

# Professional development initiatives in higher education: Empirical insights into teacher's autonomy support and motivation to transfer

Christian Jaramillo Baquerizo

Supervisor: Prof. Dr. Martin Valcke

Co-supervisor: Prof. Dr. Ruben Vanderlinde

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Professionele ontwikkelingsinitiatieven in het hoger onderwijs: Empirische inzichten over autonomieondersteuning en motivatie van lesgevers

## **Doctoral Advisory Committee**

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Prof. Dr. Katrien Struyven

Educational Science Department, Free University of Brussels

Prof. Dr. Wil Meeus

Antwerp School of Education, University of Antwerp

### **Department of Educational Studies, Ghent University, Belgium:**

Prof. Dr. Martin Valcke

Prof. Dr. Ruben Vanderlinde

Prof. Dr. Tamara Schellens



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# CHAPTER 1

## General Introduction

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This chapter is based on: Jaramillo-Baquerizo, C. (2018) Modelos de desarrollo profesional del docente universitario. *Enfoques y perspectivas del pensamiento pedagógico latinoamericano*. (Under review).



## Chapter 1

### General introduction

#### Abstract

This chapter offers to the reader an introduction to the dissertation's main research problem. It begins by introducing the main concepts studied in this dissertation, namely professional development initiatives (PDI), need satisfaction, and motivation to transfer. Besides presenting these concepts, it also formulates the main problem to be studied: the limited understanding on how to motivate university teachers to transfer their learning to the workplace. The chapter then focuses on the conceptual framework by reviewing the literature on the 'transfer problem' in the context of PDI, that is, the lack of application of the knowledge, attitudes, and skills learned during a PDI to the workplace. In this line, the transfer literature identifies the main variables focusing on the main actor of transfer: the university teacher. Then, the theoretical framework applied in this dissertation is described by reviewing the main elements present in Self-Determination Theory. This psychological macro-theory of motivation provides a framework to analyse university teachers' desire to apply their learning to a new context. That is, it allows to study the kind of motivation to transfer a university teacher may have during PDI. Next, the research challenges pertinent to the professionalization of university teachers in view of transfer are described, as a way to ground the research objectives of this dissertation. Consequently, to meet the research objectives established in this dissertation, the overall research design is elaborated followed by the structure of the dissertation and its relevance.

## Introduction

Given the increasing evidence indicating the importance of the teacher's role in student achievement (Hattie, 2009), professional development initiatives (PDI) are designed and implemented to strengthen teachers' abilities, attitudes and skills in view of improving the quality of education (Merchie, Tuytens, Devos, & Vanderlinde, 2016). Within the field of study of professional development, one of the research areas that has attracted the interest of several academics is the concept of 'transfer of learning'. For decades this concept has been studied, first appearing in the literature under the term of 'transfer of practice' in the work of Woodworth and Thorndike (1901). In this study, the concept of transfer of learning by Baldwin and Ford (1988) is used, and it is defined as the permanent application of the knowledge and skills acquired – during training – to the workplace.

The lack of transfer, sometimes referred to as 'the transfer problem' (Grossman & Salas, 2011), is the lack of application of the knowledge and skills acquired in training to the workplace. The lack of transfer is often attributed to the application of a poor PDI model negatively affecting its outcomes (Agyei & Voogt, 2014). Although 'transfer' is an expected outcome and measure of PDI success, it does not always occur (Desimone, 2009; Gravani, 2007). Some authors present controversial figures suggesting that only 10% of learning transfers to the workplace (Fitzpatrick, 2001; Kupritz, 2002). In fact, the lack of transfer raises major concerns such as restricting the possibility to be up to date with the latest advances of today's society (Grossman & Salas, 2011). Furthermore, the design and implementation of PDI requires an innumerable human and material resources. For this, researchers seek ways to improve its outcomes by, for example, identifying the main influencing factors of transfer (Botma, Van Rensburg, Coetzee, & Heyns, 2015; Grossman & Salas, 2011). Due to the vast number of variables, researchers (see the review of De Rijdt, Stes, van der Vleuten, & Dochy, 2013) group these influencing factors into three main clusters: characteristics of the learner (e.g., cognitive ability, motivation to learn, motivation to transfer, self-efficacy), characteristics related to the design of PDI (e.g., needs analysis, content relevance, instructional strategies), and characteristics linked to the work environment (e.g., supervisory support, transfer climate, strategic link). The way that these variables simultaneously influence the transfer process, makes it a complex research area of study. To limit the scope, the present dissertation focuses on an specific variable: 'motivation

to transfer', a key characteristic of the learner and an influential predictor of transfer of learning (Blume, Ford, Baldwin, & Huang, 2010; Segers & Gegenfurtner, 2013).

Research implementing motivational theories suggest that to improve transfer of learning, teachers need to feel motivated to implement changes and to apply their learning after attending a PDI (Aelterman, Vansteenkiste, Van Keer, & Haerens, 2016). In other words, they need to fully internalize and gain ownership over the change, a process that is stimulated by the experience of need satisfaction during PDI (Tessier, Sarrazin, & Ntoumanis, 2010). However, little research has been done in the context of higher education to understand how to motivate university teachers to transfer their learning to a new context. As a response to this need, the present dissertation studies a) the current PDI approach of Ecuadorian universities to help map their critical features of design and implementation, b) the way need satisfaction predicts motivation to transfer in university teachers; and c) the influence of a need-supportive PDI on university teachers' motivation to transfer (see Figure 1). These research efforts aim at furthering the understanding of the design process of PDI to foster transfer of learning in the context of university education.

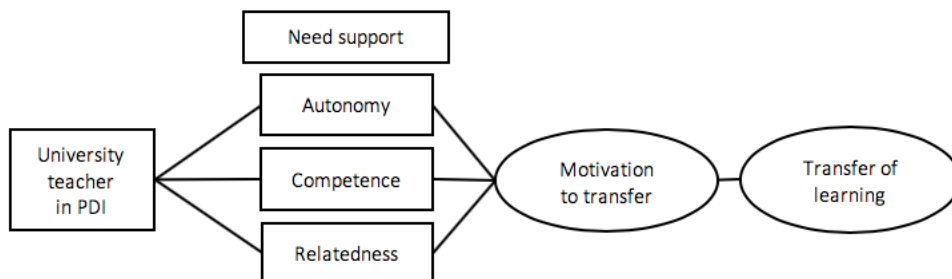


Figure 1. Theoretical model underlying the research design of studies in the dissertation.

## Conceptual and Theoretical framework

### Professional development initiatives

Teacher professional development in higher education provides a way to keep up with the rapidly increasing body of knowledge providing a means to enrich the knowledge and skills for the improvement of the quality of education (Nicoll & Harrison, 2003). Within this purpose, universities set up professional development initiatives (PDI) for their teachers, which is the focus of the present dissertation. In this dissertation, professional development initiatives are defined as the activities formally organized by an institution of higher education directed to achieve positive outcomes in knowledge and skills of university teachers, to improve their teaching and related way of thinking; ultimately to improve student learning (Merchie et al., 2016). Though there is plenty of research on the innovation in higher education, research on the design and impact of PDI on university teachers remains scarce (Stes, Coertjens, & van Petegem, 2010; Stewart, 2014). This is in sharp contrast with research focusing on primary/secondary school teachers or principals (e.g. Coldwell, 2017; Early, Maxwell, Ponder, & Pan, 2017; Gibbs & Coffey, 2004; Markussen-Brown et al., 2017; Postareff, Lindblom-Ylänne, & Nevgi, 2007; Stewart, 2014; Vangrieken, Meredith, Packer, & Kyndt, 2017).

The literature presents different PDI models reflecting a variety of approaches. For example, the review of Kennedy (2005) enlists the most common PDI models applied in the educational context. To illustrate, Table 1 presents these models enriched with perspectives of other authors (Dall’Alba & Sandberg, 2006; Dede, 2006; Dede, Jass Ketelhut, Whitehouse, Breit, & McCloskey, 2008; Fraser, Kennedy, Reid, & Mckinney, 2007). These models are enlisted together with their key characteristics, strengths and weaknesses. As Table 1 shows, PDI models contain various features. For example, the ‘Cascade Model’ may prove to be a valid opportunity for university teachers to establish relationships fostering mutual support and peer assessment, elements considered important in professional learning (Mattheos, Schoonheim-Klein, Walmsley, & Chapple, 2010) and in transfer of learning (Massenberg, Spurk, & Kauffeld, 2015).



Table 1. Models of professional development initiatives based on the review by Kennedy (2005)

Name	Characteristics	Strengths	Weaknesses
<b>Training</b>	Improving skills of teachers Given by an expert Designed by centralized units Standardizing teachers' knowledge and skills	Effective in delivering new content High control of stakeholders	Low active participation Low connection with real world
<b>Award-bearing</b>	Validated by an external institution Emphasis on quality assurance Focus on practicing new knowledge in the classroom	Nexus with institutions of higher learning Classroom practice Quality assurance	Academic and intellectual autonomy threatened by imposition of ideas Intellectualism vs professionalism
<b>Deficit</b>	Designed to address specific needs of faculty Performance oriented to raise standards	Aims at improving specific deficiencies	Unclear definition of competent performance Evaluation of results in the hands of authorities Lack of collective responsibility for deficiencies
<b>Cascade</b>	Individuals attending a PDI and transmitting the content to their colleagues	Optimal when limited resources Effective for transmitting knowledge and skills	Mainly benefits the ones attending PDI Lack of transmission of values learned in PDI
<b>Standards-based</b>	Focused on meeting standards that strengthens teacher's performance and its impact on student learning	Improves teacher competence Fulfilment of standards may allow personal and institutional growth Standardization facilitates communication with other institutions	Lack of collaborative learning among teachers Does not see the teacher beyond its performance Standards put pressure on teacher's autonomy
<b>Coaching/mentoring</b>	Personal and individual treatment with teachers Involvement of skills and counselling Based on interpersonal relationships	Strong emphasis on collaboration Can take place on-site Can support a transmission style or a transformative style PDI	Hierarchical differences can hinder individual autonomy Focus on confidentiality rather than on accountability Individual interpersonal communication is key for success
<b>Community of practice</b>	Involves more than two teachers not relying on confidentiality Mutual engagement Call for constant change Developing individual style Based on social theory of learning	Learning occurs through community interaction Individual and collective accountability Capacity for transformative practice	Learning could be passive, hiding in a group
<b>Action research</b>	Working in communities of practice is preferred but not mandatory	Relevant to the interests of individual teachers Requires teachers' active involvement Promotes individual autonomy	Successful in a decentralized educational system
<b>Transformative</b>	Eclectic model supporting transformative initiatives	Valuable alternative to the models presented before	Lack of research-based evidence of its effectiveness

In the same way, the 'Deficit' model could tackle specific areas in need of improvement. The question then arises: whose needs should be prioritized in the design of PDI? It could be argued

that the starting point for any PDI should be the students' needs. However, the teachers' needs are essential for the role they play in student learning (Hattie, 2009). Additionally, institutions also have goals that need to be achieved, for example, in view of accreditation procedures. Although all the actors involved in PDI are essential, this dissertation focuses on the main actors of transfer, that is, the university teachers, for they decide whether or not to apply the learning they acquired to the workplace. Hence, the call to design PDI centred on the teacher to foster the application of learning (Cho & Rathbun, 2013).

Nonetheless, studies show the prevalence of a 'vertical' approach in the design and implementation process of PDI, which is mainly based on the transmission of information by an expert (De Rijdt, Dochy, Bamelis, & van der Vleuten, 2016; Kennedy, 2005a). This 'vertical model' consists of PDI designed by authorities with little involvement of participants, aimed mostly at fulfilling institutional requirements (De Rijdt et al., 2016). This model faces criticism due to its low impact on teaching practices (transfer of learning), as well as, a lack of congruence with the needs of teachers (Sandholtz, 2002).

An alternative to the vertical model of design and implementation of PDI is a 'horizontal' model that places the learner at the centre. Just as student-centred learning has proven to be beneficial (see Baeten, Dochy, & Struyven, 2013; Brush & Saye, 2000; Maclellan, 2008), PDI design could adopt the same premise. In the context of PDI it would mean to design and implement PDI congruent to the professional needs of the university teacher and benefit the institution as a whole (Meeus, Cools, & Placklé, 2018). Important attempts to design and implement teacher-centred PDI (teacher-as-learner) have been suggested. For example, as presented in Table 1, the model of 'Action Research' and the 'Transformative' model are clear attempts to focus on the needs of the teachers requiring their active involvement. Other authors, like Evans (2014) places the teacher at the centre of PDI by considering the various dimensions of teacher change that occur during training, i.e., intellectual, attitudinal, and behavioural. In the same line, Cho and Rathbun (2013) propose the implementation of problem-based learning through online environments to meet the needs of the learner and place the teacher at the centre. Notwithstanding the various efforts aiming at placing the teacher at the centre of PDI, a prevalent model perceived by the teachers themselves is the vertical model

designed by institutional authorities (De Rijdt et al., 2016). In other words, there is still a need to develop and implement PDI that are need-supportive and meet the requirements of the university teacher in order to foster the application of learning (Aelterman et al., 2013). This is particularly important in view of transfer, where institutional support has been found to be essential in the outcomes of continuing training (Aelterman, Engels, Van Petegem, & Pierre Verhaeghe, 2007; Govaerts & Dochy, 2014). Finally, to improve transfer, it seems appropriate to design PDI centred on the learner. As Gegenfurtner and colleagues (2009) point out, it is the learner – in this case the university teacher – who ultimately decides to apply the learning to a new context.

### Transfer of learning

Transfer of learning is a term used to define the successful application of new learning acquired in a PDI to a new context (Gegenfurtner, 2011). Due to the significant human and material resources allocated to the design and implementation of PDI, various disciplines, such as industrial psychology, have undertaken the task to further understand how to improve transfer (Botma et al., 2015; Burke & Hutchins, 2007). Review studies (see Birman, Desimone, Porter, Garet, & Yoon, 2000; Loucks-Horsley, S., Stiles, K. E. & Mundry, 2010) point at critical characteristics affecting reported or observed implementation of what was learned in the classroom or in school practice – these characteristics will be presented in detail later in this chapter. This dissertation argues that although these studies provide valuable insights, more research is needed about the role these influencing variables play – in the present case in university teachers – and how they influence actual transfer of learning (Garet, Porter, Desimone, Birman, & Yoon, 2001). For example, meta-analyses about ‘what works in education’ consistently point at variables such as engagement, self-concept and motivation as critical in improving educational outcomes (Hattie, 2009).

Given the lack of formal pedagogical training of university teachers and the constant pressure to improve the quality of education, the need for continuing education through PDI is eminent (Drew & Klopper, 2014; Nicoll & Harrison, 2003). The application of new knowledge and skills acquired in a PDI to the workplace is highly expected after university teachers have participated in a PDI (Fernández Díaz, Carballo Santaolalla, & Galán González, 2010; Holton, Bates, & Ruona,

2000). For this, the lack of transfer, i.e., the gap between what has been learned and its actual implementation in the workplace is an important area of research. Various studies (see Burke & Hutchins, 2007; De Rijdt et al., 2013; Ford & Kozlowski, 1997) indicate that three clusters of variables influence the transfer of learning to the workplace: characteristics of the PDI intervention design, the characteristics of the work environment, and the characteristics of the learner, which in this context, is a university teacher. Each cluster of influential variables is now discussed in detail.

#### Influencing factors related to the design of the PDI intervention

This section illustrates the variety of influencing factors related to the design of PDI. The literature reports a vast number of actual PDI that have been successfully implemented. Discussing some of these PDI frameworks helps to comprehend its complexity and areas of improvement. This discussion is presented in light of the factors related to the PDI that directly influence transfer of learning.

The literature reports numerous PDI frameworks providing important insight into how to design and implement PDI. These PDI contain important characteristics ranging from various practical and theoretical standpoints. These frameworks – although successful and promising – contain areas of improvement. For example, the study of Merchie and colleagues (2016) contributes important elements to evaluate PDI and map its effects. Their contribution to the literature is worth mentioning. Based on Desimone's (2009) model, they extend the five-feature model of professional development to a nine-feature model, adding other essential evaluative features: teacher quality, teacher instruction, learning outcomes, contextual factors, and personal characteristics. These evaluative features focus mainly on: a) features related to the intervention and b) features related to the trainer. Subsequently, the features related to the intervention are subdivided into: a) 'core features', encompassing: content focus, pedagogical knowledge, coherent and evidence-based, and ownership; and b) 'structural features' which include: duration, collective or collaborative participation, school or site based, and active learning (Merchie et al., 2016). They argue that to improve PDI outcomes it is important to consider its features and design characteristics for they influence the actual design and

implementation. The study of Merchie and colleagues (2016) was based on a systematic narrative synthesis, thus evidencing the need to constantly evaluate existing PDI models in light of current evidence suggested by empirical studies. In this line, to improve the design and implementation of PDI, the design characteristics of the PDI intervention need the constant attention of researchers. By design characteristics is meant the constitutive elements that make up a PDI including their focus, strategies, theoretical standpoint, and ultimate aim. The study of actual PDI is recommended, for it opens up research avenues to further the understanding of professional learning (Dall’Alba & Sandberg, 2006; Guay, Valois, Falardeau, & Lessard, 2016). Nonetheless, the variety of actual PDI is ample. To illustrate the variety of initiatives and their characteristics, Table 2 is now presented.

Table 2. Example of PDI design frameworks and their characteristics

PDP Framework	Characteristics
Professional Development Schools (Holmes Group, Inc., 1990)	Set up a mentoring system Teaching and learning for understanding Establish a learning community Guarantee participation of teachers, teacher educators, and administrators
Japanese peer-based professional development (Shimahara, 1998)	Make training socially contextualized Develop peer commitment Motivate individual and collective learning
Guskey’s model (1999)	Examine reactions of participants, check participants’ learning, provide organizational support for participants, and guarantee implementation of new learning.
Practice-Based Professional Development model (Loewenberg, Ball & Cohen, 1999)	Link PDI to teachers’ practices.
Professional Development Design Process (Rhoton & Stiles, 2002)	Give continuous support Provide year-long training Guarantee teacher involvement in PDI changes
Kennedy’s Framework (Bressmann, 2004)	PDI focus is on development of knowledge, procedures and propositional knowledge Foster collective and individual development Support personal autonomy Pursue transmission or transformative practices
Professional Development Design Framework (Loucks-Horsley, S., Stiles, K. E. & Mundry, 2010)	Start the design from clear goals Build-in continuous reflection Apply constant adjustments Build on teacher needs
Bubb and Early (2010)	Consider teacher’s experience in a PDI. Focus on teachers’ needs
Design framework for building online teacher professional development communities for pre-service and in-service teachers (Liu, 2012)	Consider factors: Learning goals, communication tools, participant structures, and their responsibilities Consider contextual factors: culture, politics, and economics

Each PDI presented above shares a general purpose, which is to improve the learning process of participants. However, each one contains a specific focus. For example, the Professional Development Design Framework of Loucks-Horsley, S., Stiles, & Mundry (2010) suggests that PDI should begin by establishing clear goals. They also encourage reflection and flexibility during the implementation of PDI. Thus, emphasizing that PDI should be based on the needs of participants.

As Table 2 indicates, the variety of design frameworks present in the literature suggests that no single model is applicable to every context and setting. On the contrary, it seems that a design framework for PDI needs to be contextualized and needs to respond to the needs of the participants for they are located in a particular context (Leibowitz, Bozalek, van Schalkwyk, & Winberg, 2015). This rationale implies that – in view of improving PDI – together with comprehensive frameworks of analysis, more studies are needed to understand, for example, the practical perceptions of university teachers' regarding their PDI experience, that is, how they perceive and conceptualize their own process of professionalization (Avidov-Ungar, 2016).

Although the PDI presented in Table 2 provide clear design guidelines they do not provide specific strategies on how to complete the cycle by fostering transfer of learning to the workplace. In the context of transfer of learning, characteristics of the PDI design intervention also play a crucial role. Evidence shows how PDI elements foster the application of learning in the workplace. For example, PDI that meet the needs of participants are highly valued (Chitpin, 2011; Shernoff, Sinha, Bressler, & Ginsburg, 2017). In the same way, clear learning objectives presented throughout the PDI fosters participants' engagement in learning and in the application of learning to a new context (Archambault, Wetzel, Foulger, & Williams, 2010). The nature of the intervention has also been found to be an influencing factor, that is, whether the PDI was offered in a traditional form such as a workshop or seminar, or in an alternative form such as through individual consultation or peer coaching, or as a mixed of both, or as a traditional PDI workshop followed by individualized support (Stes et al., 2010). Since PDI design characteristics play an important role in the transfer process, PDI research should take these characteristics into account. The present dissertation contributes to the latter by focusing on the perception of university teachers regarding their need satisfaction while participating in

PDI, as a way to identify predictors that may boost transfer. This is an important area of research, lacking in the current literature (Chiaburu & Marinova, 2005; Gegenfurtner, Festner, Gallenberger, Lehtinen, & Gruber, 2009; Kontoghiorghes, 2002).

#### Influencing factors related to the work environment

The cluster of variables defined as 'work environment' encompasses the influential factors directly linked to the professional setting where the university teacher is expected to apply the learning acquired in PDI (Blume et al., 2010). In view of transfer, the consideration given to these variables is essential, for they directly relate to the setting where the application of learning takes place. Some of the most common influencing variables reported in the literature are those related to the social support of the learner, namely peer support and supervisor support (Massenberg et al., 2015). In the context of higher education, peer support refers to the influence exercised by colleagues during the transfer process. Supervisor support in higher education, signifies specially the influence of university authorities such as deans or department heads. In this line, the work environment is reported to influence not only professional learning (Berg & Chyung, 2008) but also the transfer of learning to the workplace. For example, peer support has been found to influence pre-training motivation and skill transfer (Chiaburu & Marinova, 2005). In the same way, opportunity to perform and opportunity to apply their learning are also influential factors (Grossman & Salas, 2011). In general, the organizational culture is a key influential factor in the implementation of innovation in educational settings (Zhu & Engels, 2013). Organizational culture refers to the values, beliefs, and ideologies shared by those who belong to an institution (Zhu & Engels, 2013). That is, the individuals who surround the university teachers during the crucial process of transferring the new learning to a new context.

Support that takes place through the proper accompaniment of supervisors and peers has been found to benefit transfer of learning (Bhatti, Kaur, & Battour, 2013). In the same way, institutional support has been found to foster transfer of learning in terms of facilitating participants with the necessary resources and allocating time to engage in PDI-related activities, and appropriate remuneration and recognition (Brand, 1997). Furthermore, research

suggests that performance expectations influence participants' motivation to transfer before attending a PDI (Massenberg, Schulte, & Kauffeld, 2017). In the same line, peer support has been found to be linked to their motivation to transfer after attending a PDI (Massenberg et al., 2017, 2015). Additionally, external factors such as working in a context of school reform and career support has been found to influence teachers' perceptions about their own professionalization (Avidov-Ungar, 2016). This implies that PDI studies should consider not only the characteristics of the work environment where university teachers learn and are expected to apply their learning but also those that are external, such as educational reform.

#### Influencing factors related to the characteristics of the learner

The characteristics of the university teacher cannot go unnoticed during the design and implementation process of PDI. Broad and Evans (2006) argue for a congruence between the trajectory of the teacher and the PDI. In other words, the PDI should consider the teachers' professional circumstances, trajectory, and even their context. Other elements to be considered include their educational qualifications (Mattheos et al., 2010), and even cognitive abilities (Agyei & Voogt, 2014; Fernández Díaz et al., 2010).

Important to the central theme of this dissertation is the consistent evidence suggesting the influential role of motivational variables. For example, motivation to teach has been linked to university teachers' personal efficacy and interest (Visser-Wijnveen, Stes, & Van Petegem, 2012). Specific to the transfer literature, the review of De Rijdt et al. (2013) on the influencing variables of transfer of learning in higher education, highlights the key role of motivational variables in the transfer process. In their review, 28 studies out of 46 studies identify motivational variables as influencing factors. Some of the motivational variables considered of utmost importance in reducing the 'transfer gap' are: motivation to transfer, motivation to participate in PDI activities (Gorozidis & Papaioannou, 2014), and motivation to learn (Aelterman et al., 2016; Evelein, Korthagen, & Brekelmans, 2008; Gegenfurtner, Veermans, Festner, & Gruber, 2009; Vansteenkiste et al., 2012). Motivation will therefore be one of the central variables considered in the studies of the present PhD. The available literature suggests a broad variety of definitions referring to this central concept. Among these, motivation is



defined as the internal drive that 'moves' an individual to act (Lazowski & Hulleman, 2016). Hence, it is considered an important antecedent to behaviour.

A recent review of the literature about motivation and how it has been embedded in empirical studies about education interventions, has been elaborated by Lazowski and Hulleman (2016). Their review shows a tremendous variety in conceptual and theoretical frameworks influencing learning and motivation research (N = 15): anxiety theories, attribution theory, expectancy-value theory, goal setting, achievement motivation, self-confrontation, possible selves, self-efficacy theory, social belongingness, transformative experiences, and self-determination theory. In the 74 studies included in the literature review, attribution theory (N = 13) and Self-Determination Theory (N = 11) were applied most often. Additionally, studies building on Self-Determination Theory (SDT) reflect the highest average effect size ( $d = .70$ ); only the 'transformative experience'-based studies (N = 4) reflect slightly higher effect sizes ( $d = .74$ ); with an overall effect size for all studies of  $d = .49$ . As will be explained later on in this chapter, we build on the SDT as the key framework guiding the research in this PhD. It will also become clear that SDT incorporates features of the 'transformative experience' approach since this theoretical framework stresses the need to reframe learning experiences as being applied in everyday activities (see Pugh, 2011). Additionally, in selecting a specific motivation theory, Lazowski and Hulleman (2016, p. 627) also stress the discussion as to how this choice is translated into a teaching and learning intervention. This discussion is also tackled later on in this chapter.

## Motivation to transfer

Motivation to transfer – a term coined by Noe (1986, p.743) – is defined ‘as the trainees’ desire to use the knowledge and skills mastered in the training program on the job’. This concept implies that the learner is the person that ultimately decides whether or not to apply the learning to the workplace (Gegenfurtner, Veermans, et al., 2009). The literature on transfer identifies motivational variables as influential in the transfer process (Agyei & Voogt, 2014; Bhatti, Battour, Sundram, & Othman, 2013; De Rijdt et al., 2013; Gegenfurtner, Festner, et al., 2009; McDonald, 2011; Weisweiler, Nikitopoulos, Netzel, & Frey, 2013). Research highlighting the influence of motivation to transfer suggests, among others, the mediating role of motivation to transfer between the readiness of the learner to participate in training and actual transfer (Dreer, Dietrich, & Kracke, 2017). It has also been suggested that motivation to transfer influences the positive affect of trainees at the individual and group levels (Paulsen & Kauffeld, 2017).

