the training professionals on the area of focus. Training design is the most important factor that practitioners can focus on to improve transfer of learning.

All in all, this study provides a better understanding for CPE training professionals of the factors that lead to a successful transfer of learning. The scarcity of resources limits the practitioners' choices in CPE programs. Therefore, we suggest the importance of allocating their resources to training design. This study can be used in conjunction with other research to improve transfer of learning in CPE programs in particular and other types of training in general.

### Study limitations

This study is limited in its generalizability. With 93% of participants being female, this study lacks generalizability to the male population. Additionally, these findings are only applicable to educators and not to the general business/industry environment. Future research endeavors need to validate these findings for male educators and investigate any potential group differences in the mediating effect of training design to transfer of learning. Another limitation of this study is the use of quantitative methods to analyze the data. Using a qualitative approach would provide us with a more in-depth look into the factors studied. Collecting data through interviews will improve the accuracy of our research results.

### Conclusion

The purpose of this study was to examine the impacts of training design, trainee motivation and work environment on the transfer of learning for teachers working in high-needs schools who enrolled in a CPE training program. The findings from this study further amplify the gravity of training design within CPE training programs. Effective training design holds extreme potential for mitigating the effects of trainees' motivation and work environment to their transfer of learning from the training to their workplace. Training design as measured by training relevance and training efficiency confirms the critical role of the trainer as a designer and facilitator of the training. Thus, it is advisable that researchers, scholars and educational practitioners thoughtfully design their training with specific purposes and learning outcome targets. This also calls for trainers themselves to continuously invest in their own learning and engage in learning for a lifetime.

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