Besides the mediating role of motivation to transfer, it is important to understand its predictors or precursors, that is, what factors foster motivation to transfer during training. In this line, research points at the expectation to use the content learned at the workplace, the motivation of individuals to learn the new skills and knowledge, and perceptions about having a motivating job (Kontoghiorghes, 2002). Other predictors include: attitudes, perceived support from others, and instructional satisfaction (Gegenfurtner, Festner, et al., 2009). A deeper analysis on transfer predictors is presented in Chapter 4 of this dissertation. Notwithstanding the body of literature identifying predictors of motivation to transfer and its mediating role, more research is needed to understand how to motivate university teachers to transfer their learning while attending PDI (Gegenfurtner, Festner, et al., 2009; Pugh & Bergin, 2006). Key is that hardly any literature, specially empirical studies, is available in the teacher professional development domain. In the next paragraphs, we mainly build, not only on studies from the educational sciences, but also on studies in the business sciences, organisational learning, and employee training.

Various theories have been applied to the study of motivation to transfer. These theories provide insightful frameworks of analysis to comprehend the transfer process and the way human behaviour is influenced by the desire to act. Some of the most relevant theories are

presented in Table 3, which is based on the study of Yamnill and McLean (2001). This table presents the following theories: The Expectancy Theory and The Equity Theory of Vroom (1964), as well as The Goal-Setting Theory of Locke (1968). These are described together with their principal characteristics, strengths, and weaknesses.

Table 3. Review of the theories supporting the study of motivation to transfer by Yamnill and McLean (2001)

Theory	Characteristics	Strengths	Weaknesses
Expectancy Theory (Vroom, 1964)	Job performance is the result of force and ability	Emphasis on capacity or ability of the individual to perform a task	Lack of focus on the 'willingness' of the learner. Emphasis on the amount of transfer and not on its kind.
Equity Theory (Vroom, 1964)	Individuals expect fair treatment	Fosters equity and satisfaction	High dependency on external rewards May create tension among colleagues
Goal-Setting Theory (Locke, 1968)	Based on intention and values	Clear objectives and feedback fosters participation, intention and performance	Emphasis on a set goal and not on the desire of the individual

Vroom's (1964) expectancy theory is a widely used motivational theory mainly implemented in the context of industrial psychology. It has been applied to study motivation to transfer (see for example, Gegenfurtner, Festner, et al., 2009) facilitating the analysis of an individual's capacity to perform an specific task. However, as presented in Table 3, its focus on the 'amount' of motivation clouds the understanding of the 'kind' of motivation that moves an individual to act. In the same way, Vroom's (1964) equity theory does not provide a design framework that may prompt PDI elements that foster intrinsic motivation in participants, instead, its basis is on external rewards. Finally, Locke's (1968) goal-setting theory also lacks the capacity to provide clear guidelines to foster intrinsic motivation for its emphasis relies on the set-goal and not on the inner desire of an individual – an area of interest in this dissertation.

The above list of theories can be expanded on the base of recent research of Bauer, Orvis, Ely and Surface (2016). They reiterate the expectancy theory from the table above but add expectancy value theory and self-determination theory. What can be learned from their analysis when linking these theoretical conceptions to motivation to transfer, is their mutual conceptual base grounded on the believe that trainees are motivated when: (a) they enjoy

participation in a training course, (b) they perceived the course to be interesting, useful for the job and important to themselves, or that (c) the applied effort will lead to a successful performance, and (d) effort will lead to application of a new skill on the job and expected outcomes (e.g., promotion). This fits the findings of the research of Grohmann, Beller, & Kauffeld (2014, p. 86) who found that motivation to transfer is strongly linked to experiences about the validity of the content and when the PDI is designed with future application in mind. Again, the design of the intervention appears as an influential factor, as in previous studies (Awais Bhatti, Ali, Mohd Isa, & Mohamed Battour, 2014; Su & Reeve, 2011).

Andreas Gegenfurtner and his colleagues (2009) – one of the predominant authors in the field of motivation to transfer – add elements of the SDT to ground their transfer model. In this way they emphasize the application of a motivational theory that leads to a better understanding of how motivation helps individuals to apply what they learned in a new context, rather than emphasizing the study of the amount of transfer that takes place through training. The authors also suggest embarking on the study of motivation following the different underlying dimensions of this concept. This is a particular strength of SDT.

### Self-determination theory

As stated above, motivation is key in the discussion of transfer of learning. Numerous studies consistently show evidence of its influential role in the application of new learning (De Rijdt et al., 2013; Gegenfurtner, 2011; Gegenfurtner, Festner, et al., 2009; Lazowski & Hulleman, 2016). This central object of study – university teachers' motivation to transfer – calls for a theoretical framework that does not only facilitate the understanding about human motivation but also provides insight into 'how' to motivate university teachers to transfer their learning. A theory of motivation is therefore helpful in designing the PDI not only to facilitate its analysis, but to provide concrete design guidelines aimed at enhancing motivation to transfer in PDI participants. Central to SDT, is the notion that motivation is enhanced through need-satisfaction, that is, the fulfilment of the basic psychological needs. A concept that now discussed in detail.

## The basic psychological needs

SDT argues that for individuals to experience growth and flourishing, their basic psychological needs must be satisfied (Ryan & Deci, 2000). The three basic psychological needs are innate and considered universal, they are: autonomy, competence, and relatedness (Ryan & Deci, 2000). The need of 'autonomy' refers to an individual's capacity to freely exercise their will and experience a sense of volition, that is, every person's need to make personal choices (Ryan & Deci, 2000). The need of 'competence' refers to the desire to control the environment, to be influential and effective, and to be able to successfully meet new challenges. Satisfying the need of competence gives a sense of security and stability (Chen et al., 2015). The need of 'relatedness' refers to a person's desire to relate to others, to feel bonded, to be loved and to be taken care of (Deci & Ryan, 2000). It extends to establishing an organizational climate supporting personal growth (Chen et al., 2015; Ryan & Deci, 2000). Previous studies have successfully applied the theoretical framework of the basic psychological needs to design environments that enhance motivation in individuals, that is, need-supportive learning environments.

## Need-supportive learning environments

SDT has been widely applied to various life-settings as a way to foster individual fulfilment and flourishing. Some of the contexts where SDT has been applied include: health care services, medicine, organizations, religion, parenting, work, education, and others. In education, SDT has been applied mainly to create learning environments centred on satisfying the psychological needs of the learner; thus fostering autonomous motivation and promoting student achievement (Vansteenkiste, Lens, & Deci, 2006). For example, the study of Haerens and colleagues (2015) found that satisfaction of the psychological needs mediates the relation between autonomy support and autonomous motivation. In the same way, they found that controlling teaching, that is, an instruction disconnected with the needs of the learner, was associated with a controlled motivation (the desire to act due to external factors), and even amotivation (the desire to not engage in an activity).

The reported benefits of need-supportive learning environments are promising for education. These have been associated, among others, with changing teachers' beliefs (Aelterman et al., 2016), fostering student motivation for learning facilitating the incorporation of innovative teaching methodologies such as case-based learning (Baeten et al., 2013), and influencing teachers instructional behaviour (Perlman, 2011). However, the successful application of SDT in the educational context has focused primarily on teaching how to support the autonomy of others (Reeve & Jang, 2006). This gap in the literature prompts the present dissertation applying SDT to the design and implementation of PDI in university education to provide insight into how to motivate university teachers to transfer their learning to a new context. This was also stated in the literature review of Lazowski and Hulleman (2016) who stress how the translation of motivational theories to the actual design of instruction or training is less clear in the available research.

### Research challenges

The professionalization of teachers at all levels of education is a complex study area. The vast number of factors simultaneously influencing its outcomes convey a challenge for researchers who attempt at providing general guidelines to design and implement professional development. This dissertation faces the challenge to provide an understanding on how to enhance motivation to transfer in PDI participants through the satisfaction of the basic psychological needs. For this, the present dissertation emphasizes the following foci.

**Focus on teacher-centred PDI** – There is an abundant body of research on student-centred learning environments and pedagogical strategies reporting numerous benefits on student learning outcomes (Baeten et al., 2013; Gilis, Clement, Laga, & Pauwels, 2008). This knowledge can be applied to the context of PDI where university teachers become 'learners'. Hence, the call to design teacher-centred PDI, that is, programs that place the teacher at the centre and study their effects (Cho & Rathbun, 2013). A vertical model of PDI design is still predominant, that is, top-down PDI designed by authorities aimed at fulfilling institutional requirements (De Rijdt et al., 2016; Kennedy, 2005b), for this reason, more empirical studies are required showing evidence on specific design guidelines that place the teacher (learner) at the centre.

**Focus on motivating university teachers to transfer** - Motivation to transfer is among the most salient variables influencing transfer of learning to the workplace (Gegenfurtner, 2011). Despite the vast amount of research identifying it as an influential variable (Baldwin & Ford, 1988; Blume et al., 2010; De Rijdt et al., 2013), there is a lack of knowledge on how to motivate teachers to transfer during PDI (Pugh & Bergin, 2006).

**Focus on need-supportive PDI** – Research applying SDT in the PDI context has focused mainly on teaching how to support the autonomy of others, specially the students (Su & Reeve, 2011). To our knowledge, no studies applying SDT, focus on creating PDI learning environments that foster motivation to transfer in university teachers. Drawing from previous studies on need-supportive learning environments, this dissertation embarks on the challenging task of identifying PDI design guidelines that enhance motivation to transfer in participants. First, empirical evidence is needed on whether need satisfaction – an important premise in SDT – predicts motivation to transfer.

### Research Objectives

Considering the review of the literature about transfer of learning and the research challenges, the present dissertation contributes to the literature by gaining insight into ways to improve current PDI design approaches to foster the motivation to transfer of university teachers. To provide a valid and coherent proposal to motivate university teachers to transfer, this dissertation formulates the following research objectives (see Figure 2):

**Research objective 1 (RO1):** Analyse current design approaches to PDI in higher education.

To accomplish RO1 the following two research questions were formulated:

Research question 1a (RQ1a): To what extent does the PDI design process in higher education consider the variables influencing transfer?

Research question 1b (RQ1b): To what extent does the PDI design process in higher education consider the basic psychological needs of university teachers?

**Research objective 2 (RO2):** Identify the relationship between university teachers' need satisfaction and motivation to transfer.

**Research objective 3 (RO3):** Analyse the influence of a need-supportive PDI on university teachers' need satisfaction and motivation to transfer.

RO3 was subsequently subdivided into two objectives:

Research objective 3a (RO3a): Develop a need-supportive PDI for university teachers.

Research objective 3b (RO3b): Implement a need-supportive PDI and analyse its influence on university teachers' need satisfaction and motivation to transfer.

To comprehend the design of this dissertation and its internal coherence, Figure 2 shows the schematic overview of the research objectives and the set-up of the three research studies.

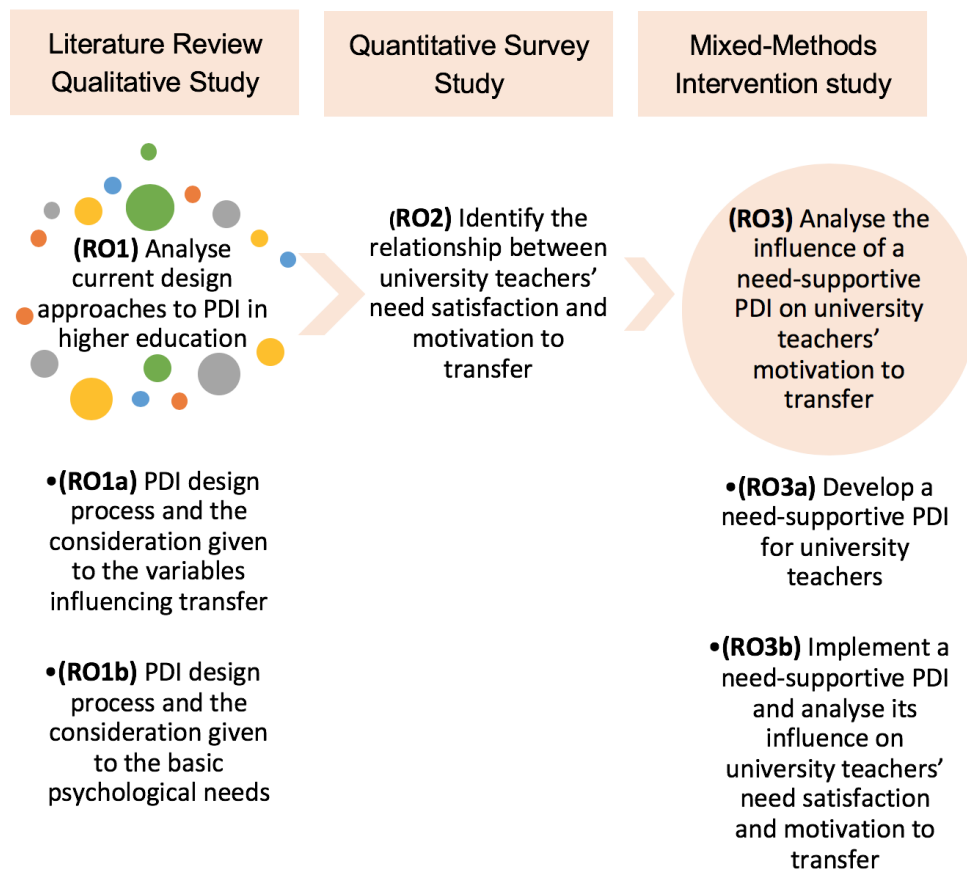


Figure 2. Schematic overview of the research objectives and research studies.



## Research design

The Ecuadorian context is worth mentioning. In the past ten years, a significant reform in higher education has taken place. Among the many reforms, university teachers must fulfil a total of 224 hours of training in PDI to acquire tenure (Consejo de Educación Superior, 2017). Thus, universities and university teachers have sought to fulfil this requirement. In a context of reform, it seems appropriate to design studies that help understand the reasons why university teachers engage in PDI-related activities, as well as, the current design approach on behalf of universities.

For a better understanding of the current design approaches to PDI in higher education, three studies were set up to collect information from various sources, namely a) PDI designers in charge of PDI design and implementation; and b) PDI participants, that is, university teachers. To accomplish the research objectives mentioned above, the studies build on both qualitative and quantitative data analysis methods (see Table 4). Study 1 was set up to achieve RO1 and answer RQ1a and RQ1b. The results of these qualitative studies make up Chapters 2 and 3 of this dissertation. Next, Study 2 was set up to answer RQ2. The results of this quantitative study helped developing Chapter 4. Finally, Chapter 5 comprises the results of Study 3, a mixed-methods intervention study.

**RO1** - To ‘analyse the current design approaches to PDI in higher education’ two research questions were set up in one study (Study 1). **RQ1a** was formulated to gain an understanding on the consideration given – by current PDI approaches – to the main variables influencing the transfer of learning. First, to answer **RQ1a**, a review of the literature on the main influencing variables of transfer provided an evidence-based framework for analysis comprising three clusters of influencing variables: 1) characteristics of the intervention design, 2) characteristics of the work environment, and 3) characteristics of the learner – the university teacher (see Baldwin & Ford, 1988; Blume et al., 2010; De Rijdt et al., 2013). The results of RQ1a contribute to the literature highlighting the current state of PDI and their suitability for transfer.

In the same way, **RQ1b** provides insight into the suitability of current PDI design approaches to provide need-supportive learning environments for university teachers in view of fostering motivation to transfer. The framework used to answer RQ1b stems from the theoretical

framework of SDT and it is constituted by the three basic psychological needs of: 1) autonomy, 2) competence, 3) relatedness.

**RO2** - To 'identify the relationship between university teachers' need satisfaction and motivation to transfer' during a PDI, a quantitative study (Study 2) was set up to collect data from university teachers participating in actual PDI. Surveys with 409 respondents were applied at the end of a PDI to measure these variables and a structural equation analysis helped determine the relationship between the different processes and variables. Due to a lack of available instruments to determine motivation to transfer, a 14-item questionnaire was developed under the theoretical framework of SDT.

**RO3** – To 'evaluate the influence of a need-supportive PDI on university teachers' need satisfaction and motivation to transfer', Study 3 was set up. It was subdivided into two research objectives. First, to accomplish RO3a, a need-supportive PDI was developed based on SDT's framework, incorporating design elements aimed at satisfying the psychological needs of university teachers. Applying SDT theoretical framework, each of the three basic psychological needs (autonomy, competence, relatedness) served as a source to include instructional design elements aimed at fostering need satisfaction in participants. Next, to accomplishing RO3b, the need-supportive PDI was implemented to analyse its influence on university teachers' need satisfaction and motivation to transfer. Study 3 provides insight into how a need-supportive design approach to PDI may foster need satisfaction and motivation to transfer in university teachers. This last study adopts a mixed-methods approach by collecting quantitative data through questionnaires applied while university teachers participate in the intervention study. Additionally, 12 participants volunteered to be interviewed providing valuable data into the way their basic psychological needs were satisfied during the PDI as well as the reasons why they would apply their learning, that is, their motivation to transfer.

To better comprehend the structure of the dissertation, Table 4 presents each of the chapters, including their research objectives, the methodology used to fulfil these objectives, the study participants, the type of data collection that was conducted, and the way the data was analysed.

Table 4. Design of the dissertation including: a) chapters; b) research objectives; c) methodology; d) participants; e) data collection; and f) type of analysis

Chapter	RO	Methodology	Participants	Data collection	Type of analysis
1		General introduction: Problem statement, conceptual and theoretical framework, research challenges, research objectives, research design, relevance of the study, overview of the dissertation			
2	1	Qualitative	12 Ecuadorian Universities	Interview to 16 Ecuadorian university authorities in charge of the design and implementation of PDI	Content Analysis (NVivo)
3	1	Qualitative	12 Ecuadorian Universities	Interview to 16 Ecuadorian university authorities in charge of the design and implementation of PDI	Content Analysis (NVivo)
4	2	Quantitative	409 university teachers	Paper and pencil questionnaire	EFA/CFA (SPSS/Amos) Structural Equation Modeling (SEM)
5	3	Mixed- methods	36 university teachers	Paper and pencil questionnaire Interviews (n = 12 participants)	Mann-Whitney test Content analysis (NVivo)
6		General discussion: Overview of the main results, limitations, directions for future research, implications			

## Structure of the dissertation

The structure of the present dissertation is based on the relationship between the three empirical studies. Figure 3 presents the build-up of the six chapters and their main topics. Chapters 2-5 of this dissertation report on research studies developed in such a way that they can be submitted as articles for ISI-indexed journals.

Chapter 1 describes the main research problem, the conceptual and theoretical background, as well as the research challenges, objectives, and design of this dissertation. It describes the main variables identified by the literature as influential in the transfer process, as well as the concept of 'motivation to transfer'. Furthermore, it presents a description of the theoretical framework of SDT. Namely, its concept of need satisfaction represented by the basic psychological needs, and the concepts of autonomous and controlled motivation. Finally, the reported benefits of need-supportive learning environments are discussed.

Chapter 2: 'Professional development initiatives for university teachers: Variables that influence the transfer of learning to the workplace' presents the results of a qualitative study that gathers data on the consideration given by PDI designers to the main influencing variables of transfer reported in the literature. With the participation of 12 Ecuadorian universities, this chapter discusses the challenges faced by those in charge of designing PDI to develop teacher-centred training for their teaching staff, as well as the suitability of current PDI in view of transfer of learning. Additionally, this chapter provides an understanding into how the context of universities influence current PDI design approaches in higher education.

Chapter 3 presents the results of semi-structured interviews carried out to 16 PDI designers analysing the suitability of current PDI approaches in higher education to create need-supportive learning environments that may foster motivation to transfer in participants. Using SDT's theoretical framework of the three basic psychological needs of autonomy, competence, and relatedness, this study seeks to emphasize the importance of considering all of the three psychological needs in the design of PDI.

Chapter 4 presents the results of a quantitative study conducted with 409 university teachers from two Ecuadorian universities participating in PDI. This study seeks to gather evidence on

the relation between the two main variables of this dissertation: need satisfaction and motivation to transfer. By using a structural equation model, the variable of 'need-satisfaction' is set as a predictor of 'motivation to transfer'. Furthermore, applying SDT's framework 'motivation to transfer' is studied under its two dimensions: autonomous motivation to transfer and controlled motivation to transfer. In the same way, the variable 'need-satisfaction' is studied through the satisfaction or frustration of the basic psychological needs. The aim of this study is to identify predictors of motivation to transfer in university teachers participating in PDI.

Chapter 5 is based on an intervention study involving 36 university teachers. For this, a needs-supportive PDI was designed and implemented in a major public university in Ecuador. Grounded on SDT, a three-month PDI was designed taking into consideration the satisfaction of the basic psychological needs of participants. Specifically, this particular PDI aimed at enhancing the motivation to transfer of university teachers by fostering their basic psychological needs of autonomy, competence, and relatedness. By gathering data from participants through questionnaires and interviews, this chapter discusses the way a need-supportive PDI influences participants' motivation to transfer.

Chapter 6 serves as a general discussion for the entire dissertation and to reflect on the conclusions of each chapter and how they relate to the initial research objectives. In addition, this chapter discusses theoretical and empirical limitations of the studies and directions for future research. Finally, based on the main findings of all three studies, a set of implications for the design of PDI are discussed. A schematic overview of the chapters is presented in Figure 3.

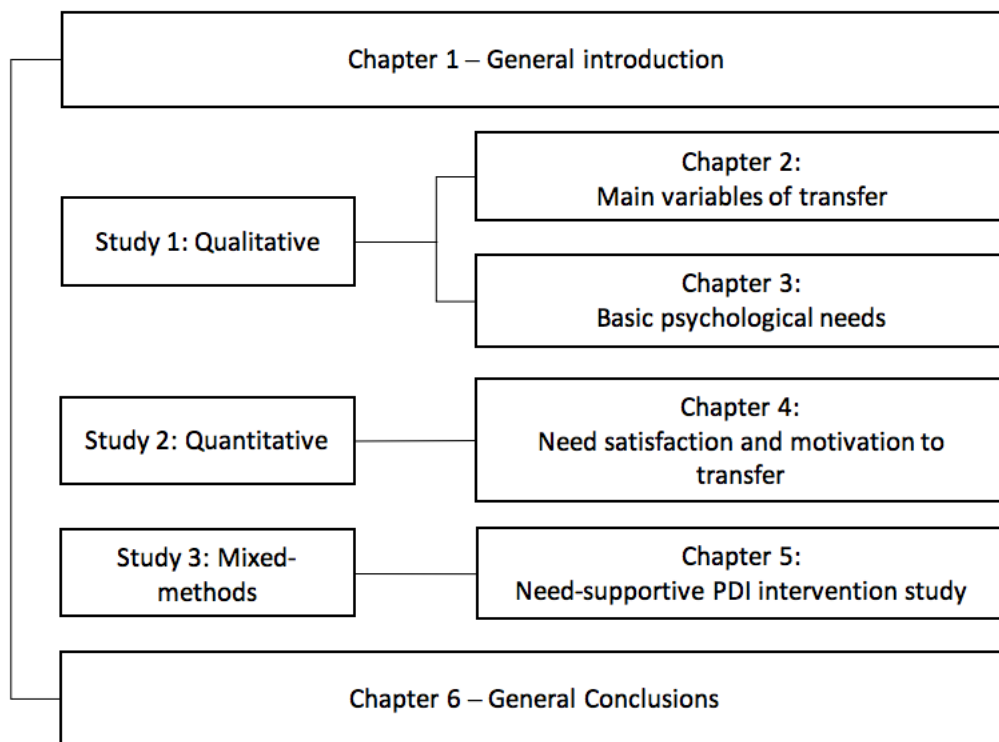


Figure 3. Schematic overview of the chapters in this dissertation.

### Relevance of the dissertation

The present dissertation contributes to the literature from a theoretical, empirical, and practical perspective. From a theoretical standpoint, this dissertation furthers the application and understanding of SDT. Previous studies have been successfully designed to create need-supportive learning environments reporting numerous benefits (see Aelterman et al., 2013; Deci, 2009; Haerens, Aelterman, Vansteenkiste, Soenens, & Van Petegem, 2015). However, such evidence is not available in the context of university teacher PDI. Applying SDT in this context is expected not only to support university teachers' autonomy, but also to learn 'how' to motivate teachers to transfer their learning (Pugh & Bergin, 2006; Su & Reeve, 2011).

From an empirical angle, this PhD provides insight into how to motivate university teachers to transfer by designing a concrete needs-supportive PDI for university teachers. A first step is to gather evidence on the relation between need-support and motivation to transfer. The results of the quantitative study reported in Chapter 4 confirm a significant association between needs

satisfaction and motivation to transfer in university teachers, setting forth a research trajectory on how to motivate PDI participants to apply their learning to the workplace. Evidence about this relationship can provide PDI designers and researchers concrete guidelines to study the application of motivational theories to the design and implementation of PDI centred on the teacher (learner), thus fostering motivation in participants to apply their learning to a new context.

From a practical perspective, motivational theories provide valuable frameworks not only to analyse human behaviour. They may also be applied to evaluate current PDI. As in the present dissertation, the framework grounded on SDT provides a practical tool to examine current PDI and their suitability to enhance motivation in participants, and to examine the measure in which the university teacher is placed at the centre of the PDI. Additionally, the theoretical framework serves as a basis to design and implement a PDI.

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# CHAPTER 2

## **Professional development initiatives for university teachers: Variables that influence the transfer of learning to the workplace**

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## Chapter 2

### Professional development initiatives for university teachers: Variables that influence the transfer of learning to the workplace

#### Abstract

Universities seek innovation by designing and implementing professional development initiatives (PDI) for their teachers. Here it is expected that teachers will apply their learning to the workplace. However, such transfer does not always occur. To address this problem, we analyse the PDI design process of 12 universities in terms of how they consider the main variables influencing transfer: intervention design, work environment, and characteristics of the learner. Qualitative data from 16 interviews suggest that programme designers tend to focus mainly on variables related to the intervention design and work environment but struggle to address the needs of the teacher. These findings can help universities realign their focus, by emphasizing teacher-centred PDI to improve the transfer of learning.

## Introduction

There are several terms used internationally to define the professionalization of university teachers: continuing professional development, academic development, staff development, instructional training, among others (De Rijdt, Dochy, Bamelis, & van der Vleuten, 2016). While each of these terms refer to aspects of teacher professionalization, they do have subtle differences. This study focuses on professional development initiatives (PDI), a term describing the formal activities explicitly designed and implemented by universities to improve the knowledge and skills of their teachers (Merchie, Tuytens, Devos, & Vanderlinde, 2016).

Research indicates that there has been improvement in the quality of education through the implementation of PDI (Popovic & Fisher, 2016). Accordingly, universities design and implement PDI for their teachers to enhance innovation and bring about reform (Baume & Baume, 2013). Following this scheme, university teachers are expected to participate in PDI to improve their skills and apply their learning to the workplace (De Rijdt et al., 2016). Researchers from various disciplines use the terms ‘transfer of learning’ or ‘transfer of training’ to refer to the successful application of the knowledge acquired in training. As these terms have somewhat different meanings, in this chapter we use the term ‘transfer’ to denote the application of new learning acquired in a PDI to the workplace (Gegenfurtner, 2011).

While transfer is expected, the application of learning does not always occur (Botma, Van Rensburg, Coetzee, & Heyns, 2015). Previous research on PDI has identified a number of variables that influence transfer, commonly grouped into three clusters: design intervention, work environment, and characteristics of the learner (De Rijdt, Stes, van der Vleuten, & Dochy, 2013). This evidence-based framework facilitates an analysis of the current state of PDI in view of transfer, i.e., whether current PDI provide optimal conditions for teachers to apply their learning to the workplace. However, research on the attention given to these variables by PDI designers is scarce. This study examines how influencing variables are included in the PDI design process in 12 universities. Data was collected by means of 16 interviews with PDI designers, i.e., university authorities in charge of the design and implementation process of PDI for their teachers. The complex process of including variables that influence transfer, particularly those related to the characteristics of the learner, is highlighted. Besides identifying areas of

improvement in transfer, this study emphasises the increasing need for a teacher-centred PDI, i.e., programmes that consider the characteristics of the learner.

### **Teacher-centred professional development initiatives**

Given the abundant research indicating the benefits of student-centred learning at all levels of education, it seems appropriate for PDI design to consider the teacher-as-a-student. Due to the central role of the teacher in both settings (PDI and transfer) certain principles need to be considered. Firstly, when teachers participate in a PDI they become 'learners'; they need to construe meaning before applying their learning to a new context (Lobato, 2012). Secondly, transfer is not an automatic response to PDI, but a complex dynamic process centred on the teacher (Larsen-Freeman, 2013). The teacher is the one who ultimately decides whether to apply the learning to the workplace. In this sense the teacher is one of the most influencing factors in transfer. Thus, to foster transfer it is vital to place the teacher at the centre of PDI.

Current design processes of PDI are increasingly incorporating teacher-centred models as an alternative to the traditional vertical model, consisting of the transmission of information by an expert. Effective practices, such as that of Cho and Rathbun (2013), propose the use of online environments and problem-based learning to design teacher-centred PDI. Evans' (2014) analysis of professional development presents a 'teacher-centred leadership approach,' calling for leaders of PDI to consider teachers as individuals fostering the various dimensions of change that occur during training: attitudinal, intellectual, and behavioural. To improve transfer, some models present design principles for educators based on the activation of existing knowledge, engagement with new information, demonstration of competence, and application in real-world practice (Botma et al., 2015). Despite current efforts, research on how PDI models can facilitate transfer and at the same time empower teachers through the inclusion of their individual characteristics is lacking (Dreer, Dietrich, & Kracke, 2017). Indeed, De Rijdt et al. (2016) found that teachers still perceive the 'management model' to be prevalent in the application of PDI, namely, a top-down model designed by institutional authorities. If transfer is one of the aims of PDI, research needs to clarify how to place the teacher at the centre.

### Transfer and its influencing variables

As noted above, transfer should not be reduced to a mere transmission or ‘passing over’ of information from training to the workplace. Instead, transfer should be considered as a dynamic process where the learner – in this case the teacher – transforms the knowledge acquired in a PDI before implementing it in a different setting (Larsen-Freeman, 2013). For this reason, transfer is an essential area of study in education due to its impact on teacher learning and educational improvement (Aelterman, Vansteenkiste, Van Keer, & Haerens, 2016; Renta Davids, Van den Bossche, Gijbels, & Fandos Garrido, 2017). Since PDI are set up to improve the quality of education for students, teachers, and the institution, a lack of transfer is a concern to all involved (Avalos, 2011; Drew & Klopper, 2014).

Researchers have identified numerous variables affecting transfer in higher education (see De Rijdt et al., 2013). These have been grouped into three clusters. The first cluster concerns ‘intervention design,’ which encompasses factors that relate to the format or structure of a PDI, such as content relevance, active learning, technological support, and learning climate. The second cluster concerns the ‘work environment,’ which comprises factors related to the work-setting, such as a strategic link, organizational support, accountability, and supervisory support. The third cluster refers to ‘characteristics of the learner,’ which includes the various aspects directly related to the teacher, such as motivation, career planning, cognitive ability, among others. Nevertheless, while the above mentioned variables can be categorized into separate clusters, the variable that is common to all in terms of its influence on the application of learning is the teacher (Hattie, 2009).

In addition to identifying the main variables influencing transfer, it is important to examine how these variables are addressed by designers. This will highlight areas for improvement in the design of PDI, especially in view of supporting the teacher during the transfer process.

### Research design

Building on previous research on the variables influencing transfer (Blume, Ford, Baldwin, & Huang, 2010; De Rijdt et al., 2013), this study addresses the following question: To what extent does the PDI design process in higher education consider the variables influencing transfer?

This question is posited in order to address the current focus of the design process and the challenges to designing teacher-centred PDI. In addressing this question, we conducted semi-structured interviews with PDI designers from Ecuadorian universities in charge of the design/implementation process of PDI for their teachers. Respondents were asked to indicate how they consider the three clusters of variables that influence transfer in the design process of PDI.

### Participants

Ecuadorian universities were purposefully selected on the basis of their academic rank and geographical location. For academic rank, we used the criteria established by the local government agency in charge of evaluating institutions of higher education: The Council of Evaluation, Accreditation, and Quality Assurance of Higher Education (CEAACES) of Ecuador. According to pre-established indicators, Ecuadorian universities are evaluated by CEAACES and placed in a category ranging from the highest (A), to the lowest (D). At the time of data collection, five universities were positioned in Category A and 22 universities in Category B. The initial sample consisted of ten universities from groups A and B, geographically located in the three main cities of Quito, Guayaquil, and Cuenca. A university from Category D was included, representing a vulnerable area of the country, as well as one major university from Category C due to its historical importance and size. In total, the sample consisted of 12 universities from 4 cities: 5 private and 7 public universities. At least one PDI designer was interviewed in each university. In total 16 interviews with PDI designers were set up.

### Procedure and data analysis

University authorities gave permission for us to set up face-to-face interviews with the PDI designers, and each interviewee gave a written consent. One-hour interviews were carried out, guaranteeing anonymity to all participants and the institutions. Interviews were recorded and transcribed. Additionally, notes were taken during the interviews (Cresswell, 2003).



QSR NVivo 11 was used to systematically analyse the transcripts, following indicators about the main variables influencing transfer. Each interview was considered as an individual case representing a university. We considered each individual reply to an interview question as a unit of analysis. Replies to questions were considered as holistic units that could incorporate multiple indicators. To determine reliability, the coding was repeated for 15% of the data (randomly selected) by an independent coder unfamiliar with the study. This resulted in an inter-rater reliability of 80%, meeting the standards of Rust and Cooil, (1994). Furthermore, the results of this study were shared with the respondents to include their feedback.

## Results

The results indicate that current PDI designers in Ecuadorian universities do consider the variables mentioned in the literature. The overall number of indicators relating to each cluster are as follows: 'intervention design' = 396; 'work environment' = 243; and 'characteristics of the learner' = 123. Further analysis was carried out to gain a deeper understanding of their nature.

An in-depth analysis of participants' responses shows the different ways that current PDI design processes address the variables of transfer. Below we group these findings in line with the three clusters together with themes emerging in the literature (De Rijdt et al., 2013).

### Intervention design

Designers mostly focus on the design process of the PDI. Due to the vast number of themes and indicators found in this section, we present only those directly related to transfer.

### Needs analysis (universities: 10, indicators: 39)

Respondents mentioned that a needs analysis is common practice. However, examples of these were limited to a) building on PDI evaluation questionnaires, and b) teaching performance

evaluations. The latter is a process linked to evaluation cycles suggesting that participants attend PDI to improve their performance:

U11: 'we already have the needs that the teacher selected in the survey, it measures what they want. Then, we begin to structure [the PDI].'

The needs analysis was restricted to defining the content and providing an evaluation at the end of a course, paying little attention to methodologies, timing, or transfer itself. It seems that an established needs analysis that allows the teacher to actively participate in the PDI design process is one of the biggest challenges faced by designers. As one respondent suggested: 'we should also make a study to determine the training needs that teachers present.'

Course content (universities: 11, indicators: 89)

Regarding the process of choosing the content, our findings suggest that the dominant procedure follows a top-down structure, i.e., interventions are defined by university authorities. University teachers play a minor role in its design. As one respondent mentioned, 'the Academic Council (vice-rector, vice-deans) approves the training programs for the faculty.'

However, in one university attempts to directly involve university teachers was found:

U8: 'The [schools] demand some elements. The professors in the area discuss and say "look, we are weak in this and we need to work on these areas." They demand certain aspects from the training. They come to us, and we on the other hand, work with the [school] of education to articulate the training proposal.'

It is common practice for the PDI units to propose the training content to their faculties. Likewise, the faculties may propose a different content. Due to the diversity in training needs among disciplines, the latter is encouraged:

U9: 'The school tells us "we need a workshop" ...they suggest with whom we do the training, who to contact, and we support the process of developing the course, the definition of criteria for evaluation and the approval of the seminars.'

Also, university teachers are provided with a 'menu,' often structured into two clusters: pedagogical content and scientific research. We provide an example on the design process of a private university:

U3: 'First there is a three-level process. The first criterion in choosing the content is the need of the State. That is, they consider the policies dictated by the State. The second is the need of the companies. Companies express their training needs to the university. And the third criterion is the needs of the institution.'

Building on the former, PDI designers consult educational experts to choose the content. Once experts define the content, they start to organize the PDI.

During the design process there appears to be little direct involvement of university teachers in choosing the training content. This highlights the difficult challenge of satisfying the needs of all stakeholders, such as students, teachers, university authorities, and the government. The results from this cluster analysis suggest that a significant amount of effort goes into logistics and the organization of PDI.

## Work environment

Accountability (universities: 10; indicators: 32)

Respondents expressed the importance of holding university teachers responsible for applying what they learnt. For example, university teachers are held responsible for sharing their training with their peers. This strategy can help teachers consolidate their learning and foster transfer. Nonetheless, it is not clear how the learning is transferred to the classroom. The inclusion of this variable seems limited to strategies that foster participation in PDI but not necessarily that of transfer. External factors, such as accreditation, tenure-track and evaluation, were salient factors in holding teachers responsible for their participation in PDI. Surprisingly, no particular strategy around transfer was mentioned, as the following fragment suggests:

U1: 'The certificate helps teachers in their reports, evaluation of the degree program, and more...if the teacher applies the new learning, that's the teacher's decision...that is why they participate [in PDI], right?'

Strategic link (universities: 11; indicators: 111)

The majority of indicators in the cluster on work environment referred to the way PDI respond to organizational goals and strategies. Respondents mentioned that the implementation of PDI strengthens the institution in areas such as institutional values, pedagogy, entrepreneurship, and accreditation processes. For example, one respondent mentioned that the institution 'trains their teachers on the design of exam questions, so that the students will be better prepared to respond to the state-tests questions.' In order to practice their professions, students from some disciplines, e.g. medicine, must pass a state-test after graduating. The Ecuadorian accreditation process for universities considers the number of students who successfully complete their studies, expecting a low number of drop-outs. This external factor seems to influence their strategic planning.

Transfer climate (universities: 9; indicators: 65)

The literature on transfer does not specifically list educational reform as an influencing variable. Nonetheless, we found evidence of its influence on the transfer climate. The two most influential elements of reform are: a) requiring university teachers to fulfil hours of training for tenure purposes, and b) institutional accreditation processes. The influence of these elements is evident when choosing the content of PDI, thus affecting transfer. For example, one respondent mentioned that they even invite government experts to participate in the design of the PDI expecting that the learning applied will assist in fulfilling institutional requirements:

U3: 'Educational policies present clear objectives for the country, hence we [the universities] need to follow those objectives.'

### Organizational support (universities: 10; indicators: 35)

Respondents explained that supporting their teachers in the acquisition of doctoral degrees and research projects improves the quality of their institutions. Support was limited to scholarships, research grants and time allocated to do research. We found no indicators reflecting a follow-up process after the conclusion of a PDI that may foster transfer. Once a teacher participates in a PDI 'we give them a certificate and then it becomes the teacher's problem.' Most commonly, a PDI concludes by handing out a certificate. This is a requirement of tenure.

### Characteristics of the learner

#### Career planning (universities: 3, indicators: 4)

Career planning was mentioned as an incentive to foster participation in PDI, given that university teachers in Ecuador need to fulfil hours of training for tenure purposes. Ecuadorian policy requires university teachers to participate in PDI for a minimum of 224 hours to secure full-professorship (Consejo de Educación Superior, 2017). Therefore, the influence of this incentive is visible in the design of PDI:

U3: '[the law] tells us that we need a certificate of minimum forty hours, this motivates people because this helps in their tenure track.'

#### Perceived utility (university: 5, indicators: 10)

Respondents expressed concerns about helping university teachers understand the importance of attending PDI. According to one respondent, university teachers prefer not to be 'outside their comfort zone.' This is often reflected by the low numbers of participants attending PDI:

U1: 'It is always very difficult [to deal] with teachers. We could have had twenty participants, but we had only eight. These are long courses and they must give up their time. Still they are not conscious of the need that they have to continue [a PDI].'

### Teaching ability (universities 6: indicators: 15)

Teaching ability seems to influence the design of PDI. Respondents suggest that PDI should be designed to remedy shortcomings in ability for areas such as ICT, scientific research, and teaching methodologies. The latter is a major concern for the designers:

U10: 'here we do not have teachers that are well prepared in [teaching] methodologies.'

### Teacher's experience (universities: 11, indicators: 44)

Designers reported they do consider university teachers' work experience. There is a focus on those with less than two years of experience. Universities mainly encourage PDI for those starting in a tenure-track position, rather than experienced faculty members, as the former seem 'much easier to manage.' Institutional policies range from free registration for PDI, to setting up courses specifically designed for new university teachers:

U10: 'Since they are new, they are eager to receive [PDI] because they do not have a teaching profile. They are professionals in their field. Their master's degrees are from an area of their academic fields, but we motivate them to grow in their career [as teachers].'

On the other hand, designers expressed having difficulty involving experienced teachers:

U1: 'Of course, they are the ones that need it [PDI] the most...they are the ones that show the most resistance.'

### Teacher qualifications (universities: 7, indicators: 31)

Respondents emphasized the determining factor of teacher qualification. The following themes emerged from the analysis: pedagogical abilities, teacher behaviour and attitudes.

One respondent mentioned that students 'prefer excellent teachers rather than excellent professionals.' Thus, being a top academic researcher is not sufficient: 'professors hold a PhD, but they lack tools to teach.' Students demand professionals that know how to teach. PDI designers consider it their duty to develop the pedagogical competences of their teachers: 'we want to strengthen their continuous education in areas of pedagogy' rather than in areas of academic content, since 'they will look for their own preparation.' The lack of teacher education in university teachers is clearly a priority:

U4: 'Sure, they are experts; expert engineers, expert medical doctors, expert mathematicians, but they do not really have continuity and never had, surely never had... pedagogical training.'

Interviewees are aware that implementing PDI is not enough. A course may be insufficient to counter a lack of pedagogical instruction. Interviewees stressed the need for a 'process of professional formation... as a teacher' in university education.

PDI designers do understand this challenge and refer to the 'students' voice' as an information source to identify areas of improvement. They list student complaints about the behaviour and attitude of some university teachers who 'do not arrive on time, do not give the grades on time, leave class before the scheduled time...' Designers expressed concern about 'the way they treat the student and respect the student'.

Motivation (universities: 3; indicators: 17)

The few designers that referred to motivation mainly linked this to participation in PDI, specifically noting tenure-track as one of the main motivating factors. We found no evidence of initiatives fostering 'motivation to transfer' in the PDI design.

Compared to the other two clusters of influencing variables, this cluster received the least consideration by designers. The fundamental purpose of PDI seems to address the pedagogical void in the preparation of university teachers, particularly the young teachers that seem to show acceptance and openness to change through PDI.

## Discussion

This study investigated the design process of PDI in universities through what research considers to be the most influencing variables of transfer: intervention design, work environment, and characteristics of the learner. This study's contribution to the literature is based on an analysis of the current state of PDI and their suitability for transfer. By implementing an evidence-based framework we investigated whether current PDI designers consider variables that influence transfer. This study also highlights the challenges faced by designers in incorporating the three clusters of variables in their work.

Our findings show the prominent consideration given to the operational aspects of PDI. While organization is key, transfer may require a wider focus that is specially related to teacher characteristics. This is in line with previous research suggesting that studies on transfer pay more attention to variables related to intervention design (De Rijdt et al., 2013). Designers struggle to actively involve university teachers in the design process, which is an important influencing factor in their professional satisfaction (Starkey et al., 2009). Designers' attempts to involve participants were limited to needs analyses based on evaluation procedures of the PDI itself, and not its impact on learning or transfer. We found few indicators focusing on teaching methodologies that aim at transfer, such as hands-on practice workshops or active learning.

Regarding the work environment, this study found that designers conceive the professionalization of university teachers as crucial for institutional growth. Accountability, strategic link, transfer climate, and organizational support were the variables included in the design of PDI. For example, university teachers are considered to be responsible for transfer by disseminating their learning to peers. Nonetheless, designers require strategies to establish a much needed support climate to foster knowledge and transfer (Song, Bae, Park, & Kim, 2013). In the Ecuadorian context, educational reform seems to influence the decisions of designers and consequently the design of PDI. This diverts the focus from the university teacher to the fulfilment of institutional requirements. An important finding of this study is the difficulty expressed by designers to create teacher-centred PDI. Institutional and governmental requirements seem to significantly influence the design process. This raises concerns, since overlooking learner characteristics may hinder transfer (Gorozidis & Papaioannou, 2014).



Although current PDI models increasingly focus on the teacher, our study suggests that the design of teacher-centred models needs further attention, i.e., to shift PDI design based on the transmission of information by experts to a design that includes systematic institutional support for university teachers throughout their learning and transfer process (van der Sluis, Burden, & Huet, 2017).

### **Implications and limitations**

A critical finding of this study is the absence of motivational variables in the design considerations of PDI. Among the most salient influencing variables of transfer (belonging to the characteristics of the learner) is motivation (De Rijdt et al., 2013). Variables such as motivation to transfer, motivation to learn, and motivation to participate have been found to improve transfer (Segers & Gegenfurtner, 2013). Including motivational theories into the design of PDI might comprise a promising and innovative model for implementing PDI in higher education, focusing on motivating the teachers instead of coercing them to fulfil institutional requirements. This requires PDI designers to adopt a holistic and theory-based approach when designing PDI in view of supporting the university teacher in the transfer process. This study is limited by its focus on the perspective of PDI designers and not on other stakeholders. Further studies may incorporate university teachers and students, analysing the extent that PDI improves the adoption of specific teaching and learning processes and their effect on student performance. Future research could also focus on the analysis of actual on-campus implementations.

### **Conclusion**

The present study fills a gap in the literature by analysing the nature of current PDI characteristics and their link with transfer. As suggested by the results of this study, not enough consideration is given to the learner characteristics of the university teacher. Consequently, there is a need for theoretical frameworks that highlight the importance of the learner in the design process of PDI, despite external pressure from institutional or governmental requirements.

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# CHAPTER 3

## **Exploring the inclusion of the basic psychological needs of university teachers in the design of professional development initiatives**

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## Chapter 3

### Exploring the inclusion of the basic psychological needs of university teachers in the design of professional development initiatives

#### Abstract

A growing body of research indicates the prominent role of ‘motivation’ in the outcomes of professional development initiatives (PDI). Specifically, motivation is consistently identified as an influential factor in various PDI-related activities, such as: motivation to participate, motivation to learn, and motivation to transfer. However, studies examining how PDI design guidelines foster motivation in participants to improve its outcomes is scarce. Applying the psychological macro-theory of Self-Determination Theory (SDT), this study links ‘motivation’ to need support. That is, the satisfaction of the basic psychological needs of autonomy, competence, and relatedness – that according to SDT – enhances motivation in individuals. Accordingly, the present study examines the suitability of current PDI design to create need-supportive learning environments and foster motivation in university teachers. To collect data, we interviewed 16 PDI designers from 12 Ecuadorian universities on the inclusion of the basic psychological needs in the design of PDI. Results indicate the various ways PDI design addresses university teachers’ psychological needs, particularly of autonomy and competence. Unexpectedly, relatedness is hardly considered in the PDI design. These results provide insights into how PDI design can be upgraded to boost their efficacy by creating need-supportive PDI to enhance motivation in participants and improve its outcomes.

## Introduction

Improvement in the quality of education is linked to the professionalization of teachers participating in professional development initiatives (PDI) (Gibbs & Coffey, 2004; Gore et al., 2017). Universities expect their teachers to engage in PDI-related activities to strengthen their attitudes, knowledge, and skills, expecting them to learn new content, transform the new knowledge, and apply it to the workplace (Avalos, 2011; Hill, Beisiegel, & Jacob, 2013). However, the expected PDI outcomes do not always materialize leading researchers to investigate the design approach of PDI and its influencing factors (Bhatti, Battour, Sundram, & Othman, 2013).

To improve the outcomes of PDI, researchers encourage the study of motivational variables (Blume, Ford, Baldwin, & Huang, 2010; Burke & Hutchins, 2007; Grossman & Salas, 2011). Despite the literature's recognition of the key role played by motivational variables, few studies apply theoretical models that provide an in-depth analysis on the role of motivation during PDI (Gegenfurtner, Veermans, Festner, & Gruber, 2009), specifically how its design principles affect motivation in participants (Evelein, Korthagen, & Brekelmans, 2008; Volet, 2013). Research on PDI has mainly focused on its impact on student outcomes (Maclellan, 2008) and to a far lesser extent on the situated context of teachers during professional training (Desimone, 2009; Opfer & Pedder, 2011). This state of affairs leads to the following question: how to determine optimal PDI design decisions that foster motivation in university teachers?

According to Self-Determination Theory (SDT) motivation is boosted when individuals experience 'need support', that is, the satisfaction of the basic psychological needs of autonomy, competence, and relatedness (Ryan & Deci, 2000). SDT has been successfully applied to create need-supportive learning environments, showing numerous benefits (Reeve, 2009; Reeve et al., 2014). However, these studies have focused mainly on teaching how to support the autonomy of others, and less on the way PDI design principles foster need-support in participants (Su & Reeve, 2011). This study proposes 'need support' as an adequate approach to enhance motivation in the design and implementation process of PDI. The implications of this study are expected to provide a theory-driven framework to examine current PDI design and their implementation processes in view of enhancing motivation as well as to respond to

the various calls for teacher-centred PDI designs (Cho & Rathbun, 2013; Jaramillo-Baquerizo, Valcke, & Vanderlinde, 2018).

### **Conceptual and theoretical background**

#### Professional development initiatives

Internationally, several terms are used to define the professionalization of teachers: continuing professional development, academic development, staff development, instructional training, among others (De Rijdt, Dochy, Bamelis, & van der Vleuten, 2016). Although they encompass the area of teacher professionalization, they do have subtle differences. The present study focuses on professional development initiatives (PDI), a term describing the formal activities designed and implemented by institutions of higher education to boost the knowledge and skills of their teachers to ultimately improve student learning (Merchie, Tuytens, Devos, & Vanderlinde, 2016).

Current designs of PDI reflect a variety of approaches defining key characteristics, strengths, and weaknesses (Botham, 2017). One of the main challenges in PDI is to involve the teachers in its design process. For example, the study of De Rijdt et al. (2016) shows that teachers still perceive a 'management model' to be the most commonly used method to design PDI. In the same line, Jaramillo-Baquerizo and colleagues (2018) highlight the challenging task of including the characteristics of university teachers in the design of PDI. The vertical approach to PDI design faces criticism due to its low impact on teaching practices, not responding to the needs of teachers (Botma, Van Rensburg, Coetzee, & Heyns, 2015); neglecting the study of its impact on student learning (Loucks-Horsley, S., Stiles, K. E. & Mundry, 2010); and not providing an opportunity for teachers to reflect on their practice (Hill et al., 2013). To improve the PDI experience it is crucial to shift its design approach from its traditional vertical model to a model centred on the learner, i.e., the university teacher (Cho & Rathbun, 2013; Jaramillo-Baquerizo et al., 2018).



### Motivational variables

Research on professional development consistently identifies motivational variables such as motivation to transfer, motivation to learn, and motivation to participate in training as key characteristics of the learner influencing various outcomes, such as the application of learning to a new context (De Rijdt, Stes, van der Vleuten, & Dochy, 2013). Research suggests that motivational variables relate with important aspects of the learner. For example, motivation to transfer – that is, the desire to apply the learning acquired in PDI to the workplace (Noe, 1986) – has been found to relate with learning and prove goal orientation (Medina, 2017). Also, an association has been reported between motivation to transfer and the positive affect experiences at the individual and group level of university students (Paulsen & Kauffeld, 2017). Motivation, has also been linked to the intention to apply new learning (Kreijns, Vermeulen, Van Acker, & van Buuren, 2014). Despite the significant amount of literature on motivation, little research explains the concrete mechanisms and predictors driving teachers' motivation to apply their learning in a new context (Dreer, Dietrich, & Kracke, 2017).

### Self-Determination Theory (SDT)

SDT is a psychological macro-theory widely applied in educational contexts providing optimal guidelines to create environments that foster autonomous motivation in individuals. It is 'concerned primarily with promoting in students an interest in learning, a valuing of education, and a confidence in their own capacities and attributes' (Deci, Vallerand, Pelletier, & Ryan, 1991, p. 327). This motivational theory explains that individuals become self-determined when their basic psychological needs are met (Chen et al., 2015). In optimal conditions individuals should choose to act freely and out of an inherent interest. Nevertheless, in the context of PDI in higher education, behaviours of university teachers may be influenced by external conditions such as the fulfilment of institutional requirements (Jaramillo-Baquerizo et al., 2018). In a context where external conditions are prevalent, university teachers should receive the necessary support through the satisfaction of their basic psychological needs, thus facilitating a process of interiorization, a key concept in SDT (Ryan & Deci, 2000).

### Autonomous and controlled motivation

One of the strengths of SDT is its capacity to analyse the concept of motivation in its multidimensionality, namely as autonomous and controlled. Autonomous motivation results in behaviours that people seek out of an inherent interest (Ryan & Deci, 2000). On the other hand, controlled motivation initiates outside the self, directing behaviours in order to achieve an external goal or for a perceived utility (Ryan & Deci, 2000). SDT states that autonomy and controlled motivations are not mutually exclusive but are conceived as a continuum. This continuum varies from an individual's lack of intention to act: amotivation, to performing an activity purely out of personal enjoyment or interest: intrinsic regulation. Additionally, SDT contemplates behaviours between these two polarities. The 'extrinsic motivation' cluster encompasses controlled motivation, which in turn, includes external regulation (external rewards or punishment drive a behaviour) and introjected regulation (subjects look for approval of others and self when carrying out a behaviour). Autonomous motivation includes identified regulation (subjects understand the goals being achieved by carrying out a behaviour), and integrated regulation (carrying out the behaviour helps to meet personal meaningful goals) (Ryan & Deci, 2000).

Studying the SDT continuum in the context of PDI becomes relevant for its capacity to analyse behaviours that are both externally initiated and inherent to university teachers. Furthermore, research on SDT suggests that externally regulated behaviours may be interiorized through the satisfaction of the psychological needs (Vansteenkiste, Lens, & Deci, 2006). In the same line, studies suggest that individuals who properly interiorize external motivations experience well-being and satisfaction, compared to non-motivated individuals (Nowell, 2017).

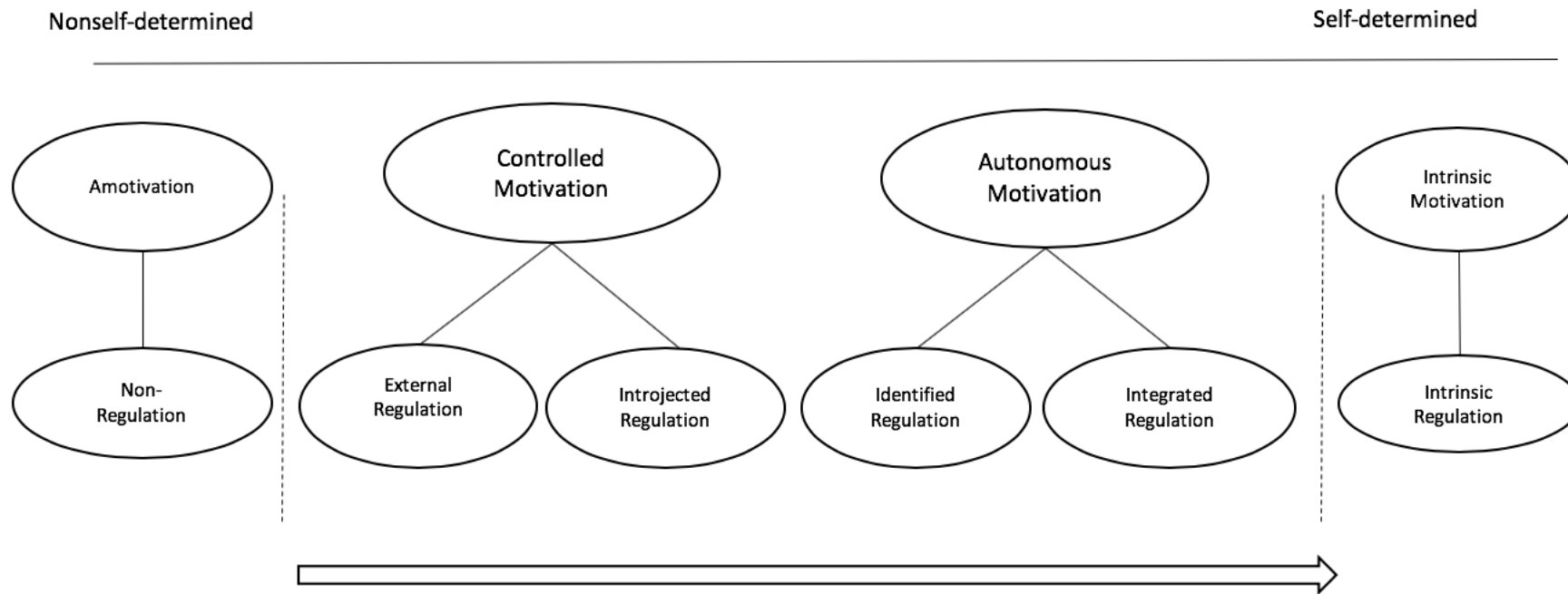


Figure 1. Process of interiorization in the Self-determination continuum. Adapted from Ryan and Deci (2000).

### The basic psychological needs

The three basic psychological needs of autonomy, competence, and relatedness are considered innate, essential, and universal (Ryan & Deci, 2000). As with other needs – for example physiological – restricting or frustrating them, may hinder growth and well-being (Ryan & Deci, 2000). On the other hand, when psychological need satisfaction is experienced, an individual may become autonomously motivated, even when conditions initiate outside the self (Ryan & Deci, 2000). Understanding how to address the basic psychological needs of university teachers participating in PDI, may provide grounds to facilitate need support in this particular learning environment, thus enhancing an autonomous motivation.

‘Autonomy’ refers to an individual’s faculty of volition; a person’s need to make personal choices. In a context of teacher professionalization, it refers to the active involvement of university teachers in the design of PDI. As research suggests, PDI design affects teachers’ willingness to internalize the training content (Aelterman, Vansteenkiste, Van Keer, & Haerens, 2016). It also involves – among others – providing university teachers with explanatory rationales, use of non-controlling language, nurture their inner resources, and allow them various options to exercise choice (Su & Reeve, 2011). In other words, PDI can foster the need of autonomy through active involvement of university teachers in its design process linking the content of PDI to their needs and by allowing a direct application of the content learned.

‘Competence’ refers to the desire to be influential, to be effective, and to be able to successfully meet challenges (Ryan & Deci, 2000). Satisfying the need of competence gives a sense of security and stability (Chen et al., 2015). In the context of PDI, university teachers need to feel confident before introducing new learning to their work-settings. As research suggests, application of the content learned is facilitated when participants feel up to the task (Van den Broeck, Vansteenkiste, Witte, Soenens, & Lens, 2010). To satisfy the need of competence, university teachers need to experience a well-structured PDI. This implies clear instructions during training, be able to engage in challenging tasks, receive feedback, and allocate time for practice (Van den Broeck et al., 2010).

‘Relatedness’ refers to a person’s desire to relate to others, to feel bonded, and to be loved (Ryan & Deci, 2000). It extends to establishing an organizational climate supporting personal growth (Vansteenkiste, Ryan, & Deci, 2008). In terms of PDI this translates to elements of

accompaniment and support, to avoid experiencing isolation when confronting the challenge of learning a new content and applying it to a new setting. This calls for PDI design elements such as institutional accompaniment, collaboration, support during early application of what was learned, providing feedback, among others.

#### Benefits of need-supportive learning environments

Numerous benefits have been associated with the satisfaction of the psychological needs in the educational context. It has been linked to autonomy support which in turn predicts positive performance (Baard, Deci, & Ryan, 2004). It has been found to improve academic performance in graduate students (Kusurkar, Ten Cate, Vos, Westers, & Croiset, 2013), as well as self-efficacy, motivation and achievement (Jungert & Koestner, 2015). In the same manner, need-supportive learning environments have been found to foster learning, engagement, self-regulation, and well-being (Reeve et al., 2014). On the other hand, controlling motivational learning environments have been found to lead to anxiety and stress (Reeve & Tseng, 2011), fostering a lack of motivation (amotivation), restricting the areas already mentioned above: engagement, self-regulation, learning, achievement, and well-being (Soenens, Sierens, Vansteenkiste, Dochy, & Goossens, 2012).

The positive outcomes suggested by research on need support explains why the present study puts forward the SDT theoretical framework to investigate current PDI design approaches. Up to now, the literature presents studies considering the satisfaction of psychological needs in the education of student teachers (Evelein et al., 2008), training of teachers in view of need-supportive teaching (Aelterman, Vansteenkiste, Van den Berghe, De Meyer, & Haerens, 2014), the effect of pedagogical practices on student motivation (Guay, Valois, Falardeau, & Lessard, 2016), the impact of a PDI on teachers' motivational discourse (Kiemer, Gröschner, Kunter, & Seidel, 2018), or the application of need satisfaction approaches in classrooms to foster student engagement (Niemi & Ryan, 2009). Although enlightening, more studies are needed to explain how current PDI design guidelines may enhance motivation in university teachers.

## Method

### Context

Ecuadorian policy for higher education has undergone a significant reform in the past 10 years. Current policies require universities to facilitate the professionalization of university teachers, encouraging participation in PDI to secure tenure (Consejo de Educación Superior, 2017). As a response to these requirements, some universities establish centralized units to design and implement PDI for their teachers.

Building on the conceptual and empirical base outlined above, the following research question is put forward: How does the design process of professional development initiatives in higher education consider the basic psychological needs of their teachers? To answer this research question, semi-structure interviews were conducted with 12 PDI designers, that is, university staff responsible for the design and implementation of PDI. Three university authorities suggested to include in the study other key members of their staff knowledgeable of the design and implementation process, totalling 16 interviews.

### Participants

Ecuadorian universities participating in this study were purposefully selected based on the following criteria: academic rank and geographical location. For the academic rank, we used the list provided by the official government entity of Ecuador in charge of assessing institutions of higher education: The Council of Evaluation, Accreditation, and Quality Assurance of Higher Education (CEAACES). CEAACES periodically assesses Ecuadorian institutions of higher education assigning them to a category ranging from the highest (A) to the lowest (D). At the time of the data collection, 5 universities were positioned in category A and 22 universities in category B. First, an initial sample of 10 universities was gathered from groups A and B, geographically located in the three main cities of the country: Quito, Guayaquil, and Cuenca. It was found pertinent to include two more universities, one from Category D representing a vulnerable area of the country, and another from Category C due to its historical importance and size. In total, 12 universities (5 private and 7 public) participated in this study.

### Data collection

The theoretical framework of this study provided the necessary constructs to build a research instrument (Cresswell, 2009) for data collection. Using SDT's constructs of the basic psychological needs – namely autonomy, competence, and relatedness – a semi-structured interview was designed to examine the extent to which PDI designers consider the psychological needs of university teachers in the design of PDI. Each interview was structured into two parts. In the first part, PDI designers were asked an open-ended question where they were encouraged to explain the critical features of their PDI design process. In the second part, they were asked about the consideration given to the three psychological needs and their inclusion in the design and implementation of their PDI. In general terms, they were asked: about the criteria used to involve their teachers in the design process (autonomy), about the strategies implemented for university teachers to learn and acquire new skills (competence), and about the process used to accompany their teachers throughout the PDI (relatedness). An example question addressing the need of competence was 'How do you address the needs of your teachers to learn new skills?' Participants were asked to provide concrete examples to support their answers.

Face-to-face interviews were carried out by the main researcher lasting on average one-hour. Informed written consent was obtained from each interviewee and institutional permission was granted in advance. Anonymity was guaranteed to the interviewee and the university involved in the study. Interviews were digitally recorded and transcribed; next to notes taken by the main researcher (Cresswell, 2009).

### Data analysis

Interviews were transcribed literally. Each interview was considered as an individual case representing a university. Complete replies to an interview question reflected a unit of analysis. Replies to questions were considered as holistic units that could incorporate multiple indicators. QSR NVivo 11 was used to analyse the transcripts in a systematic way.

First, each transcription was read several times before beginning the coding process, according to the theoretical framework established for this study. Using a deductive approach, labels were established for indicators in relation to the psychological needs (autonomy, competence,

relatedness). Based on the SDT theoretical framework, each unit of analysis was coded (full statement) in view of these constructs (Miles, Huberman, & Saldana, 2014). Indicators about the satisfaction as well as the frustration of the basic psychological needs were checked (Berg, 2009).

The main researcher carried out the analysis. In view of establishing interrater reliability, a second researcher – knowledgeable of the Ecuadorian context, language, and well introduced to the theoretical framework of SDT – carried out a second analysis. The results of both analyses were screened and discussed to reach a consensus. After developing a full results overview, the authorities of the participating universities were consulted to give feedback as to the adequacy of the analysis results (Cresswell, 2009). Their feedback was included in the presentation of the results and to develop the conclusions of this study.

## Results

The transcripts were coded to check whether satisfaction or frustration of the basic psychological needs was observed in each unit of analysis. A quantitative overview of the results provides a first picture of the nature of the results (Miles et al., 2014). This overview presents a striking difference in the number of indicators for each basic psychological need: autonomy satisfaction = 50, autonomy frustration = 46; competence satisfaction = 48, competence frustration = 1; relatedness satisfaction = 1, relatedness frustration = 2. An overview of these results reflects few indicators referring to the need of relatedness. It also shows a relatively equal proportion of indicators focusing on the needs of autonomy and competence. Nonetheless, further analysis is needed for a deeper understanding of these results.

In-depth analysis of the answers from participants reflects the different ways current design processes of PDI address the psychological needs of university teachers. These findings were grouped in line with the three basic psychological needs. For a better comprehension of how the psychological needs are addressed, the results are grouped into themes. Additionally, number of indicators and percentage are included.



### Autonomy satisfaction (50/148, 33.78%)

A large number of indicators related to autonomy satisfaction was found, however, when interviewees were asked about the way they address their teachers' need of autonomy, their replies centred mainly on strategies related to a voluntary participation and an evaluation of needs at the end of PDI.

#### Voluntary Participation

Respondents explained that the way they support the autonomy of university teachers is by allowing a voluntary participation in some of their PDI. One university had switched completely the mode of participation to a voluntary system. Unsuccessful previous attempts to establish mandatory participation influenced their decision to opt for participation on a voluntary basis, as illustrated by the following quote: *'we know that there are some universities that make it mandatory for their teachers to participate in entrance courses. We do not do that... We did that during a couple of semesters, but it did not work'*.

Although PDI designers foster voluntary participation, they expressed difficulties in trying to motivate university teachers to participate in PDI. To encourage participation, they mainly build on external motivators such as tenure track requirements.

#### Content Relevance

In line with a voluntary participation, designers mentioned they provide university teachers with elements of choice regarding the content of PDI. That is, they would offer various courses hoping to raise an interest in participants: *'Now we are organizing workshops of continuing formation for our teachers in areas of their interest, for example there are courses on Problem-based Learning. Again, there are courses that are optional...we cannot oblige them (to participate)'*.

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### Autonomy frustration (46/18; 31.08%)

#### Top-down model

Indicators pointed out to design elements that might frustrate the need of autonomy. These were mainly related to the structure and organization of PDI. The indicators reiterated a top-down design process. In general, PDI designers make the key design decisions; no indicators were found about active involvement of university teachers: *'At the beginning of the year we make a plan of training where we establish all the training programs for the year...the department is formed by experts in the area, they analyse the content and they refine the needs and then they say, "it is ready"'*.

#### Mandatory participation

Participants reported that one of the reasons university teachers participate in PDI is to comply with institutional objectives. Many courses, planned by the institutions were mandatory, especially aimed at new teachers, particularly in areas of pedagogy. In this way, it was difficult to perceive institutional strategies that consider the need of autonomy in view of the design process: *'Teachers with low results (evaluations), for the interests of the university, have the obligation, it is not elective, but it is mandatory to follow a course...in pedagogical improvement'*.

### Competence satisfaction (48/148, 32.43%)

A large number of indicators related to the satisfaction of the need of competence. Fostering pedagogical skills and research competences appear being the dominant areas for which competence needs were satisfied. Universities provided their teachers with tools to improve their teaching and research skills. The focus on pedagogy included: teaching with ICT, teaching methodologies, educational theories. In view of developing research competences, they emphasize PDI on project management and specific research skills, tools and methodologies.

### Pedagogy

The lack of initial pedagogical formation of university teachers generates a need for PDI. Hence academic development units prioritized the organization of courses on pedagogy: *'We mainly worry about pedagogical areas. Because it is true that we have engineers, psychologists, etc., but they do not come out (formal education) as teachers.'*

### Research

Interviews reflected great expectations to improve the research skills of university teachers. As in other regions, publications are of primordial interest for institutions, especially for accreditation purposes. At the individual level, university teachers on the tenure-track are required to publish a fixed number of publications in indexed journals thus encouraging participation in courses related to scientific publishing: *'We are asked to train teachers in the areas of research. This is a policy that our university assumed to help in the process of formation and research'.*

Although accreditation requirements may condition the design and participation processes of PDI, a participant manifested that courses related to research can be conceived not only as a way for university teachers fulfil institutional requirements, but an instance where they can develop professionally: *'If you are a professor, you have to constantly update...that is why we emphasize research because it is the way that you get an external update'.*

Accreditation from government entities is a major concern for universities influencing their PDI design. This external factor drives them to design PDI and strengthen the skills of university teachers as way to fulfil institutional requirements. This might cloud other specific individual needs.

### Competence frustration (1/148; 0.68%)

No indicators related to frustrating the need of competence were found. However, the need of competence might have been hindered when university teachers are hardly given opportunities to put into practice what they learned. As a participant mentioned that *'In some cases, it (PDI) may be too theoretical and that may not work out in practice'.*

Relatedness satisfaction (1/148, 0.68%)

The analysis on the way PDI considered the need of relatedness expected to find evidence of elements referring to institutional accompaniment and support for university teachers especially in applying the new learning. In the analysis of the data few indicators were found suggesting a consideration given to the need of relatedness.

Cascade effect

One university stressed an approach that could satisfy the need for relatedness. They encouraged university teachers to transfer their learning to their peers. This is expected to foster peer support and accompaniment during and after training: *'It makes no sense for the training to remain only with the one who received it. We are forming one person to become the nexus, the way, so that they can also train others and multiply the knowledge. That is one of the missions that we seek in the process of training'*.

Relatedness frustration (2/148; 1.35%)

No follow-up

PDI is often conceived as an individual undertaking, since little consideration is given to accompanying measures during and after the PDI programs. No lasting professional relationship seems to be established between university teachers and the institution after concluding a PDI. Also, no evidence was found of systematic follow-up during the transfer process. When asked, interviews reiterated a lack of systematic accompaniment during and after the PDI program. The few indicators pointing at a frustration of the need for relatedness referred to the latter lack of follow-up exemplified in the following statement: *'The course finishes, we give them the certificate and we go on'*.

## Discussion and implications

Given the influential role 'motivation' plays in activities related to professional development initiatives (PDI) (De Rijdt et al. 2013; Gegenfurtner et al. 2009), this study analysed the current PDI design approach and its suitability to enhance motivation in participants. A step to fill a gap in the literature to understand how to motivate participants during PDI to improve its outcomes (Gegenfurtner, Festner, Gallenberger, Lehtinen, & Gruber, 2009; Pugh & Bergin, 2006). Building on the literature on need-supportive learning environments (Aelterman et al., 2014; Vansteenkiste, Sierens, Soenens, Luyckx, & Lens, 2009) and its reported influence on motivation (Baeten, Dochy, & Struyven, 2013; Haerens, Aelterman, Vansteenkiste, Soenens, & Van Petegem, 2015), we applied the psychological macro-theory of Self-determination theory (SDT) to conduct interviews to 16 PDI designers from 12 Ecuadorian universities to understand their current design approach. Specifically, we analysed whether PDI design provides need-supportive learning environments for university teachers by considering their basic psychological needs – that according to SDT – foster motivation in individuals (Ryan & Deci, 2000). The numeric results of this study indicate significant differences in the consideration given to the psychological needs. For example, emphasis is given to the needs of autonomy and competence and less to the need of relatedness. Further analysis indicates the way each need is considered in PDI design.

### Autonomy

A significant number of indicators pointed out to the need of autonomy (96/148, 64.86%). Within autonomy, 50/148 (33.78%) indicators referred to autonomy satisfaction and 46/148 (31.08%) referred to autonomy frustration. Although a significant number of indicators pointed out to autonomy satisfaction, our analysis indicated that universities address this need only by a) encouraging voluntary participation in PDI and b) by providing choice through various courses. According to SDT, autonomy is indeed supported when individuals experience choice. However other elements are necessary. For example, individuals experience autonomy support when their inner motivational resources are nurtured and when they are provided with explanatory rationales (Su & Reeve, 2011). No indicators pointed out to such elements.

Moreover, we found no active participation of university teachers in the design process. In general, centralized units determined the overall design. This is a common trend confirming previous research highlighting PDI design controlled by centralized units (De Rijdt et al., 2016; Kennedy, 2005; Thillmann, Bach, Wurster, & Thiel, 2015). To support the need of autonomy PDI design should include SDT elements such as: the active involvement of participants, providing explicit reasons for learning and developing new knowledge and skills, and explanations of the influence of PDI in their careers (Su & Reeve, 2011; Webster-Wright, 2009). Research suggests that excluding teachers from the design process influences their perceived identities, restricting their involvement in innovation (Ketelaar, Beijaard, Boshuizen, & Den Brok, 2012). On the other hand, previous research applying SDT has found that satisfying the basic psychological needs during training influence teachers' teaching experiences (Aelterman et al., 2016; Evelein et al., 2008).

#### Competence

A significant number of indicators (49/148, 33.11%) pointed out to competence. Further analysis revealed that universities considered satisfying the need of competence by establishing activities focused primarily on promoting new skills-development in teaching and research. Though promising, these strategies remain rather basic since next to acquiring new knowledge, university teachers need support in handling the complex academic environment (Holyoke, Sturko, Wood, & Wu, 2012; Ryan & Deci, 2000; Webster-Wright, 2009) and during the application of the new learning to a new context after attending a PDI (Ten Cate, Kusurkar, & Williams, 2011). In view of effective PDI outcomes and satisfaction of the need of competence, university teachers need extra reinforcement from the institution (Stenfors-Hayes, Weurlander, Dahlgren, & Hult, 2010). In the context of PDI, the need of competence may be satisfied by the inclusion of elements such as: active learning, feedback, peer support, and hands-on-activities.

#### Relatedness

Hardly any indicators could be found fostering the need of relatedness (3/148; 2.03%). No evidence suggests a systematic approach to accompany university teachers during or after the

conclusion of their PDI experience. The link between trainers-unit and university teachers ends as soon as the program finishes. When possible, PDI should continue until the application of learning has taken place, as stated by available research (O'Hara & Pritchard, 2008). As reflected in the interviews, PDI is not conceived as a collaborative activity, but rather as an individual task and responsibility of the university teacher. In line with Webb, Wong, and Hubball (2013) universities should support their teachers through PDI with activities such as: group work, peer feedback, peer assessment, and positive reinforcement.

In the context of this study, the lack of evidence of clear strategies to support the psychological needs of university teachers during PDI are a call to review current design processes. Since the design of PDI tailored to every need may prove challenging (Tjin A Tsoi, de Boer, Croiset, Koster, & Kusurkar, 2016), this study is a call to acknowledge university teachers psychological needs to foster motivation instead of recurring to external incentives to coerce their behaviour.

Inevitably, external factors are present in the context of PDI. For example, it is often presented to secure tenure or as a condition in the context of other promotion requirements (Parsons, Hill, Holland, & Willis, 2012). Ecuadorian educational policies require university teachers to participate in PDI – as in other regions – significantly influencing participation (Behari-Leak, 2017; Consejo de Educación Superior, 2017). Also, for accreditation purposes, universities design PDI to fulfil governmental requirements. Although these external factors may influence university teachers' behaviour and PDI design, the inclusion of elements aimed at satisfying teachers' psychological needs may facilitate the internalization process to appropriate the new learning and make autonomous decisions (Ryan & Deci, 2000). Efforts should be made to support the autonomy of university teachers during PDI to facilitate the internalization process and foster autonomous motivation, for example, by considering satisfying each of their psychological needs.

### **Limitations and suggestions for further research**

The results of the present study help develop a first in-depth picture about the way current PDI-design might be related to need-supportive learning environments. Nonetheless, this study also reflects limitations. Firstly, the sample only comprised PDI designers, that is, university authorities in charge of the design and implementation process of PDI. Involving university

teachers as the target audience could help enriching the picture. Secondly, the data collection was based on individual interviews with PDI designers from centralized units; thus, losing opportunities to map within and inter-institution variations linked to faculties, knowledge domains, or policies related to Quality Assurance. Future studies could centre on the analysis of actual on-campus PDI implementations. Finally, evidence is needed as to the relation between need-satisfaction and motivation to transfer while university teachers participate in PDI-related activities. Further studies could address this gap in the literature.

### Conclusion

The current study is an attempt to fill a gap in the PDI literature by analysing current design approaches and their linkage to need-supportive learning environments that foster motivation in university teachers. The innovative inclusion of SDT, proved a relevant theoretical foundation to study PDI in higher education, providing an approach to analyse how design elements may support university teachers by satisfying their psychological needs instead of creating environments that limit their participation – and other relevant outcomes such as transfer of learning – to the fulfilment of institutional or governmental requirements. This call echoes previous studies suggesting needs satisfaction as a way to promote participation in PDI (Tjin A Tsoi, De Boer, Croiset, Koster, & Kusurkar, 2016). Under this framework, PDI design may provide opportunities for university teachers to appropriate themselves of the new learning (autonomy), to be confident to apply the new learning (competence), and to receive institutional support (relatedness). Further research is needed on how need support may be included in PDI design. Knowledge on ways to consider the psychological needs of university teachers may facilitate the process of internalization when their behaviours towards PDI may not be inherent to them. This requires PDI designers to adopt a holistic approach and include motivational variables in its design.



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# CHAPTER 4

## **Professional development initiatives in higher education: studying the link between need satisfaction and motivation to transfer**

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## Chapter 4

### Professional development initiatives in higher education: studying the link between psychological need satisfaction and motivation to transfer

#### Abstract

In an attempt to improve the quality of education, universities organize professional development initiatives (PDI) for their teachers, expecting them to apply their learning to the workplace. However, transfer doesn't always occur. Although research identifies 'motivation to transfer' as a key predictor in the transfer process, there is a lack of understanding on how to motivate university teachers to transfer. This prompts the present study building on Self-Determination Theory (SDT) to investigate university teachers' need satisfaction during a PDI as predictor of motivation to transfer. Structural Equation Modeling analyses were performed to a sample of 409 university teachers enrolled in various PDI at two major Ecuadorian universities. The results suggest that need satisfaction significantly predicts university teachers' autonomous motivation to transfer compared to a controlled motivation to transfer. These results and its implications are discussed.



## Introduction

Teacher professional development initiatives (PDI) have been found to strengthen participants' knowledge and skills, positively influencing teaching effectiveness and improving student achievement (Desimone 2009). In the context of higher education, PDI have been linked to strengthening university teachers' teaching instruction, especially in circumstances where university teachers have not received formal pedagogical training (Stenfors-Hayes et al. 2010). Hence, as a means to improve the quality of education, university teachers are expected to participate in PDI and apply their learning to the workplace (Gregory and Salmon 2013; Behari-Leak 2017). Researchers from various disciplines, e.g. organizational psychology, use the terms 'transfer of learning' or 'transfer of training' to refer to the successful application of the knowledge and skills acquired in training (Gegenfurtner 2013). As these terms have somewhat different meanings (Gegenfurtner, Veermans, et al. 2009), in this chapter, we use the term 'transfer' to denote the process of application of new learning acquired in a PDI to the workplace (Gegenfurtner 2011).

While significant human and material resources are allocated to the implementation of PDI, transfer does not always occur (Botma et al. 2015; Grossman and Salas 2011). In this line, researchers from various disciplines have proposed ways to reduce the 'transfer gap' highlighting the most salient variables influencing transfer (Holton III et al. 2007; Segers and Gegenfurtner 2013). In this respect, several studies emphasize the predictive nature of motivational variables in the transfer process (see Burke and Hutchins 2007; Blume et al. 2010), with the literature review of De Rijdt et al. (2013) identifying 'motivation to transfer' as one the most influential variables of transfer in higher education – a variable directly related to the characteristics of the learner.

While motivation to transfer is considered an influential variable of transfer, research identifying its predictors is scarce, thereby limiting the development of concrete guidelines to motivate participants to transfer while attending PDI (Pugh and Bergin 2006). A lack of knowledge on predictors of motivation to transfer may debilitate the design of PDI environments and consequently its outcomes. Furthermore, there is a call for more studies that may gain a more fine-grained insight into motivation to transfer, thereby applying theoretical

frameworks that conceive motivation as a multi-dimensional construct (Gegenfurtner et al., 2009).

The present study addresses this need by applying one of the most authoritative motivational theories: The Self-Determination Theory (SDT). SDT's theoretical framework can be applied to analyse the type of motivation experienced by an individual, for it distinguishes between an autonomous motivation, that is, marked by freedom and choice and a controlled motivation, that is, characterized by pressure and tension (Vansteenkiste, Lens, and Deci 2006). Despite SDT's suitable theoretical framework, the existing literature in higher education lacks – to our knowledge – evidence of an actual link between psychological need satisfaction and motivation to transfer in the context of PDI. The presence of such link may have direct implications in PDI design, providing evidence-based guidelines to motivate university teachers to transfer. To investigate a possible association, data was collected from 409 university teachers in two major Ecuadorian universities participating in PDI organized by their institution. Structural Equation Modeling (SEM) was performed to study the relation between need satisfaction and frustration (autonomy, competence, relatedness) and motivation to transfer (autonomous, controlled).

### **Professional development initiatives and transfer**

The professional development of teachers comprises various activities focused on strengthening abilities, knowledge, and attitudes to ultimately improve student learning (Desimone 2009). Professional development can include formal and informal settings; both found to be conducive to learning (Thomson 2015). Congruent to the focus of this study the term professional development initiative (PDI) is used to refer to activities formally organized by institutions of higher education – for their teachers – directed to achieve positive outcomes in their knowledge and skills, to support their teaching and related way of thinking (Merchie et al. 2016). It can be argued that the investment of significant resources allocated to PDI compels institutions to expect positive results from its implementation. This explains why various disciplines, including education, focus on ways to improve transfer (Holton III et al. 2007; Konkola et al. 2007).

Transfer is defined as the application of new knowledge and skills acquired in training into a new context (Bransford and Schwartz 1999). It is not merely the transmission or ‘passing over’ of information from training to the workplace. Instead, as Larsen-Freeman (2013) explains, it is a dynamic process where the learner ‘transforms’ the knowledge acquired before implementing it in different settings. Although transfer is a concept mainly studied in non-educational contexts, e.g. industrial psychology (Gegenfurtner 2011), it is pertinent to higher education due to its reported influence on teacher-related areas such as sense-making of learning during training (Stewart 2014), teaching approaches (Stes, Coertjens, and van Petegem 2010), and teachers’ beliefs (Aelterman et al. 2016). Since PDI is conceived as a strategy to improve the overall quality of education directly benefiting the students and teachers (Avalos 2011), as well as the institution (Drew and Klopper 2014), the lack of transfer is a concern for all the actors involved.

### **Motivation to transfer**

Motivation to transfer, a term coined by Noe (1986), is defined as the desire of the trainee to apply the knowledge and skills – acquired in training – to the workplace. The literature consistently identifies the variable ‘motivation to transfer’ as a predictor of transfer (Yamkovenko and Holton 2010; Bhatti et al. 2013; Weisweiler et al. 2013). In the context of higher education, research on professional development increasingly concentrates its attention on this key concept (De Rijdt et al. 2013), with various studies underpinning the role of motivation to transfer (Chiaburu and Marinova 2005; Hamid, Saman, and Saud 2012). It has been found to be linked – among others – to positive affect at the individual and group level (Paulsen and Kauffeld 2017) and to engagement in teacher training (McDonald 2011). Additionally, a meta-analytic study by Gegenfurtner (2011) on motivation and transfer in professional training (148 studies,  $k = 197$ ,  $N = 31,718$ ), concludes that motivation to transfer has a significant large effect on the transfer process.

Again, to foster motivation to transfer it is necessary to understand what predicts motivation to transfer in participants (Pugh and Bergin 2006). Knowledge about its predictors may have direct implications for the design and implementation process of PDI (Peters et al. 2012). In this

line, research on precursors identify factors such as: motivation to learn, expectation to use the content learned, and having a motivating job (Kontoghiorghes 2002), attitudes towards training content, relatedness and instructional satisfaction (Gegenfurtner, Festner, Gallenberger, Lehtinen, & Gruber, 2009), as well as pre-training conditions such as transfer-effort performance expectations, supervisory support, and transfer opportunity (Massenberg, Schulte, and Kauffeld 2017). Although these studies provide an understanding about a number of predictors in various contexts, they do not shed light on design principles of PDI that may motivate university teachers to transfer.

In addition, the transfer literature points out the need to study the qualitative aspects of motivation to transfer (Gegenfurtner, Veermans, et al. 2009). That is, to focus on the kind of motivation rather than the amount of motivation an individual may have to apply their learning to a new context. To pursue this goal there is a need to apply theories that conceive motivation as a multi-dimensional construct (Gegenfurtner et al. 2009).

### **Self-Determination Theory (SDT)**

SDT is a psychological macro-theory that studies the motivational dynamics of individuals in various aspects of their lives (Beachboard et al. 2011; Van den Broeck et al. 2010). According to SDT, individuals experience personal and professional fulfilment when their basic psychological needs of autonomy, competence, and relatedness are satisfied; a fundamental principle for individual growth (Vansteenkiste, Ryan, and Deci 2008). An active frustration of these psychological needs can also occur, hindering the personal and professional growth of an individual.

#### **The Basic Psychological Needs**

The basic psychological needs are considered to be innate and universal, influencing growth and personal satisfaction of individuals in various life settings (Ryan and Deci 2000). The need for autonomy refers to an individual's need to experience volition and choice, i.e. to feel psychologically free (Ryan and Deci 2000). In the context of PDI it relates – among others – to



university teachers' active involvement in its design process and application of training. Given that PDI design has been found to affect participants' willingness to internalize the training content (Aelterman et al., 2016), researchers increasingly call for teacher-centred PDI designs built upon the needs of the learner instead of traditional designs based on the transmission of information by an 'expert' (Kennedy 2005; Dreer, Dietrich, and Kracke 2017).

The need for competence refers to the individual's natural desire to dominate the surroundings, to be effective, and to be able to successfully meet new challenges (Ryan and Deci 2000). Satisfying the need of competence provides a person with security and balance (Chen et al. 2015). In the context of PDI, university teachers need to experience a well-structured PDI to facilitate learning (Sierens et al. 2009). Furthermore, individuals need a high level of self-efficacy in view of transfer (Chiaburu and Marinova 2005). As shown in previous research, participants are more willing to apply what they learned when they feel confident with the new learning (Van den Broeck et al. 2010). Providing feedback, allowing time for practice, and guidance may satisfy the need of competence (Aelterman et al. 2016). Hence, a way to satisfy the need of competence during a PDI may be through a careful and balanced implementation of theory and practice, allocating time for participants to reflect on the new content to facilitate learning (Avalos 2011).

Relatedness specifies a person's desire to feel connected with others, to belong to a group and feel supported (Deci and Ryan 2002). It extends to establishing an organizational climate supporting personal growth (Vansteenkiste, Ryan, and Deci 2008). This implies that PDI design should foster learning environments conducive to the establishment of relationships that provide the learner with the proper accompaniment and support during the transfer process (Aelterman et al. 2013). Sharing experiences and collaboration with colleagues in trying out new ideas may satisfy this need. In this sense, perceived institutional support is important to optimize the learning environment. In educational settings, the need of relatedness is satisfied by the support of peers and the institution as a whole (Cox, Duncheon, and McDavid 2009).

### Autonomous and controlled motivation to transfer

SDT suggests that individuals should develop into autonomous professionals in their work setting (Vansteenkiste, Ryan, and Deci 2008). Ideally, participation in PDI-related activities should then arise from an innate desire to develop professionally (Jansen in de Wal et al. 2014). However, behaviours and attitudes may not always be inherent to all participants (Grossman and Salas 2011). Investigating behaviours initiated outside the self and how they may be internalized is one of the strengths of SDT (Ryan and Deci 2000). This process is explained through the concepts of autonomous and controlled motivation.

Autonomous motivation encompasses intrinsic and identified regulation. In the context of training, the concept of 'autonomous motivation to transfer' has been defined as the inherent desire of the participant to apply the learning acquired in training to the workplace (Gegenfurtner 2013). On the other hand, controlled motivation encompasses introjected and external regulation. Again, in the context of training, 'controlled motivation to transfer' is conceived as the learner's desire to apply new learning to the workplace due to external factors, such as rewards (Gegenfurtner 2013). The SDT literature identifies differences in the quality of both motivations, by for example, associating autonomous motivation with long-term effects in individuals when compared with the short-term effects promoted by controlled motivation where the activities tend to end when the external conditions that fostered them are no longer present (Haerens et al. 2015; Vansteenkiste, Lens, and Deci 2006; Deci and Ryan 2000).

In addition, SDT explains the way individuals may internalize behaviours that originate outside the self (Ryan and Deci 2000). This process of internalization is described by SDT's controlled-autonomous continuum. A continuum which describes the various forms of behaviour regulation performed by an individual (Ten Cate, Kusurkar, and Williams 2011). The various stages of regulation extend from a complete lack of intention to act, namely amotivation. Then moving to 'controlled motivation' encompassing external and introjected regulations; and 'autonomous motivation' encompassing identified and intrinsic regulations. This continuum explains the various stages of internalization, a process facilitated by the satisfaction of the basic psychological needs (Ryan and Deci 2000). This means that university teachers who experience need satisfaction in the workplace may internalize externally-originated behaviours

better than those who experience need frustration. In conclusion, need-supportive PDI environments may lead to self-determined individuals.

#### Benefits of need-supportive learning environments

Numerous benefits have been linked to need-supportive learning environments in the educational context. For example, supporting the autonomy of students has been found to improve academic achievement, self-efficacy and motivation (Jungert and Koestner 2015) as well as learning, self-regulation, and well-being (Reeve et al. 2014). In the same line, supporting the needs of students by providing a well-structured learning environment (Jang, Reeve, and Deci 2010) and fostering the need of relatedness (Klassen, Perry, and Frenzel 2012) have been found to predict engagement. On the other hand, controlling motivational styles, that is, need frustration, have been related to anxiety and stress even fostering non-motivation in the learner (Soenens et al. 2012; Reeve and Tseng 2011).

Previous research in educational contexts have applied SDT in the field of professional development, successfully identifying the benefits of need-supportive environments influencing, for example, teachers' beliefs about teaching (Aelterman et al. 2016), and teachers' instructional practice (Perlman 2011). SDT has also been implemented to help teachers satisfy the psychological needs of students by providing autonomy support, structure, and interpersonal involvement (Tessier, Sarrazin, and Ntoumanis 2010). In conclusion, SDT has proven to be a valid theoretical foundation applied to the context of PDI, with a primary focus on creating autonomy-supportive environments. Though successful, the focus of many of the PDI interventions applying SDT has been on teaching how to satisfy the needs of students (Su and Reeve 2011). More research is needed focusing on PDI itself and its relationship with motivation to transfer in the context of higher education. This gap in the literature explains the focus of this study on mapping university teachers' psychological need satisfaction/frustration while participating in PDI and its influence on motivation to transfer. This analysis can provide valuable implications for centralized units and researchers on strategies to improve transfer.

### Towards a research model

Putting together the conceptual, theoretical, and empirical basis discussed above, this study focuses on the main actors of transfer in higher education: the teachers. University teachers attending PDI become students, and as 'learners', they need to feel motivated to transfer (Bransford and Schwartz 1999). As presented above, research identifies motivation to transfer as one of the most salient variables in the transfer process (Bhatti et al. 2013; Abrami, Poulsen, and Chambers 2004). More empirical evidence is needed as to what predicts university teachers' motivation to transfer. For this, the present study gathers evidence on the relation between psychological need satisfaction during PDI and motivation to transfer by stating the following research question: How is need satisfaction/frustration of university teachers during PDI related to their autonomous and controlled motivation to transfer? To answer this research question, we hypothesize that university teachers' perceived need satisfaction during PDI is positively related to autonomous motivation to transfer (Hypothesis 1). This implies that university teachers' perceived need satisfaction is not positively related to controlled motivation to transfer (Hypothesis 2). In the same line, we expect to find that university teachers' perceived need frustration is not positively related to autonomous motivation to transfer (Hypothesis 3), while their perceived need frustration is positively related to their controlled motivation to transfer (Hypothesis 4).

### Method

#### Research context and sample

To fulfil accreditation standards, Ecuadorian universities support the professionalization of their teachers in various ways. Some universities design and implement their own PDI, while others encourage their teachers to receive training elsewhere. Additionally, university teachers must fulfil 224 hours of training to secure full-professorship (Consejo de Educación Superior 2017).

The study involved a sample of 409 university teachers from various disciplines from two major Ecuadorian universities. Participation in the PDI was on a voluntary basis open to all members of the institution. Data was collected while teachers participated in various PDI programs

organized by their universities. The content of the courses in both universities were aimed at strengthening skills on teaching strategies. 82% of participants were affiliated to a public university ( $n = 351$ ). 18% represented a private university ( $n = 78$ ). The average number of male participants was higher (71.6%) compared to female participants (28.4%). The mean age of participants was 48.43 ( $SD = 9.52$ ) years, and the average teaching experience was 12.28 ( $SD = 9.31$ ) years.

### Research procedure

The universities participating in this study were selected because of their established PDI policy. The university staff in charge of PDI were contacted by the main researcher to explain the nature of the study and ask for their willingness to participate in it. After confirming their participation and to comply with ethical regulations, permission was received from the university authorities, as well as the facilitators in charge of each training session. Also, informed written consent was received from every participant. While attending a PDI, participants received a one paper-version questionnaire measuring all the variables of this study. The questionnaire was applied during actual sessions at the end of the PDI program allowing participants to link their responses to their PDI experience. Anonymity was guaranteed to the respondents and the institution.

### Measures

#### Psychological need satisfaction and frustration

To measure university teachers' need satisfaction, the 24-item Basic Psychological Need Satisfaction and Need Frustration Scale of Chen et al. (2015) was administered. This well-validated instrument has been applied in 4 countries (China, USA, Peru, and Belgium). The original 5-point Likert scale was used ranging from 1 (strongly disagree) to 5 (strongly agree). Test items were adapted to measure the psychological need satisfaction during PDI, including also the introduction statement: 'During this training program...', as in previous studies on professional development (Aelterman et al. 2016). Sample items: 'I felt I had the freedom and

the possibility to express my opinions' (autonomy satisfaction); 'I felt able to apply the proposed strategies' (competence satisfaction); 'I felt excluded from this group of participants' (relatedness frustration).

Following the validation of the instrument by Chen et al. (2015), a new Confirmatory Factor Analysis was performed using a six-factor model comprising the satisfaction and frustration of the three psychological needs that is autonomy, competence and relatedness. The data fit the theoretical model well ( $\chi^2 = 324,208$ ,  $DF = 233$ ,  $p < .01$ ;  $GFI = .94$ ;  $CFI = .97$ ;  $RMSEA = .03$ ;  $SRMR = .03$ ). Reliability scores for autonomy satisfaction:  $\alpha = .71$ ; autonomy frustration:  $\alpha = .82$ ; competence satisfaction:  $\alpha = .80$ ; competence frustration:  $\alpha = .60$ ; relatedness satisfaction:  $\alpha = .90$ ; relatedness frustration:  $\alpha = .84$

#### Motivation to transfer learning (MTL)

In view of studying motivation to transfer, a review of the literature revealed only one validated instrument by Gegenfurtner, Festner, Gallenberger, Lehtinen, and Gruber (2009) to assess this construct applying various theories (SDT, expectancy theory, and the theory of planned behaviour). Starting from this instrument, a set of items was designed, based on SDT, reflecting a clear distinction between autonomous, that is, intrinsic and identified motivation; and controlled, that is introjected and external motivation to transfer. This preliminary questionnaire was screened by an expert in SDT checking the fit of each item with the motivation dimensions, which resulted in an instrument with 8 items focusing on autonomous motivation to transfer and 10 items assessing controlled motivation to transfer. Each of the items started with the statement 'The reason why I would like to put into practice what I learned during this professional development initiative is...' All four subscales were administered in the questionnaire: 1. External regulation, e.g., 'Others would criticize me if I wouldn't do so'; 2. Introjected regulation, e.g. 'I have to prove to my students that I am a capable good teacher'; 3. Identified regulation, e.g., 'I think what I learned yields important benefits for me and my students'; and 4. Intrinsic motivation, e.g., 'I enjoy trying out different ways of doing my job'.

In view of determining structural validity, the scales were grouped based on the theoretical foundation of SDT: controlled motivation to transfer (external regulation and introjected regulation) and autonomous motivation to transfer (identified regulation and intrinsic motivation).

### Analysis approach

First, descriptive statistics and reliability analysis were executed. The validity of the instruments was studied applying structural equation analysis. Initial analyses were performed using IBM SPSS Statistics version 22. In view of SEM, IBM AMOS version 22 was used. To interpret SEM-results, the benchmarks of Hu and Bentler (1999) were implemented to evaluate the model fit: the Goodness of Fit Index ( $GFI > .95$ ), the Comparative Fit Index ( $CFI > .95$ ), the Root Mean Square Error of Approximation (RMSEA between  $.05 - .08$ ), and the Standard Root Mean Square (SRMR  $\leq .08$ ).

### Results

Building on data from 50% of the participants, an Exploratory Factor Analysis (EFA) was conducted, with an oblimin rotation to allow potential covariances between both constructs and by looking at factor loadings of items  $< .5$  (eigenvalue) (Hair et al. 2006). A three-factor solution emerged, explaining 56% of the variance. The first factor consistently clustered 7 of the 8 items that focus on autonomous motivation to transfer. The second factor grouped 4 items linked to controlled motivation to transfer, while the third factor grouped 3 items related to controlled motivation to transfer (but with negative factor loadings). Considering the theoretical focus on either autonomous or controlled motivation to transfer, subsequently an EFA was performed, focusing on a two-factor solution. This analysis explained 54% of the variance, showing a similar first factor (7 items) and a second factor grouping the controlling items belonging to the earlier second and third factor. Removing items with factor loadings  $< .50$ , four items were deleted from the original 18-item scale, resulting in a balanced 7-item

scale for autonomous motivation to transfer and a 7-item scale for controlled motivation to transfer.

Next, a Confirmatory Factor Analysis was conducted. The results indicate a good fit of the data with the theoretical model:  $\chi^2 = 173.31$ ,  $DF = 68$ ,  $p < .01$ ;  $GFI = .94$ ;  $CFI = .95$ ;  $RMSEA = .06$ ;  $SRMR = .08$  and reliability scores were sufficient for both autonomous ( $\alpha = .87$ ,  $n = 7$ ) and controlled ( $\alpha = .78$ ,  $n = 7$ ) motivation to transfer.

Before testing the model, all research variables were included in a correlation analysis (see Table 1). Satisfaction of each psychological need (autonomy, competence and relatedness) was positively correlated with an autonomous motivation to transfer but not to a controlled motivation to transfer, while frustration of the psychological needs showed a significant negative correlation with autonomous motivation to transfer and a significant positive correlation with a controlled motivation to transfer. In addition, a positive correlation was observed between autonomous and controlled motivation to transfer.

Table 1. Descriptive statistics and correlations among variables of this study,  $N = 409$ .

	M (SD)	1	2	3	4	5	6	7	8
1. Autonomous motivation to transfer	4.46 (.66)	1	,26**	,54**	-,37**	,50**	-,23**	,36**	-,30**
2. Controlled motivation to transfer	2.45 (1.1)	,26**	1	,08	,16**	-,00	,17**	,08	,11**
3. Autonomy satisfaction	4.13 (.65)	,54**	,08	1	-,51**	,67**	-,37**	,57**	-,46**
4. Autonomy frustration	1.76 (.81)	-,37**	,16**	-,51**	1	-,52**	,64**	-,35**	,57**
5. Competence satisfaction	4.20 (.63)	,50**	-,00	,67**	-,52**	1	-,48**	,51**	-,46**
6. Competence frustration	1.96 (.73)	-,23**	,17**	-,37**	,64**	-,48**	1	-,37**	,61**
7. Relatedness satisfaction	4.05 (.69)	,36**	,08	,57**	-,35**	,51**	-,37**	1	-,51**
8. Relatedness frustration	1.83 (.72)	-,30**	,11*	-,46**	,57**	-,46**	,61**	-,51**	1

\*. Correlation is significant at the 0.05 level (2-tailed).

\*\* . Correlation is significant at the 0.01 level (2-tailed).

A structural equation model, based on maximum likelihood estimation, was tested focusing on the satisfaction and frustration of the basic psychological needs as predictors of autonomous and controlled motivation to transfer (Figure 1).



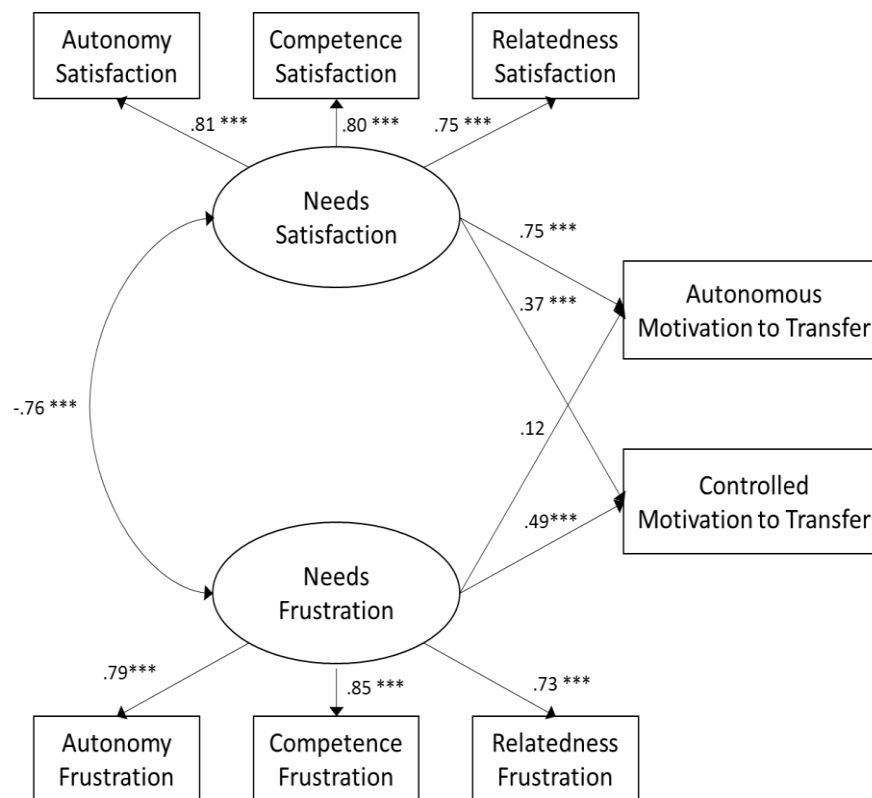


Fig. 1. Path model with parameter estimates for relations between the satisfaction and frustration of teachers' basic psychological needs attending professional development initiatives and their controlled and autonomous motivation to transfer,  $\chi^2(12) = 42,311$ ,  $p < .001$ ; CFI = .98; GFI = .97; RMSEA = .07, SRMR = .04,  $***p < .001$ .

Testing the model resulted in good fit indices:  $\chi^2 = 42,311$ ,  $p < .001$ ; DF = 12; CFI = .98; GFI = .97; SRMR = .04; RMSEA = .07; SRMR = .04. The results support Hypothesis 1 indicating that psychological need satisfaction largely predicts university teachers' autonomous motivation to transfer ( $\beta = .75$ ,  $p < .001$ ). To a lesser extent, and contrary to Hypothesis 2, controlled motivation to transfer was found to be predicted by psychological need satisfaction ( $\beta = .37$ ,  $p < .001$ ). Regarding the perceived frustration of their psychological needs, the results indicate that controlled motivation to transfer was predicted by need frustration ( $\beta = .49$ ,  $p < .001$ ; Hypothesis 4) while a non-significant link was found between psychological need frustration and an autonomous motivation to transfer ( $\beta = .12$ ,  $p > .001$ ; Hypothesis 3). Finally, a significant but negative covariance between needs satisfaction and needs frustration was found ( $\beta = -.76$ ,  $p < .001$ ).

## Discussion

Increasingly, research on professional development initiatives (PDI) in higher education gains importance, providing documented evidence on its influence on teaching practices and its role in the improvement of the quality of education (Nicoll and Harrison 2003). To be successful, participation in PDI needs to lead to a continuous application of what was learned, that is, transfer. While motivation to transfer has been identified as an important predictor in the transfer process, more evidence is needed on how to motivate teachers to apply their learning, and consequently, how to strengthen the design and application of PDI (Evers, Kreijns, and Van der Heijden 2015). This study contributes to current research on predictors of motivation to transfer by investigating its relationship with need satisfaction and need frustration during PDI. This study builds on the Self-Determination Theory (SDT) that distinguishes between autonomous and controlled motivation underlying someone's behaviour. Furthermore, studies based on the SDT theoretical framework suggest that need satisfaction fosters personal flourishing (Deci and Ryan 2002), influences teachers' beliefs during training (Aelterman et al. 2016), and evokes higher competence, enjoyment and lower anxiety in individuals (Black and Deci 2000).

To gather evidence for a possible relationship between the need satisfaction and motivation to transfer, questionnaires were applied to university teachers while attending PDI organized by their own institutions. Using a Structural Equation Modelling approach, this study analysed the association between need satisfaction and frustration during PDI and the constructs of autonomous and controlled motivation to transfer.

A first finding provided by the bivariate correlations indicates a significant positive relationship between need satisfaction and an autonomous motivation to transfer. The subsequent structural model corroborates Hypothesis 1 suggesting that need satisfaction has a large positive effect ( $\beta = .75$ ) on autonomous motivation to transfer. This implies that satisfying the psychological needs (autonomy, competence, relatedness) of university teachers during PDI significantly predicts an autonomous motivation to transfer. These results open a research trajectory to investigate the impact of need-supportive PDI on transfer of learning to the workplace.

The bivariate correlations displayed a non-significant association between need satisfaction and controlled motivation to transfer. Yet, the structural model indicates a modest relationship ( $\beta = .37$ ) between need satisfaction and controlled motivation to transfer. Due to this unexpected finding, contrary to Hypothesis 2, further analyses were conducted. Applying SDT, a refined structural model was tested investigating the single construct of need satisfaction (Chen et al. 2015) as predictor of the four motivational constructs with identified and intrinsic motivation (both forming autonomous motivation), and introjected and external motivation (both forming controlled motivation). The results of the refined model found intrinsic motivation ( $\beta = .44$ ) and identified motivation ( $\beta = .59$ ) to be largely predicted by need satisfaction. Whereas introjected motivation was found to be marginally predicted by need satisfaction ( $\beta = .11$ ); and external motivation was found to be related negatively to need satisfaction at a non-significant level ( $\beta = -.02$ ). Hence, the positive relation in the original structural model between a controlled motivation to transfer and need satisfaction was explained by the latter's specific association with introjected regulation.

Similar findings have been reported by other studies. Gegenfurtner (2009) found that factors such as 'attitudes towards training', specifically related to external rewards, may influence a controlled motivation to transfer in adult learners. Haerens et al. (2015) also found an unexpected positive relation between need satisfaction and controlled motivation; a further analysis with a refined structural model also found that 'introjected motivation' was the linking factor between need satisfaction and controlled motivation. These findings are not contrary to SDT for it conceives autonomous and controlled motivation as a continuum – not as mutually exclusive constructs. What SDT emphasizes is that controlled motivation is not sufficient to maintain long-lasting effects (Haerens et al. 2015). Continuing application of the learning acquired in training is an essential component of transfer (Noe 1986). Finally, it is important to mention the situated context of the participants in our sample. Ecuadorian policies expect university teachers to fulfil hours of in-service training to secure tenure, affecting the motives for participating in PDI-related activities (Jaramillo-Baquerizo, Valcke, and Vanderlinde 2018). Finding an association between need satisfaction and controlled motivation to transfer suggests that external factors do influence university teachers' motivation and should also be taken into consideration during the design and implementation of PDI.

In addition, the bivariate correlations and the structural model suggest a moderate relationship ( $\beta = .49$ ) between need frustration and a controlled motivation to transfer (Hypothesis 4) and a non-significant weak link ( $\beta = .12$ ) between need frustration and autonomous motivation to transfer (Hypothesis 3). These findings provide a clear starting point for the improvement of PDI, suggesting that PDI design guidelines that frustrate the psychological needs of participants may foster a type of motivation to transfer founded on external conditions. Among other aspects related to learning and well-being, a controlled motivation may lead to immediate results but may not prove helpful for long-term effects (Vansteenkiste, Lens, and Deci 2006).

### Implications of the present study

Evidence suggests numerous benefits associated with need-supportive learning environments, positively influencing the behaviour of individuals (Black and Deci 2000; Aelterman et al. 2014; Sierens et al. 2009). In this line, SDT may serve as a theoretical foundation to provide direct guidelines to satisfy the needs of university teachers participating in PDI, by creating learning environments where they are not obliged but encouraged to make choices and solve problems on their own (autonomy), are provided with structure and clear guidelines (competence) and receive the necessary support and accompaniment (relatedness). By including elements that foster need satisfaction, PDI may promote university teachers to learn and apply their learning because of personal and internal convictions, instead of limiting transfer to a fulfilment of institutional expectations. Although constitutive components of PDI may not be inherent to university teachers' beliefs, SDT contemplates a process of internalization through need satisfaction. In this way, university teachers may internalize these elements and make them their own. Further research is needed into 'what' and 'how' different elements impact the satisfaction of university teachers' psychological needs.

On the other hand, finding a significant prediction of a controlled motivation to transfer by the satisfaction of the psychological needs may suggest that university teachers do consider factors related to their introjected regulation when they transfer their learning. Consequently, PDI should also take into account factors related to the situated context of university teachers in its design (Leibowitz et al. 2015). This result suggests that university teachers conceive PDI-

related activities not only as a path for personal fulfilment but also as a means to fulfil institutional requirements. As the study of Jansen in de Wal et al, (2014) suggests, not all teachers are highly motivated to participate in PDI-related activities, hence more needs to be done to engage university teachers in PDI.

### **Limitations and future research**

The diversity of factors present in each PDI implicate that the found associations are quite robust. Nonetheless, this study presents various limitations. First, the methodological design did not include studying the influence of other variables, such as characteristics of the facilitator, professional background of participants, teaching methods, among others. Future studies could address these variables to understand their influence on university teachers' psychological needs. Also, the inclusion of qualitative data, such as interviews, could deepen the comprehension of the 'what' and 'how' university teachers are influenced by need satisfaction. Due to a limited access to study university teachers while attending PDI in universities and the length of the training sessions, this cross-sectional study measured need satisfaction at one time. Whenever possible, future studies could measure at different points to determine their progressive changes of need satisfaction and motivation to transfer.

### **Conclusion**

By focusing on one of the most influential variables of transfer identified in the literature, this study applied SDT's framework to examine need satisfaction as predictor of motivation to transfer. The results of this study support SDT theorizing indicating a positive association between need satisfaction and an autonomous motivation to transfer, and the latter's negative association with need frustration. This enhanced understanding of predictors of motivation to transfer may provide valid insight into the design and implementation of PDI to improve transfer and ultimately the quality of education (Grohmann, Beller, and Kauffeld 2014).

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# CHAPTER 5

## **The influence of a need-supportive professional development initiative on university teachers' need satisfaction and motivation to transfer: Qualitative and quantitative findings**

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## Chapter 5

### The influence of a need-supportive professional development initiative on university teacher's need satisfaction and motivation to transfer: Qualitative and quantitative findings

#### Abstract

An expected outcome after teachers attend a professional development initiative (PDI) is for transfer to take effect, that is, for PDI participants to apply their learning to a new context. However, transfer does not always occur. Among the many variables influencing transfer, 'motivation to transfer' is consistently identified as an important predictor. Nevertheless, the number of studies showing how to motivate participants to transfer is scarce. Applying Self-Determination Theory (SDT), we designed a need-supportive PDI aimed at enhancing university teachers' motivation to transfer. To understand its influence, we compared the results of participants from the need-supportive PDI with those attending regular PDI offered at the same institution. Results from this mixed-methods study suggest that university teachers participating in the need-supportive PDI appreciate elements of need support during a PDI, thus influencing their need satisfaction and motivation to transfer. The results and the implications of this study are discussed.



## Introduction

Transfer, that is, the application of the knowledge and skills acquired in training to the workplace, is a well-documented area of research (Weisweiler, Nikitopoulos, Netzel, & Frey, 2013). In the context of higher education, transfer is expected as a way to improve the quality of education after teachers participate in a professional development initiative (PDI). The lack of transfer, after allocating a vast amount of material and human resources to the design and implementation of PDI, is a concern for all institutions and its actors (Segers & Gegenfurtner, 2013). Accordingly, researchers from various disciplines (e.g. education, industrial psychology, human resources) investigate the main influencing variables of transfer to find ways to improve PDI design and its outcomes (Segers & Gegenfurtner, 2013). One of the main influencing variables of transfer consistently identified in the literature is 'motivation to transfer', that is, the desire of the trainee to apply the knowledge acquired in a PDI to a new context (Baldwin & Ford, 1988; De Rijdt, Stes, van der Vleuten, & Dochy, 2013). Although motivation to transfer is found in the literature as a key variable of transfer, there is a lack of knowledge on how to motivate participants to transfer (Gegenfurtner, Festner, Gallenberger, Lehtinen, & Gruber, 2009; Pugh & Bergin, 2006).

Research on PDI suggests that to foster teacher change, motivational variables such as psychological need satisfaction should be considered (Aelterman, Vansteenkiste, Van Keer, & Haerens, 2016). However, intervention studies focusing on ways to satisfy the psychological needs of university teachers during a PDI is lacking. Building on previous research studying need-supportive learning environments (Aelterman et al., 2016; Tessier, Sarrazin, & Ntoumanis, 2010), this study proposes the satisfaction of the basic psychological needs as a basis for enhancing motivation to transfer during a PDI. Applying Self-Determination Theory (SDT) of Ryan and Deci (2000) we designed a need-supportive PDI for university teachers, that is, a training program which integrates elements of autonomy (i.e. psychological freedom and sense of volition), competence (i.e. sense of effectiveness), and relatedness (i.e. support from others). In turn, this study examines the way this needs-supportive PDI influences a) teacher's perceived basic psychological needs satisfaction; and b) motivation to transfer. To gather evidence, we collected data from two groups of university teachers from the same institution. The first group participated in 'regular' PDI held at their own institution. The second group

voluntarily participated in the need-supportive PDI. Quantitative and qualitative results from the two groups are discussed.

### Conceptual and theoretical background

#### Motivation to transfer in the context of professional development initiatives (PDI)

In this study, professional development initiatives (PDI) are conceived as activities formally organized by an institution to promote improvement in university teachers' abilities and skills, to optimize performance and advance the quality of education (Merchie, Tuytens, Devos, & Vanderlinde, 2016). The goal of PDI is to create the necessary conditions for teachers to positively influence their ability and work performance (Gore et al., 2017) – to ultimately improve student learning (Krolak-Schwerdt, Glock, & Böhmer, 2014). Accordingly, various studies highlight the influence of PDI on various areas such as pedagogy and technology integration (Dysart & Weckerle, 2015) and teaching approaches (Stes, Coertjens, & van Petegem, 2010).

An expected avenue of improvement through PDI is for teachers to improve their skills and apply their learning to the workplace (De Rijdt, Dochy, Bamelis, & van der Vleuten, 2016). Researchers refer to the successful application of the knowledge acquired in training using the terms 'transfer of learning' or 'transfer of training' (Gegenfurtner, Veermans, Festner, & Gruber, 2009). While these terms hold somewhat different meanings, in this chapter, the encompassing term of 'transfer' will be used to denote the application of new learning – acquired in a PDI – to a new context (Gegenfurtner, 2011).

Despite the significant human and material resources allocated to PDI, transfer does not always occur (Larsen-Freeman, 2013). Consistently, the literature identifies various factors affecting transfer. Amongst them, 'motivation to transfer' increasingly emerges as an influential variable in the transfer process (Bhatti, Battour, Sundram, & Othman, 2013; Weisweiler et al., 2013; Yamkovenko & Holton, 2010). Motivation to transfer, a term coined by Noe (Noe, 1986), denotes the desire of the trainee to apply the knowledge and skills – acquired in training – to the workplace. Motivation to transfer has been found to influence, among others, engagement in teacher training (McDonald, 2011), learning outcomes and goal attainment (Medina, 2017),

and positive affect at early states of training (Paulsen & Kauffeld, 2017). Nonetheless, to foster motivation to transfer, it is first necessary to gain insight into its predictors (Gegenfurtner, Festner, et al., 2009; Pugh & Bergin, 2006) before suggesting design guidelines to enhance teachers' motivation during PDI.

Research on predictors of motivation to transfer identify important factors related to PDI. For example, motivation to learn, expectation to use the content learned, and having a motivating job have been found to predict motivation to transfer (Kontoghiorghes, 2002). In the same line, pre-training conditions such as learner readiness, supervisor support, opportunity to use the learning, performance-outcomes expectations, and performance self-efficacy have been found to affect motivation to transfer (Massenberg, Schulte, and Kauffeld 2016). Furthermore, attitudes towards training content, relatedness and instructional satisfaction have also been found to predict motivation to transfer (Gegenfurtner, Festner, Gallenberger, Lehtinen, & Gruber, 2009). Additionally, motivation to learn, expectation to use the content learned, and a motivating job have been identified as predictors of motivation to transfer (Kontoghiorghes, 2002). Research applying SDT suggests that attitudes towards training content predict a controlled motivation to transfer; on the other hand, attitudes, relatedness, and instructional satisfaction predict an autonomous motivation to transfer (Gegenfurtner, Festner, et al., 2009). Although the literature identifies predictors of motivation to transfer, empirical studies are needed to gain insight into how to motivate teachers to transfer their learning to a new context (Weisweiler et al., 2013). For this, we resort to a motivational theory widely applied in the educational context to enhance motivation in individuals: The Self-determination theory.

#### Self-determination theory (SDT)

The Self-determination theory (SDT) of Ryan and Deci (2000) is a psychological macro-theory applied to the study of motivation in individuals in various life-settings e.g., education, relationships, health care, among others. SDT affirms that individuals experience fulfilment and growth when their basic psychological needs are satisfied (Vansteenkiste, Ryan, & Deci, 2008). In the same way, frustration of the psychological needs may restrict the personal and professional growth of an individual. These basic psychological needs are autonomy,

competence, and relatedness, and are considered to be innate and universal for every individual (Ryan & Deci, 2000).

The need of *autonomy* refers to an individual's sense of volition, that is, the need to freely make personal choices (Ryan & Deci, 2000). In the context of PDI it refers to the capacity for participants to state their opinions and to provide them with opportunities to adapt the content to their own needs. Research suggests, that autonomy is enhanced through the use of non-controlling language, providing an explanatory rationale for each activity, displaying patience, and acknowledging expressions of negative effects (Su & Reeve, 2011). The need of *competence* refers to the natural desire to be effective and to meet new challenges (Ryan & Deci, 2000), providing security and balance to an individual (Chen et al., 2015). In the context of PDI, university teachers need a well-structured training environment to facilitate their learning (Aelterman et al., 2013) and a high level of self-efficacy to effectively transfer (Chiaburu & Marinova, 2005). Since participants are willing to transfer when they feel confident with the content learned (Van den Broeck et al. 2010), providing clear guidelines, instructions, and expectations about the course may satisfy the need of competence of university teachers (Sierens, Vansteenkiste, Goossens, Soenens, & Dochy, 2009). In the same way, accompaniment and support also satisfy the need of competence in the learner (Mouratidis, Vansteenkiste, Lens, & Sideridis, 2008). Hence, to satisfy the need of competence, it is important to create well-structured learning environments that provide unambiguous feedback and clear instructions to avoid confusion among participants (Reeve & Jang, 2006). Finally, *relatedness* is the desire to feel connected and supported by others (Deci & Ryan, 2002). Relatedness provides a learning climate that supports personal growth (Vansteenkiste et al., 2008). During the course of a PDI, university teachers should feel support from the facilitator, their peers, and the institution as a whole, through personal involvement, providing emotional support and accompaniment (Ryan & Deci, 2000).

The concepts of autonomous and controlled motivation to transfer

According to SDT, professionals should develop into independent autonomous individuals (Vansteenkiste et al., 2008). This implies that engaging in PDI-related activities – including transfer – should arise from an inherent interest. Nonetheless, behaviours and attitudes

towards PDI may not always be inherent to every participant (Grossman & Salas, 2011). Facilitating the internalization of behaviours initiated outside the self is one of the strengths of SDT (Ryan & Deci, 2000). This process is clarified by the concepts of autonomous and controlled motivation.

Autonomous motivation is the desire – initiated in the self – to perform an activity out of ones' interest (Ryan & Deci, 2000). The concept of autonomous motivation to transfer in the context of PDI denotes the inherent desire to apply the learning acquired in training to the workplace (Gegenfurtner 2013). Controlled motivation, on the other hand, is the desire to act due to external factors such as rewards or punishments (Ryan & Deci, 2000). In PDI, controlled motivation to transfer denotes the desire to apply the learning to a new context due to external factors (Gegenfurtner 2013). Research evidence suggests the positive effects of fostering autonomous motivation versus a controlled motivation (Haerens, Aelterman, Vansteenkiste, Soenens, & Van Petegem, 2015; Vansteenkiste, Lens, & Deci, 2006). Autonomous motivation has been found to contribute to long-term effects due to the inherent interest of the individual compared to a controlled motivation, where the activities tend to end concurrently with the external conditions that foster them (Ryan & Deci, 2000).

SDT's explains the process of internalization of behaviours originated outside the self by a continuum which describes the various regulations of behaviour (Ten Cate, Kusurkar, & Williams, 2011). It extends from amotivation, or the lack of intention to act; then the controlled motivation cluster encompassing external regulation and introjected regulation; then the autonomous motivation cluster including identified regulation and integrated regulation. Finally, intrinsic regulation, is the activity performed out of personal enjoyment or interest. Importantly, SDT maintains that the satisfaction of the psychological needs facilitates the process of internalization (Ryan and Deci 2000). In other words, we hypothesize that university teachers experiencing need satisfaction during PDI may internalize externally-originated behaviours better than those experiencing frustration of their needs. This implies supporting the needs university teachers during PDI to foster autonomous self-determined individuals.

### Benefits of need-supportive learning environments

Numerous studies have reported the benefits associated with need-supportive learning environments. Need support has been found to influence performance evaluation (Baard, Deci, & Ryan, 2004) and to improve academic performance (Kusurkar, Ten Cate, Vos, Westers, & Croiset, 2013). Also, it has been reported that need support influences self-efficacy, motivation and achievement (Jungert & Koestner, 2015), as well as learning, engagement, self-regulation, and well-being (Reeve et al., 2014). To illustrate the opposite scenario, learning environments characterised by lack of need support, e.g., controlling environments have been related to anxiety and stress, fostering non-motivation and restricting learning and well-being (Reeve & Tseng, 2011; Soenens, Sierens, Vansteenkiste, Dochy, & Goossens, 2012).

Studies have found that teachers' beliefs about teaching (Aelterman et al., 2016) and teachers' instructional practice (Perlman, 2011) have been fostered through need-supportive environments. SDT has been applied to PDI training teachers to foster intrinsic motivation in students and to create need-supportive environments (Vansteenkiste et al., 2008), as well as, training teachers to consider the psychological needs of students in the classroom (Tessier et al., 2010). It has also been implemented to foster the need of relatedness in students to promote higher levels of engagement (Klassen, Perry, & Frenzel, 2012). In conclusion, the focus of PDI interventions applying SDT has been to teach how to support the psychological needs of others (Su & Reeve, 2011). Further research is needed to understand how need-support may influence motivation to transfer in PDI participants.

### The present study

Building on SDT's theoretical framework, we designed a needs-supportive PDI and examined its influence on participants' need satisfaction and motivation to transfer. We wanted to know in which way does a need-supportive PDI influence university teachers': a) perceived need satisfaction and need frustration, and b) their autonomous and controlled motivation to transfer. To answer this research question, we collected data through questionnaires in a major public university in Ecuador measuring university teachers' need satisfaction/frustration and motivation to transfer while they attended actual PDI, thus constituting the control condition. Then, we designed a need-supportive PDI for university teachers at the same institution and



applied the same questionnaires. Additionally, interviews were carried out with 12 participants from the intervention study.

The quantitative approach of this study states the following hypotheses:

Hypothesis 1: University teachers involved in the intervention study will reflect a significantly higher need satisfaction as compared to those in the control condition.

Hypothesis 2: University teachers involved in the intervention study will reflect a significantly lower need frustration as compared to those in the control condition.

Hypothesis 3: University teachers involved in the intervention study will reflect significantly higher autonomous motivation to transfer as compared to those in the control condition.

Hypothesis 4: University teachers involved in the intervention study will reflect a significantly lower controlled motivation to transfer as compared to those in the control condition.

## Method

### Context

In accordance with local regulation, Ecuadorian universities support the professionalization of their teachers by designing and implementing PDI. University teachers are required to fulfil 224 hours of PDI training to secure full-professorship (Consejo de Educación Superior, 2017). The university participating in the study was selected because of its established PDI policy, size, public status, and historical significance.

### Participants in the control condition

It consisted of 331 university teachers. Participation in the PDI was on a voluntary basis open to all members of the institution. Data was collected while teachers participated in various PDI programs organized by the university during a one-year period. The number of males was higher (75%) than females (25%). Mean age of participants was 49.2 (SD = 9.3) years. Average teaching experience was 12.5 (SD = 9.2) years. All programs in this study followed a total of 40 hours face-to-face sessions imparted during a one-week period.

### Participants in the intervention study

The intervention study consisted of 36 university teachers from the same institution who voluntarily signed up for the PDI. The female population was higher (59%) than the male population (41%). The mean age of the participants was 44.90 years (SD = 9.38). Their average teaching experience was 10.92 years (SD = 8.74). From the participants of the intervention study, 12 university teachers volunteered to an interview.

### Quantitative study procedure

University authorities in charge of PDI were contacted by the main researcher to explain the nature of the study and ask for their willingness to participate. After confirming their acceptance, and to comply with ethical regulations, permission was received from the university authorities, as well as the facilitators in charge of each training session. Also, informed written consent was received from every respondent of the questionnaires. The instruments were applied as one paper-version questionnaire measuring all the variables of this study (need satisfaction/frustration and motivation to transfer) while participants attended a PDI. The questionnaire was applied during the last session of the program allowing participants to link their responses to their PDI experience. Anonymity was guaranteed to the respondents and the institution.

### Design of the need-supportive PDI intervention

#### Content and Structure

After an extensive revision of the literature on PDI, the in-service training was designed. This particular PDI ran for three-consecutive months on the following teaching strategies: 'Cognitive Levels of Classroom Questions', 'Think-Pair-Share', 'Flipped-Classroom', and 'Effective Oral Presentations'. This PDI consisted of five interrelated parts: Part 1: face-to-face sessions; Part 2: design of a lesson plan; Part 3: application in a real setting; Part 4: reflection of practice; and Part 5: follow-up sessions.

Part 1 consisted of four face-to-face in-service training sessions imparted by the main researcher lasting two hours and imparted every two weeks. In each session, the facilitator met

with the participants in a classroom located in their institution to present the teaching strategies. The use of images and videos supported the explanations of the nature of each strategy, its method of application and its effect on student learning. In these sessions, participants familiarized themselves with the teaching strategy and received clarifications on its application. Additionally, the face-to-face sessions allowed participants to establish interpersonal relations with their colleagues.

For Part 2, participants were asked to design a lesson-plan and include in it the newly learned strategy. This lesson plan was then uploaded to an online learning environment allowing the facilitator to provide feedback to each participant. The presentation given by the facilitator during the face-to-face sessions were also uploaded to the online learning environment together with supplementary reading and visual materials for participants to review the lesson and visualize examples of application. The inclusion of an online learning environment responded to time restrictions in the daily schedules of university teachers that include, among others: work overload, administrative responsibilities, research, and teaching responsibilities. These activities may complicate the participation of university teachers in PDI (Bubb & Earley, 2013). To facilitate the completion of activities and to improve the professional development of participants (Matzat, 2013; Owston, Wideman, Murphy, & Lupshenyuk, 2008), we incorporated the use of an online learning environment (Bonk & Graham, 2006).

In Part 3 participants were encouraged to choose one of their classes to apply the teaching strategy. For this, participants had an ample period of two weeks to apply the teaching strategy – which they previously elaborated in their lesson-plan. During the application period, the facilitator provided feedback on their lesson-plan through the online environment.

In Part 4, participants had the opportunity to reflect on their experience of application. For this, they were provided with guiding questions e.g., how did the students react to the new strategy? What difficulties did you find when applying the new strategy? After answering these questions, they were asked to upload them in the online environment. Finally, Part 5 consisted of two face-to-face sessions where participants presented examples of application and received immediate feedback from their peers and the facilitator.

Elements of need support included in the PDI intervention

Building on previous research on need-supportive training for teachers (Aelterman et al., 2013; Su & Reeve, 2011), this study included elements aimed at supporting each of the basic psychological needs (autonomy, competence, relatedness) of participants.

To satisfy the need of autonomy, participants were encouraged to choose the 'when' and 'how' to apply the new teaching strategy. That is, they were asked to choose the application setting and adapt it to their own needs according to the characteristics of their students and content of the lecture. Considering that teachers may have various teaching approaches (Postareff, Lindblom-Ylänne, & Nevgi, 2007; Trigwell, Caballero Rodriguez, & Han, 2012), the strategies contemplated two broad teaching styles: a) student-centred (Think-Pair-Share and the Flipped-Classroom) and b) teacher-centred (cognitive levels of classroom questions and effective oral presentations). Additionally, particular attention was given to explain the nature and utility of each strategy. In other words, we provided a clear rationale for each activity, thus implementing an important element of autonomy support (Su & Reeve, 2011). In addition, the facilitator presented each strategy using elements from previous studies on need-supportive training (Aelterman et al., 2013), namely, adopting an emphatic attitude, providing choice, and using non-controlling language (see Reeve & Jang, 2006).

For the need of competence, an emphasis was given to provide a well-structured learning environment (Aelterman et al., 2016; Reeve & Jang, 2006) that included elements such as: a) explanations of the constitutive parts of each teaching strategy, b) in-class presentation of examples of applications through images and videos, c) time to apply the teaching strategy in a real classroom, d) reflection of application, e) feedback on application by peers and the facilitator during the face-to-face sessions and online environment.

The need of relatedness often co-occurs with the other psychological needs (Reeve & Jang, 2006). Nonetheless, elements – in addition to the ones presented above – to support and accompany participants included: a) feedback throughout the training from facilitator and peers b) two follow-up sessions to present examples of application.

### Preliminary quantitative analysis

Given the unequal number of participants in the control and intervention setting, care was taken to check implications in view of statistical analysis. Data were screened in view of studying outliers and extremes. In the intervention study data from participants had to be excluded from the analysis due to incomplete data (not attending all sessions;  $N = 6$ ). Also, data from three participants had to be removed because of inconsistent response patterns showing misinterpretation in the scale. The total number of participants in the intervention study was of  $N = 36$ . Data from participants in the control condition were also screened. This resulted in 20 cases removed totalling  $N = 331$ .

To test the hypotheses, first assumption about normality were checked (Komogorov-Smirnoff Z test). Since some Z values were significant, it was decided to apply non-parametric statistics to test the hypotheses as to the differences between both research conditions (Hart, 2001). A  $p$  value of  $p \leq 0.05$  is put forward; considering the small sample size in the intervention study.

### Questionnaires

#### Psychological need satisfaction questionnaire

The 24-item Basic Psychological Need Satisfaction and Need Frustration Scale of Chen et al. (2015) was administered. A well-validated instrument applied in China, USA, Belgium, and Peru. Its original 5-point Likert scale was used ranging from 1 (strongly disagree) to 5 (strongly agree). Test items were adapted to measure the psychological need satisfaction during PDI. This instrument included as introduction to the items 'during this training program...' as in previous studies on professional development (Aelterman et al., 2016). Sample items: 'I felt I had the freedom and the possibility to express my opinions' (autonomy satisfaction); 'I felt able to apply the proposed strategies' (competence satisfaction); 'I felt excluded from this group of participants' (relatedness frustration).

Following the validation of the instrument by Chen et al. (2015), a new Confirmatory Factor Analysis was performed using a six-factor model comprising the satisfaction and frustration of the three psychological needs of autonomy, competence and relatedness. The data fit the theoretical model well ( $\chi^2 = 324,208$ ,  $DF = 233$ ,  $p < .01$ ;  $GFI = .94$ ;  $CFI = .97$ ;  $RMSEA = .03$ ;

SRMR= .03. Reliability scores for autonomous satisfaction:  $\alpha = .71$ ; autonomous frustration:  $\alpha = .82$ ; competence satisfaction:  $\alpha = .80$ ; competence frustration:  $\alpha = .60$ ; relatedness satisfaction:  $\alpha = .90$ ; relatedness frustration:  $\alpha = .84$ .

### Motivation to transfer questionnaire

To measure autonomous and controlled motivation to transfer, we used the 14-item questionnaire validated in Chapter 4. This instrument is based on the theoretical framework of SDT and reflects a distinction between autonomous and controlled motivation to transfer. The subscale of autonomous motivation to transfer encompasses the constructs of identified regulation and intrinsic motivation; and the controlled motivation subscale encompasses external regulation and introjected regulation. Each item started with the statement 'The reason why I would like to put into practice what I learned during this professional development initiative is...' Example items: 1. External regulation, e.g., 'Others would criticize me if I wouldn't do so'; 2. Introjected regulation, e.g. 'I have to prove to my students that I am a capable good teacher'; 3. Identified regulation, e.g., 'I think what I learned yields important benefits for me and my students'; and 4. Intrinsic motivation, e.g., 'I enjoy trying out different ways of doing my job'.

For validity purposes a Confirmatory Factor Analysis was applied. Analysis results reflect a good fit of the data with the theoretical model:  $\chi^2 = 93,899$ ;  $DF = 54$ ,  $p < .01$ ;  $GFI = .96$ ;  $CFI = .98$ ;  $RMSEA = .04$ ;  $SRMR = .04$ ). A positive correlation of .24 was observed between autonomous and controlled motivation to transfer. The reliability score for autonomous motivation to transfer was: 7 items Cronbach's  $\alpha = .87$ ; and for controlled motivation to transfer: 7 items Cronbach's  $\alpha = .78$ .

### Interviews

The theoretical framework of this study provided the constructs to build a research instrument in view of data collection (Cresswell, 2009). Using SDT's constructs of the basic psychological needs (autonomy, competence, relatedness) and motivation to transfer (autonomous and controlled) a semi-structured interview was designed to examine their perceived influence of

the needs-supportive PDI on their psychological needs and their motivation to transfer. Each interview was structured into two parts. The first part focused on their general perceptions of the PDI. Then, they were asked about specific elements related to need satisfaction: 1. Autonomy – about the way this PDI addressed their freedom to choose and express their opinions, 2. Competence – the way this PDI facilitated their learning of new skills 3. Relatedness – the way this PDI addressed their need to feel support from others. Participants were asked to provide concrete examples to support their answers. Example questions: Autonomy Satisfaction: ‘In which way this PDI influenced your sense of freedom?’ Competence Frustration: ‘In which way this PDI helped you learn and apply the new strategies?’ Relatedness Satisfaction: ‘In which way this PDI helped you feel supported by others?’ To understand the way the need-supportive PDI influenced their motivation to transfer, they were also asked about the reasons why they would apply (or not) the content learned in the PDI to the workplace.

#### Qualitative procedure and analysis

University authorities gave permission to set up face-to-face interviews with the participants, and each interviewee gave a written-consent. One-hour interviews were carried out, guaranteeing anonymity to all participants and the institution. Interviews were digitally recorded and transcribed literally. Also, notes were taken during the interviews (Cresswell, 2003).

Each transcription was first read several times before beginning the coding process, according to the theoretical framework established for this study. Using a deductive approach, labels were established for indicators in relation to the basic psychological needs (autonomy, competence, relatedness) and motivation to transfer (autonomy, controlled), establishing the criteria of selection based on SDT. Each unit of analysis (full statement) was as such coded in view of the construct based on the SDT theoretical framework (Miles, Huberman, & Saldana, 2014). Indicators about the satisfaction as well as the frustration of the basic psychological needs and their motivation to transfer were checked (Berg, 2009).

QSR NVivo 11 was used to systematically analyse the transcripts, following indicators about the satisfaction of the basic psychological needs and motivation to transfer. Each interview was

considered as an individual case. We considered a complete individual reply to an interview question as a unit of analysis. Replies to questions were considered as holistic units that could incorporate multiple indicators. In view of establishing interrater reliability, a second researcher – knowledgeable of the Ecuadorian context, language, and well introduced to the theoretical framework of SDT – carried out a second analysis. The results of both analyses were screened and discussed to reach a consensus.

## Results

### Quantitative results

#### Descriptive Statistics

Table 1 with overall mean (M), median (Mdn) and standard deviations (SD) for each condition.

Study Variables	Control Group		Intervention Study		Overall M	Overall SD	Overall Mdn	Z
	M (SD)	Mdn	M (SD)	Mdn				
<b>Need satisfaction</b>								
Autonomy	4.1 (.66)	4.2	4.4 (.38)	4.5	4,1	,65	4.2	- 3,2
Competence	4.1(.65)	4.2	4.4 (.46)	4.6	4,2	,64	4.2	- 2,4
Relatedness	4.0 (.70)	4.0	3.5 (.72)	3.7	3,9	,72	4.0	- 3,4
<b>Need frustration</b>								
Autonomy	1.7 (.80)	1.5	1.5 (.53)	1.2	1,7	,78	1.5	- 1,3
Competence	1.9 (.73)	2.0	1.8 (.65)	1.7	1,9	,72	2.0	- ,6
Relatedness	1.8 (.75)	1.7	1.9 (.61)	2.0	1,8	,74	1.7	- 1,1
<b>Motivation to transfer</b>								
Autonomous	4.4 (.69)	4.6	4.6 (.41)	4.8	4,4	,67	4.6	- 1,6
Controlled	2.5 (1.0)	2.6	2.0 (.94)	2.0	2,4	1,09	2.5	- 2,5



### Needs satisfaction

For Hypothesis 1, a Mann-Whitney test indicated that participants in the intervention study reported a higher perceived satisfaction of the need of autonomy (Mdn = 4.5) compared with those in the control condition (Mdn = 4.2),  $U = 4040.00$ ,  $Z = -3.20$ ,  $p = .00$ . Regarding the need of competence, participants in the intervention study reported a higher perceived satisfaction of the need of competence (Mdn = 4.7) compared with those in the control condition (Mdn = 4.2),  $U = 4524.5$ ,  $Z = -2.4$ ,  $p = .01$ . Finally, participants in the intervention study reported a lower perceived satisfaction of the need of relatedness (Mdn = 3.75) compared with those in the control condition (Mdn = 4.0),  $U = 3891.5$ ,  $Z = -3.4$ ,  $p = .00$ . For Hypothesis 2, regarding need frustration, the descriptive statistics suggest a higher need frustration of autonomy and competence in the control condition, and a higher perceived frustration of relatedness in the intervention study. However, the non-parametric test indicates a non-significant difference between the two groups.

### Motivation to transfer

For Hypothesis 3, the descriptive statistics show a higher autonomous motivation to transfer in the intervention study. A Mann-Whitney test indicated that the autonomous motivation to transfer was greater for participants (marginal statistical significance) in the intervention study (Mdn = 4.8) than for participants in the control group (Mdn = 4.6),  $U = 4943.0$ ,  $p = .08$ . For Hypothesis 4, the controlled motivation to transfer in participants from the intervention study (Mdn = 2.0) did differ significantly from those in the control group (Mdn = 2.6),  $U = 4398.0$ ,  $p = .01$ .

Due to the marginal statistical significance we conducted a further analysis applying the SDT framework. Specifically, autonomous motivation to transfer was examined into its two sub-constructs of identified regulation and intrinsic regulation (Deci & Ryan, 2000). This refined analysis indicated that participants in the intervention study reported a statistically significant higher identified motivation to transfer (Mdn = 6.0) than those in the control group (Mdn = 5.6),  $U = 4883.5$ ,  $p = .05$ . The reported intrinsic motivation to transfer did not significantly differ in the intervention study (Mdn = 5.7) compared with the control group (Mdn = 5.5),  $U = 5193.0$ ,  $p = .19$ .

### Qualitative results

In-depth analysis of the answers from participants reflects the different ways the need-supportive PDI addressed their psychological needs. The findings are grouped in line with the satisfaction and frustration of the three basic psychological needs (autonomy, competence, relatedness) and motivation to transfer (autonomous, controlled).

#### Autonomy Satisfaction

Participants appreciated the need to perceive the utility of the strategy they learned, for example, how it would help their classroom activities: *'They (the students) did the Think Pair-Share and it helped a lot, so I see that there is an interest. I raised an interest in the students with these themes... I liked it'*. To satisfy the need of autonomy participants not only needed to be introduced to the content – as it was presented in the face-to-face sessions – they also required time to assimilate and interiorize the content by, for example, allowing them to freely choose when and how to apply each strategy in a real setting. Specifically, it was important for participants to experience how it facilitates their daily teaching practices. As manifested by a participant: *'Because it (teaching) feels more comfortable for me. I see that it becomes easier to teach the class to the students, to participate and not only to teach my class and send them homework...In the future I intend to stay with this technique'*. Providing choice, offering a rationale, and adopting an emphatic attitude were key elements appreciated by participants as shown in the following quotes: *'I have done other courses in pedagogy, and I felt forced (to participate) because I did not like them. I had to fulfil those hours. This is the first course I have come by necessity and I have not been forced'*; and *'I have been bored in the previous courses where they simply transmit information and do not give us material to read at home and participate in the classes. It has been very different, very interesting, everyone has praised the way classes were imparted. And, lately we prepare the material and present it to the rest (of peers) ... it complements very well...and it (the course) is all designed with very good structure'*.

### Autonomy Frustration

Participants expressed a sense of autonomy frustration when the lack of time and work overload constrained their PDI related activities. Institutional responsibilities, demands, and content relevance put pressure on university teachers creating difficulties in their participation of PDI. As one participant mentioned: *'I was not able to participate much in class, I would have liked to arrive (to the sessions) with more strength...it has been a wearying day'*. Besides these external factors, internal factors were reported to influence their autonomy. As one participant manifested that he did not feel *'identified with the second strategy: Think-Pair-Share'*, as he considered it *'not so innovative'*, when compared with the other strategies: *'But I liked very much the others (strategies)'*.

### Competence Satisfaction

A perceived support of the need of competence was observed in the responses of participants. University teachers felt they mastered new skills and, more importantly, were able to put them into practice. The emphasis on a well-structured PDI seemed to foster the need of competence: *'What we learned is what we apply, for example the Think-Pair-Share we did in class (face-to-face). So, in that way, when we saw that activity, we knew what we have to do. So, we apply what we are learning in class'*. Moreover, a clear presentation of the strategy allowed for an easy comprehension and applicability. As one participant manifested: *'they (the strategies learned) have been easy to handle, they are not complicated, and for me they have been quite easy to apply with the students'*. Complementary to clear instructions, the PDI encouraged participants to adapt the content learned to their own needs by introducing a concrete activity: the design of a lesson-plan. This fostered their need of competence for they were able to work on the content of the course – at an individual level; and receive feedback on the design of the lesson-plan and application of the strategy – at a group level. The following quotes exemplify this experience: *'It forces us to investigate, to educate ourselves; the knowledge that one learns by self-educating is hardly forgotten'*. Another participant mentioned: *'The course was quite good because we had to apply it. At the time of application, we realized the benefit of this methodology. If it was only theoretical... I venture to say that fifty percent or no one at all would have applied it. The moment you told us: "with this material that*

*I give you apply it in class”, that was the part that pushed us all to feel much more motivated’.* Finally, Part 4 of the training (i.e. reflection) was also well received by participants who manifested the importance of examining their own learning and application process, as suggested by the following quote: *‘In general, it seems to me that it is a very interesting course, I believe that it allows, above all, a deep reflection on the things that we are doing in class’.*

### Competence Frustration

Once again, time seems to be a perceived obstacle to satisfy the needs of participants. As it was mentioned: *‘To be honest, time is a limitation, even though we may have time to prepare the material and apply it, sometimes other activities come up and complicate its application’.* Another reported difficulty to enhance the need of competence was the infrastructure. As one participant wanted to vary from the traditional lecture: *‘the physical space does not facilitate a variation... because the classrooms are distributed in a traditional way. It is difficult to make a U shape...’* Notably, a participant mentioned how student disposition affects the application of the strategy: *‘I was just talking to my students... I asked them how they liked the activity. They said: “very interesting, but let us be patient, because we are not used to work in such short time” ...this strategy forces them to exploit their capacity of immediate learning’.* Another participant mentioned: *‘I think the only impediment would be the lack of participation from the students. If they do not want to participate, the strategy fails’.*

### Relatedness Satisfaction

Compared to the other two needs presented above, we found less evidence about a perceived satisfaction of the need of relatedness. Participants suggested they felt satisfaction of the need of relatedness through the facilitator. As one participant mentioned: *‘As a student in this course, I felt really motivated. The facilitator was encouraging because he was always attentive to the information and the content, communicating the information on time. The instructions and guidelines have been very clear, comprehensible. I felt connected with the facilitator through the virtual information that was provided’.* Although not specifically contemplated in the design of the PDI, team collaboration was encouraged. Spontaneously, some participants teamed-up with colleagues to work on the PDI activities fostering their need of relatedness: *‘In*

*this course I partnered with another teacher...from economics, to do the homework. We both felt mutual support. If she did not understand something or if I was confused, we supported each other'.*

Despite the mixture of academic backgrounds and professions, participation with professionals from other academic fields seemed to enrich the overall experience and boost the need of relatedness: *'The participation of other colleagues was fruitful. They contributed significantly...it motivated all of us to participate. We were nourished by the participation of teachers from other faculties, it has been very interesting'.* Finally, one participant manifested a perceived support from the institution: *'They (authorities) made this course available. I did not see an impediment of any nature'.* However, we did not find further evidence of a perceived institutional support.

#### Relatedness Frustration

Participants reported frustration as to their perceived need of relatedness. In our design, support aimed at promoting feedback and collaboration in view of satisfying the need of relatedness. However, respondents' examples of establishing relationships with colleagues were scarce, except when working together on the assignments during the sessions. For some, this resulted in getting acquainted and establish a collaboration. Once again, time was a determining factor: *'There was not so much empathy with other colleagues due to the short time we met...I can say this was a factor that did not allow full communication with the rest of participants of the course'.*

The PDI seemed less than an optimal space to develop new relationships among peers. Participants referred, for example, to the efficient but short face-to-face sessions. Due to the large size of the university, for some participants, it was the first time they met and could relate even for short periods of time. As a young participant suggested: *'I think we should find a way to take advantage of these moments of reflection among peers... We should have more time to drink a coffee and discuss about our experiences...and about our learning'.*

At the institutional level, we did not find strong evidence in teachers' perception of support. Instead, we found clear indicators of related frustration: *'One of the problems is the absence of institutional accompaniment. That is, they give you the course and then you have to deal with how to apply it. And we keep repeating the same things, I see this as a weakness'.* Regarding

time, a participant mentioned that *'they don't give me free time (to attend a PDI) I have to arrange my own time'*.

The need of relatedness seems to be the most difficult to satisfy. Participants did not report the institution establishing a system of accompaniment or encouragement after the conclusion of PDI. Participants manifested their desire for the institution to launch initiatives to accompany their continuous formation. Some examples of such incentives were recognition of participation and time allocated for training. As the following quote exemplifies this concern: *'I attend the training outside of my work schedule, and they (authorities) do not give me any feedback. There's no support, they do not mention "how valuable these topics are" or "recognize that you're innovating" or "it's good that you're applying". No, there's nothing like that'*. Furthermore, one participant suggested, sometimes the *'authorities (e.g. deans) are not even aware'* that their own teachers are participating in PDI.

#### Autonomous motivation to transfer

Participants expressed various reasons why they felt autonomously motivated to transfer during the PDI. First, personal characteristics such as openness to experience were reported as motivating factors: *'what motivates me always is the desire to learn...to know that you don't always have the truth... These strategies make sense when we appropriate ourselves (of the content). For this you need to feel free'*. As mentioned in the last quote, to feel free to voice their opinion and modify the strategies according to their needs was recognised as factors fostering university teachers' motivation to transfer. Additionally, their perceived utility regarding the strategy also fostered their motivation to apply their learning: *'I see that the kids (university students) improve their grades. That motivates me to continue to use these strategies'*. Although elements of autonomous motivation to transfer were found in every participant, senior university teachers manifested more autonomous responses. As the following quote suggests: *'In my case, I'm about to retire. So, for me it's not about climbing the ladder..., I just want to learn. It's about learning, and innovating. It's about giving my best and putting into practice (the new strategies) until the last day of my professional and teaching career'*.

### Controlled motivation to transfer

Manifested reasons to apply their learning related also to external factors such as a sense of duty. That is, to fulfil the course requirements and comply with the expectations of the course. As a participant mentioned: *'the main motivation, we believe would be, to comply with the activity and verify if it is applicable for all courses...You must know if it works or if it does not work'*. Other concerns expressed by younger participants were aspirations to secure tenure, student evaluations, improvement in student learning, and even practical reasons such as *'keeping the attention of the students and keep them awake during the early morning sessions'*.

## Discussion

Previous PDI interventions on need support have focused mainly on teaching how to support the autonomy of others (Su & Reeve, 2011). Instead, the present study built on previous research to design and implement a need-supportive PDI and examine its influence on university teachers' basic psychological needs and motivation to transfer; two influential factors in the success of PDI (De Rijdt et al., 2013; Haerens et al., 2015). The mixed-methods approach adopted in this study allowed not only to identify a difference on need satisfaction and motivation to transfer between a control condition and the intervention study, it also allowed to identify the ways in which their needs satisfaction and motivation to transfer was influenced during a need-supportive PDI.

### Autonomy

In line with previous research, it was important for university teachers to grasp the value and utility of the content learned during training (Deci, Ryan, Vallerand, & Pelletier, 1991; Su & Reeve, 2011). The 'content-relevance' criterion is reiterated consistently in the literature of transfer (Renta Davids, Van den Bossche, Gijbels, & Fandos Garrido, 2017), as well as literature on PDI (De Naeghel, Keer, Vansteenkiste, Haerens, & Aelterman, 2017). Despite studies favouring practical over theoretical-based instruction (see e.g., O'sullivan & Deglau, 2006; Opfer & Pedder, 2011; Pedder, Opfer, McCormick, & Storey, 2010) this need-supportive PDI provided a balance between theory and practice by first providing participants with a

meaningful rationale before fostering application of each strategy (Aelterman et al., 2013). Besides relating with participants through a non-controlling language, and using other autonomy-supportive strategies (see Su & Reeve, 2011), and innovative element found to foster the need of autonomy was to provide participants with the possibility to choose and adapt the content to their own needs, an essential component to bring about innovation (Ketelaar, Beijaard, Boshuizen, & Den Brok, 2012). In view of transfer, the satisfaction of the need of autonomy was regarded as essential to foster participants overall satisfaction and motivation, as it has been reiterated in previous research on transfer in non-educational contexts (Weisweiler et al., 2013). The quantitative analysis, established in Hypothesis 1, corroborates to this finding by suggesting a significant difference between the two groups of participants; where those in the intervention study reported a higher autonomy satisfaction.

Despite the reported elements of autonomy satisfaction, participants mentioned their autonomy was restricted by various factors. Although these factors were not related directly to the PDI design, they are worth discussing. First, work overload was a reported factor competing with their intention to participate in PDI and continue their professional development. Research suggests that these factors may cause exclusion especially in younger university teachers (Behari-Leak, 2017). The younger group of university teachers were concerned with all the institutional requirements necessary to acquire tenure and secure their jobs. This seems to influence their desire to comply with PDI requirements. Furthermore, an element directly related to the PDI experience was content relevance. As Mattheos and colleagues (2010) highlight, PDI participants may manifest an interest in certain strategies, suggesting that if the content is not perceived as useful it will not be internalized.

### Competence

The quantitative findings suggest that participants in the intervention study experienced an enhanced satisfaction of the need of competence, compared with those in the control condition. As in previous studies, including the one of Abrami and colleagues (2004), the qualitative findings indicate that participants appreciated the time allocated during the PDI for practice and implementation of the learning (Part 3). Consistent with Renta Davids et. al., (2017), it is critical for PDI to provide content that is relevant and applicable for the setting of



participants. Again, to satisfy the need of competence, it was important to design a well-structured PDI (Part 1) that included: theoretical and practical components, a balanced comprehension of the content, and clear instructions (see Reeve & Jang, 2006). Furthermore, the possibility for participants to design a real lesson-plan (Part 2), supported by feedback from the facilitator and peers (Part 5) facilitated the familiarization with the new strategies. Finally, as in other studies, including the one of Popovic and Fisher (2016), asking participants to reflect on their practice (Part 4) was valued by participants in view of satisfying their need of competence for it allowed them to empower the content viewed in training and reinforce their sense of capability and to identify their own strengths and weaknesses.

Despite the efforts to satisfy the need of competence, need frustration was also observed. Again, a perceived lack of time played a negative role affecting participation in PDI and in the application of new learning as reported in previous research (Shernoff, Sinha, Bressler, & Ginsburg, 2017). As in previous studies (Leibowitz, Bozalek, van Schalkwyk, & Winberg, 2015; Van Tartwijk, Driessen, Van Der Vleuten, & Stokking, 2007), other challenges reported by participants consisted of infrastructure, student disposition, and number of students per classes.

### Relatedness

Relatedness became the most challenging need to satisfy during the PDI. As observed in the quantitative results, the reported satisfaction of the need of relatedness was lower in the intervention study compared with the control group (Hypothesis 1). Although the study of Gegenfurtner, Festner, et al., (2009) found a lack of association between relatedness and autonomous motivation to transfer, this prompts a necessary discussion about the factors that may have contributed to this unexpected result. First, the intensity of the face-to-face sessions did not allow much time to build interpersonal relations among participants. Sufficient time is needed for participants to bond; despite the tendency to restrict PDI time allocation and subsequent implementation (Shernoff et al., 2017). On the other hand, the modality of participation in the control group allowed more time for participants to foster relationships. The condensed schedule of 40 hours of training during a one-week period seemed to foster the

need of relatedness in the control group compared to the 2-hour sessions of the intervention study.

Additionally, PDI seemed to compete for time in the professional lives of the participants. This can be related to the often-weaker status of PDI in institutions (Nicholls, 2014). In settings where PDI is a formal part of the career path at a junior or senior level, this is less an issue (Thomson, 2015). Crucial was participants' consistent manifestation of a lack of support and accompaniment from the institution during and after training. Our findings can be interpreted as a call to rethink institutional responsibilities to support university teachers during and after a PDI. Research suggests that organizational support is key for the satisfaction of a professional and for the organization (Lew, 2009), and that factors related to the work environment are the most challenging ones to tackle during training in view of fostering transfer of learning (Schneider, 2014). The question then, is how to establish an institutional accompaniment for university teachers during PDI? Research suggests that in the context of early career development mentoring networks among new staff could boost this need for relatedness (Denard Thomas, Gail Lunsford, & Rodrigues, 2015). Relatedness could be enhanced by enriching the current design with the establishment of Communities of Practice (Guldberg, 2017). These may guarantee a level of continuity in relatedness. Available examples show how Communities of Practice can potentially influence actual try-outs of new ideas in practice at a later stage; underpinning the sustainability of PDI (Wals, 2014).

Communication established through the online environment allowed participants to relate to the facilitator and feel supported and accompanied during training. This reiterates the findings of comparable online PDI studies; though mainly set up to foster the adoption of online learning (Baran & Correia, 2014). These authors stress how online support extends the perceived support into the personal workspace and establishes a continuity in the feeling of relatedness.

#### Motivation to transfer

Provided that SDT allows for an examination of the motivational state in individuals (Hagger & Chatzisarantis, 2012), this study examined the state of participants' motivation to transfer during a PDI under both constructs: autonomous and controlled. Although marginally significant, the quantitative data indicated a higher autonomous motivation to transfer in the

intervention study when compared with the control group (Hypothesis 3). Further analysis suggests that participants in the intervention study had a significantly higher identified motivation to transfer compared to those in the control condition. The qualitative results indicate that autonomous motivation is related to the internal characteristics of participants. As mentioned in their responses, participants' inner desire to learn was linked to their motivation to transfer. This result supports SDT's theoretical standpoint. As evidenced by studies conducted in other educational contexts, need-supportive teaching does foster an autonomous motivation in the learner (Soenens et al., 2012). Additionally, participants linked their motivation to transfer to autonomy-supportive elements (see Reeve, 2009) related to their PDI experience, such as: allowing to voice their opinion, adapt the content to their own needs, and perceived content utility. This highlights the benefit of satisfying participants' psychological needs during PDI by providing a rationale, supporting their inner desire to appropriate the content, the usage of non-controlling language, allow elements of choice, and provide support and feedback (Aelterman, Vansteenkiste, Van den Berghe, De Meyer, & Haerens, 2014; Reeve & Jang, 2006).

Related to this result, we found that university teachers in the intervention group perceived a lower controlled motivation to transfer than those in the control group (Hypothesis 4). This promising result emphasizes our hypothesis of supporting the psychological needs of university teachers during PDI to decrease motivations linked solely to external factors, in an attempt at enhancing autonomous motivations to transfer. Research suggests that controlling environments lead to negative effects, for example, hindering classroom functioning (Reeve & Jang, 2006). Although this is a promising result and the aim of supporting the needs of participants, a controlled motivation to transfer should not be perceived as detrimental to professional development. On the contrary, it may even be expected. To illustrate this point, we reiterate the situational contexts (Guay, Vallerand, & Blanchard, 2000) of the participants in our sample. Namely, university teachers in Ecuador must fulfil institutional requirements to secure tenure. As such, these external factors should also be considered in PDI. Hence, to comply with the externally initiated expectations of participants a well-structured need-supportive PDI is highly recommended to help university teachers in the process of interiorization and enhance an autonomous motivation to transfer and consequently transfer itself.

### **Limitations and directions for future studies**

Due to the vast number of participants in the control condition and their condensed schedule, we could not run interviews to gather data on their perceptions of their training. Also, data from institutional authorities might have enriched the current picture. Next, our study focused on reported motivation to transfer and not on actual transfer of learning. The former limitations present a basic list of directions for future research.

### **Conclusion**

This study presents the results of an effort to foster university teachers' motivation to transfer by satisfying their basic psychological needs during a PDI. Applying SDT, we designed a PDI integrating elements of needs satisfaction. This design aims at satisfying university teachers' need to feel free by allowing them to choose from various options (autonomy); providing a setting to effectively learn new content and apply it in real scenarios (competence); and finally, a much-needed environment of support and accompaniment during and after the conclusion of PDI (relatedness). This study supports the idea that an instructional design of PDI that considers university teachers' need-satisfaction presents an avenue for future designs to foster motivation to transfer and improve transfer itself.

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# CHAPTER 6

## General discussion

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## Chapter 6

### General discussion

#### Abstract

The present doctoral dissertation focused on the design and implementation of PDI for university teachers in the context of higher education. Its aim was to understand how to improve transfer of learning by focusing on one of the main influencing variables: motivation to transfer. In view of this, three research studies were set up. A first qualitative study was designed to analyse the current approaches to PDI. The results of Study 1 are reported in Chapters 2 and 3 of this doctoral dissertation. Chapter 2 presents the results of an analysis of current PDI design and the way in which they consider the main variables of transfer. In the same line, Chapter 3 presents the results of an analysis made to current PDI and their suitability to design need-supportive learning environments that enhance motivation in participants. Namely, the way in which current PDI design consider the basic psychological needs of university teachers. Study 2 gathered evidence about the relationship between need satisfaction and motivation to transfer. The results from this quantitative study are reported in Chapter 4. Finally, Study 3 consisted of a PDI intervention applying guidelines drawn from Self-Determination Theory (SDT) to design and implement a need-supportive learning environment aimed at enhancing university teachers' motivation to transfer. The results from this mixed-methods study are described in Chapter 5. The present chapter begins by presenting the research objectives described in the introductory section (Chapter 1) so they can be discussed in light of the main findings of Chapters 2 to 5. Next, it presents a reflection on the limitations of the studies set up in view of each research objective, leading to concrete guidelines for future studies. In the same way, it discusses the theoretical, methodological, practical, and policy implications for the design and implementation of PDI based on need-supportive learning environments in view of fostering motivation to transfer in university teachers.

## Introduction

In this dissertation, the term professional development initiatives (PDI) is used to define the programs formally designed and implemented by a university to strengthen their teachers' abilities, attitudes and skills in view of improving the quality of education (Merchie, Tuytens, Devos, & Vanderlinde, 2016). The design and implementation of PDI are linked to the improvement of the quality of education due to their positive influence on strengthening teachers' skills and professional learning (Avalos, 2011). For this reason, there is an ongoing call to design research studies that lead to practical ways to improve the outcomes, particularly one of the most substantial elements of PDI, the application of the knowledge and skills acquired during PDI to the workplace (Paulsen & Kauffeld, 2017; Peters, Barbier, Faulx, & Hansez, 2012). This 'transfer of learning' challenge is a well-documented area of research in various disciplines including industrial psychology and education (Burke & Hutchins, 2007). Transfer of learning is defined as the continuous application of the content learned in training to the workplace (Kathe Schneider, 2014). Its importance relies mainly on documented evidence showing its influential role at the individual and institutional levels (Schneider, 2014). Consequently, the 'transfer problem', that is, the lack of application of the knowledge and skills acquired in a PDI, is a concern for all actors involved due to the significant amount of resources – human and material – allocated to the design and application of PDI (Segers & Gegenfurtner, 2013).

To improve transfer of learning, it is essential to understand the contextual challenges faced by the learner to apply the content learned (Yamhill & McLean, 2001). To understand these challenges and improve transfer of learning, the present dissertation puts forward three main research objectives centred on gaining insight about the current state of PDI approaches in higher education and finding ways to motivate university teachers to apply their learning to a new context. We reiterate the research objectives as formulated and studied in this dissertation:

**Research objective 1 (RO1):** Analyse current design approaches to PDI in higher education

To accomplish RO1 the following two research questions were formulated:

Research question 1a (RQ1a): To what extent does the PDI design process in higher education considers the main variables influencing transfer?

Research question 1b (RQ1b): To what extent does the PDI design process in higher education considers the basic psychological needs of university teachers?



**Research objective 2 (RO2):** Identify the relationship between university teachers' need satisfaction and motivation to transfer

**Research objective 3 (RO3):** Analyse the influence of a need-supportive PDI on university teachers' need satisfaction and motivation to transfer.

RO3 was subsequently subdivided into two objectives:

Research objective 3a (RO3a): Develop a need-supportive PDI for university teachers

Research objective 3b (RO3b): Implement a need-supportive PDI and analyse its influence on university teachers' need satisfaction and motivation to transfer

To pursue these research objectives, three interdependent successive studies were set up. Figure 1 presents a schematic overview of these studies. Study 1 provided an understanding of the current approaches of PDI in higher education in view of transfer of learning. First, an evidence-based framework was applied. That is, a framework built on a review of the literature about a) the main influencing variables of transfer and b) the basic psychological needs as presented by the theoretical framework of SDT. In this way, two interview studies were set up, involving staff from 12 Ecuadorian universities. Building on the picture developed from these studies, Study 2 was designed to analyse the association between university teachers' need satisfaction and their motivation to transfer. From a quantitative perspective, a survey study was set up with university teachers who were participating in PDI as offered in their context. This helped observing, (a) the level of satisfaction of their basic psychologic needs and (b) how this is linked to their motivation to transfer. Congruent to the theoretical framework of this study, motivation to transfer was conceptualized building on the constructs of 'autonomous' motivation to transfer versus 'controlled' motivation to transfer. Building on Study 1 and 2, a mixed-methods intervention study was set up to understand the influence of a need-supportive PDI on university teachers' need satisfaction and motivation to transfer.

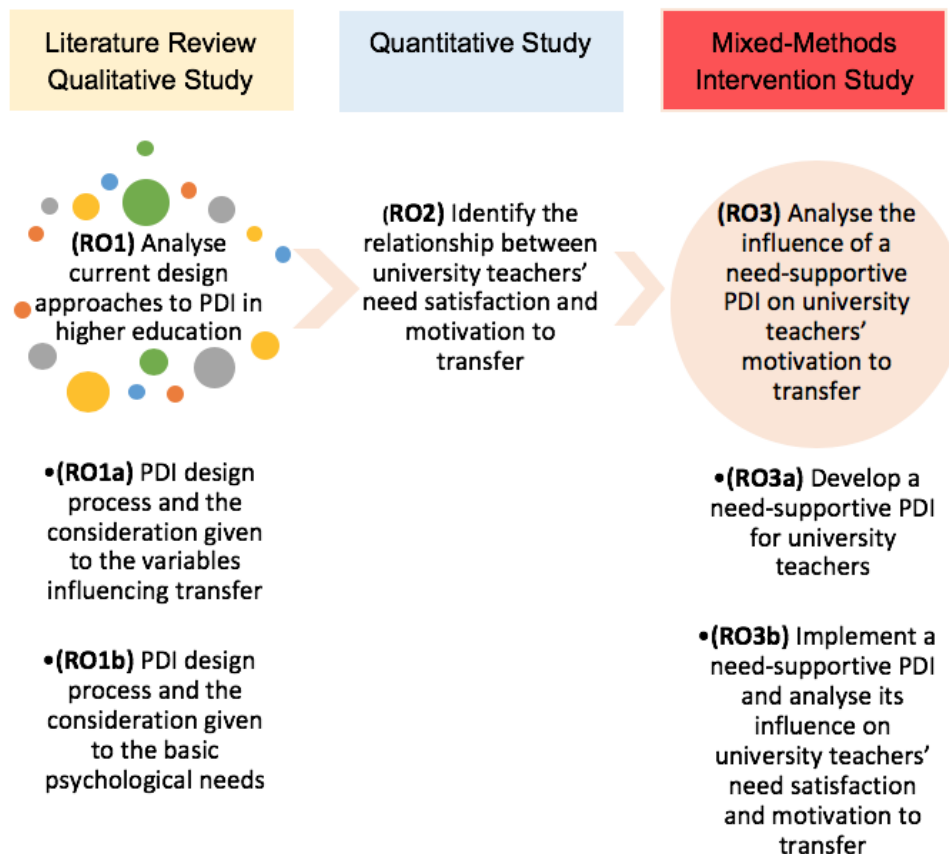


Figure 1. Schematic overview of the research objectives and research studies.

### Overview of the main results related to the research objectives

#### Analyses of the current design approaches to PDI in higher education (RO1)

It was critical to begin this dissertation with a study about the current approaches towards the design and implementation of PDI in higher education. This analysis of current PDI and their suitability for transfer, was aligned with the first research question: (RQ1a): To what extent does the PDI design process in higher education consider the main variables influencing transfer?

To answer **RQ1a**, we carried out a review of the literature to identify the main influential variables affecting potential transfer. This review resulted in an eclectic framework, based on the work of De Rijdt et al., (2013), Burke and Hutchins (2007), and Baldwin and Ford (1988), Blume et al., (2010). Especially the latest study of De Rijdt et al., (2013) was of particular importance because it was based on studies in higher education. This framework facilitated the study of the state of the art of PDI in higher education and their suitability to transfer. The

framework brings together three clusters of variables – reported by various studies – influencing transfer of learning to the workplace: characteristics of PDI design, characteristics of the work environment, and learner characteristics (Baldwin & Ford, 1988; Blume et al., 2010; De Rijdt et al., 2013).

This tripartite framework was applied to study the suitability of current PDI approaches. This was accomplished by interviewing 12 PDI designers, in charge of the design and implementation of PDI for their own staff. The framework was used to construct the interview questions. The latter started with a general question about the PDI design process, thus providing ample opportunities for respondents to set the tone of the interview and at the same time develop a general picture of the specific PDI process. To collect data about the consideration given to the variables related to their *PDI design*, they were asked specific questions about the way they set up PDI. Next, to collect information about the characteristics of the *work environment*, they were asked how their teachers were supported and accompanied throughout the transfer process. Finally, to understand the consideration given to the *learner characteristics*, they were asked to explain how they involve their university teachers and include their characteristics in the design process of PDI. Again, the intention of this study was to understand the current focus of PDI designers in their design and implementation process in light of the variables that are influential in the transfer of learning to the workplace.

From a quantitative perspective, the results of this study show that a large proportion (52%) of PDI designer statements focused on the characteristics of *PDI design*. Salient themes emerging from the analysis revolved around a) a needs analysis and b) the course content. In needs analysis it was found that PDI designers conduct evaluations at the end of the PDI to gather basic information from participants on their overall perception. The second theme ‘course content’ revolved around the process of choosing the content for the PDI. These two themes seem to be of great concern for PDI designers. Needs analysis has been reported to improve the overall outcomes of PDI for it aims at fulfilling the requirements of the participants (Bubb & Earley, 2013). Nonetheless, a further analysis of our results revealed that this process is primarily based on evaluations set up at the end of PDI. No evidence was found of a systematic approach to identify the needs of university teachers nor a process of evaluation that may contribute to their professionalization. Evaluation through valuable feedback has been found to play an important role in the professional development of teachers (Delvaux et al., 2013). Next, course content was primarily decided upon by the university authorities. Nonetheless, PDI designers did report taking into consideration the needs expressed by the different faculties. However, we did not find evidence about a systematic approach involving university

teachers in the design of the PDI. As research suggests, teacher involvement is a key factor in their overall satisfaction of continuing training (Starkey et al., 2009). The lack of involvement of university teachers in the design of PDI is worrisome. This is contrary to current calls to design PDI centred on the learner (Cho & Rathbun, 2013; Jaramillo-Baquerizo, Valcke, & Vanderlinde, 2018). This current state implies that current PDI must undergo significant changes, by for example, involving the learner (university teachers) from the early stages of PDI design and throughout the entire PDI process including transfer.

In their responses, PDI designers also stressed to a large extent (32%), the characteristics of the *work environment*. This suggests that current PDI approaches are influenced by the professional work context, which in this case, are policies at a national level influencing university policy. At the time of the data collection, the Ecuadorian government required universities to meet specific conditions related to – among others – the number of graduates, number of publications in indexed journals, number of university teachers with a doctoral degree, number of hours of continuing training to secure tenure (Consejo de Educación Superior, 2017). This context is reflected in the responses of the interviewees. Although ‘education reform’ as such does not explicitly appear in the literature as an influential variable of transfer of learning, it was included in the results under the umbrella variable of ‘transfer climate’ (De Rijdt et al., 2013). We argue that the context of educational reform influences the design and implementation process, especially when it comes to deciding on the content of the courses. This interpretation builds on responses that referred to, for example, invitations of government officials to collaborate in PDI design and to choose the content aimed at fulfilling government requirements to improve the scores in standardized tests. An influential factor in PDI is also related to the new professional requirements related to the number of publications they get published in indexed journals. This is linked to institutional quality screening and the revised national accreditation process. Building on these, our results suggest that transfer of learning was primarily conceived as a means to fulfil institutional requirements in view of accreditation. This is worrisome, for it clouds the overall design of PDI. In other words, these results suggest that PDI is conceived to perpetuate a vertical model based exclusively on the needs of the institution in view of, among others, accreditation. This approach may severely neglect the particular needs of the learner, in this case the university teacher, who is considered the main actor of the transfer process, and a key player in the overall improvement of the quality of education (Hattie, 2009).

A surprising finding was the lack of a systematic institutional accompaniment throughout the transfer process for university teachers; either during the PDI or after its implementation. Our analysis indicates an immediate separation between the institution and the university teacher

when the training or professional development ends. Respondents mentioned that transfer of learning was expected, but no evidence was found as to a process supporting such transfer of learning, hence the scarce indicators pointing to this area. In the transfer literature, support is considered conditional for transfer success (Govaerts & Dochy, 2014; Massenberg, Spurk, & Kauffeld, 2015). Our results highlight the lack of a systematic support process. It seems that universities conceive the transfer process as a responsibility belonging solely to the individual learner. Transfer is not conceived as a shared responsibility between the university teacher and the institution to co-create an appropriate transfer climate (Massenberg et al., 2015).

The cluster of variables that proportionally received least attention was related to the *characteristics of the learner* (16%). This comprised elements associated with boosting the career of teachers, strengthening their teaching abilities, and improving their qualifications. Additionally, PDI designers expressed concerns about the way they help university teachers perceive the utility of PDI. That is, the difficulty for PDI designers to assure participants about the importance of engaging in PDI-related activities. Striking is the lack of systematic strategies to motivate university teachers to participate and engage in PDI-related activities. Other variables mentioned by PDI designers were related to the age and teaching experience of participants. Specifically, respondents mentioned that younger faculty generally showed willingness to engage in PDI, in contrast to a lower level of engagement in more experienced university teachers. Again, the lack of consideration of the characteristics of the learner manifested in our study calls for intervention studies that address the learner to improve transfer and the quality of education.

Overall, the results of this study suggest that current PDI approaches in the Ecuadorian context struggle to design PDI environments centred on the needs of university teachers. As in other countries, the pressure to fulfil institutional requirements, for example accreditation processes, clouds the process of designing PDI. For example, in the United Kingdom, there is a mounting pressure to increase the quality of teaching through the professionalization of their university teachers, to the extent that there are attempts to link the teaching quality offered by an institution with the fees charged to the student (European Commission, 2017). The difficulty to design PDI congruent with the needs of university teachers is worrisome, particularly in view of transfer of learning, for research evidence consistently attributes to the characteristics of the learner a crucial role in the application of the learning acquired in training to the workplace (De Rijdt et al., 2013; Gegenfurtner, Veermans, Festner, & Gruber, 2009; Kathe Schneider, 2014). These results are in line with the recent findings of De Rijdt, Dochy, Bamelis, and van der Vleuten (2016) suggesting that the 'management model', that is, a vertical design approach of PDI, is the most common model perceived by teachers. Although various studies encourage

teacher-centred PDI (Cho & Rathbun, 2013; Guskey, 2002), PDI designers still struggle to balance institutional requirements with the particular individual needs of a university teacher.

Complimentary to RQ1a, a second research question was formulated to address the same issue from a different perspective. After an analysis of the way current PDI design approaches consider variables affecting transfer of learning (RQ1a), a second research question (**RQ1b**) was formulated: To what extent does the PDI design process in higher education consider the basic psychological needs of university teachers? This research question is essential to understand whether current PDI approaches create need-supportive learning environments, specifically if current PDI conditions are suitable to enhance motivation in university teachers. This question was answered by applying the Self-Determination Theory (SDT) framework focused on the psychological needs for autonomy, competence, and relatedness. This helped analysing the suitability or fit of current PDI in view of creating need-supportive learning environments (Aelterman, Vansteenkiste, Van den Berghe, De Meyer, & Haerens, 2014). It is worth stressing that motivational variables have been consistently identified by the literature as predictors of transfer (Gegenfurtner, 2011; Paulsen & Kauffeld, 2017; Peters et al., 2012).

During the same interviews with PDI designers to collect data in view of answering RQ1a, a set of questions was designed reflecting a focus on each of the three basic psychological needs. Questions were first asked regarding the way PDI directly addressed the autonomy of the university teacher. For example, whether PDI included the university teacher's voice – allowing freedom and choice (autonomy). Next, questions focused on the way PDI design helped assuring university teachers to feel confident while learning new skills (competence). Lastly, questions were asked to understand the way the institution provided support and accompaniment during the PDI, and/or the transfer process (relatedness). As such, analysis of the interview transcriptions was expected to clarify the way current PDI designers consider the basic psychological needs of university teachers in their design process.

The results suggest that, among the three psychological needs, PDI designers focus mainly on satisfying the need for **competence and autonomy**. This is especially clear in statements that focus on assuring that university teachers learn new skills during PDI. This is congruent with the findings of RQ1a reported in Chapter 2 where the institutional requirements set the pace for the professionalization of university teachers (Jaramillo-Baquerizo et al., 2018). It seems that the aim of assuring learning and the acquisition of new skills and abilities during PDI is geared to attaining institutional goals about accreditation. This is an important topic of discussion for it questions the very essence of what it means to be a university teacher and the way the relationship with the institution is conceived. In this regard, the question to be pondered is:

what is the intention behind the design and implementation of PDI? And whether the intention of PDI is exclusively to strengthen 'weak areas' in university teachers to benefit the institution, and not to foster autonomous professionals who through their individual and collective flourishing may innovate and improve the quality of education.

Looking at the need for **autonomy** numerous indicators pointed out directly satisfying university teachers' need of volition. However, a further analysis shows that the design approach was once again a vertical model based on the decision of the university authorities. Our study suggests a lack of need-supportive learning environments that foster the autonomy of university teachers. As suggested by other studies, need-supportive learning environments foster professional learning and change teachers' in their beliefs and practice (Aelterman, Vansteenkiste, Van Keer, & Haerens, 2016; Reeve et al., 2014). The pressure to fulfil institutional requirements in view of accreditation seems to cloud the design of PDI and include elements that may foster the autonomy of university teachers. For example, if the institution is required to improve their number of publications in indexed journals, then PDI is designed exclusively to improve institutional scientific output, and not to enhance the individual capacities of university teachers and become the main actors of innovation. Finally, the need of **relatedness** was the least attended factor found in our analysis. PDI designers did not specify a systematic approach to accompany university teachers during the PDI. PDI was – from this perspective – perceived as an individual endeavour with the institution merely adopting the role of an organizer. This is in conflict with recommendations of various studies stressing support and accompaniment to improve PDI outcomes (Aelterman et al., 2016; Madjar, Nave, & Hen, 2013; Webb, Wong, & Hubball, 2013).

More than seeking for one PDI model that 'fits-all-needs', the second part of Study 1 (RQ1b) argues the importance of including the psychological needs of university teachers in the design of PDI. In this way, need-supportive PDI may be suitable environments to enhance university teachers' motivation to transfer. This approach to PDI design reflects a trust in the capacity of the individual – in this case a highly trained professional – who ultimately decides to transfer their learning. The intention of an approach based on supporting the needs of the learner is to improve their performance and to motivate them to apply their learning to the workplace (Bouwma-Gearhart, 2012). The inclusion of the three basic psychological needs of autonomy, competence, and relatedness, may prove an important research avenue to place the learner (university teachers) at the centre of PDI design.

### **The association between university teachers' perceived need satisfaction and their motivation to transfer (RO2)**

While the first study (Study 1) helped examining the way current PDI approaches consider a) the influencing variables of transfer of learning and b) the basic psychological needs in their design and implementation processes, a second and quantitative study (Study 2) was set up to understand a crucial point in this dissertation: the relationship between need satisfaction and motivation to transfer. The rationale for this study was to identify predictors of motivation to transfer, in view of designing an intervention study that enhances motivation to transfer in participants, and consequently, improve actual transfer of learning (Gegenfurtner, Festner, Gallenberger, Lehtinen, & Gruber, 2009). This quantitative study provided evidence about the link between these two variables, as well as, setting up guidelines for PDI design that fosters transfer of learning. For this, the key research question guiding this study was: In which way the perceived need satisfaction of university teachers during PDI predicts their motivation to transfer? To answer this research question, the theoretical framework of SDT was implemented to analyse the two central constructs of this study: need satisfaction and motivation to transfer. As it was presented in Chapter 1, need satisfaction was conceptualized as the satisfaction or frustration of the basic psychological needs of autonomy, competence, and relatedness (Ryan & Deci, 2000). Motivation to transfer, was conceptualized as autonomous motivation to transfer and controlled motivation to transfer (Gegenfurtner, Festner, et al., 2009; Ryan & Deci, 2000).

Again, the expected contribution of Study 2 was to find a much needed set of predictors of motivation to transfer in order to improve the design and implementation of PDI and the actual transfer of learning to the workplace (Gegenfurtner, Festner, et al., 2009; Kontoghiorghes, 2002). Although previous studies have identified motivation to transfer as a predictor to transfer of learning (Blume et al., 2010; De Rijdt et al., 2013), there is little knowledge on how to motivate teachers to transfer their learning (Gegenfurtner, Festner, et al., 2009; Pugh & Bergin, 2006). Hence, by identifying an actual link between need satisfaction and motivation to transfer, Study 2 could help future PDI design. The latter assumption builds on earlier research showing the benefits of need-supportive learning environments (see Aelterman et al., 2013). Autonomy support has been found to improve students' academic achievement, self-efficacy and motivation (Jungert & Koestner, 2015). In the same way, it is associated with fostering learning, self-regulation, and well-being (Reeve et al., 2014). In contrast, controlling motivational environments have been found to frustrate basic psychological needs. This has been associated with anxiety and stress leading to a lack of motivation in the learner (Reeve & Tseng, 2011; Soenens, Sierens, Vansteenkiste, Dochy, & Goossens, 2012). The above empirical



base shows how little research is available studying the related assumptions in the field of PDI. With this in mind, we formulated the following hypotheses:

- Hypothesis 1 - University teachers' perceived need satisfaction during PDI is positively related to their autonomous motivation to transfer.
- Hypothesis 2 - University teachers' perceived need satisfaction is not positively related to their controlled motivation to transfer.
- Hypothesis 3 - University teachers' perceived need frustration is not positively related to their autonomous motivation to transfer.
- Hypothesis 4 – University teachers' perceived need frustration is positively related to their controlled motivation to transfer.

The above hypotheses were tested involving 409 university teachers participating in actual PDI sessions organized by their own university.

The results of Structural Equation Modeling (SEM) helped establishing an empirical and significant link between need satisfaction and motivation to transfer (see Figure 2). The results supported Hypothesis 1. That is, need satisfaction was found to predict an autonomous motivation to transfer, suggesting that if a university teacher experiences freedom in their action and choices (autonomy); feels capable to apply the new learning (competence), and feels supported by others (relatedness) they will in turn be motivated to transfer due to internal convictions (autonomous motivation to transfer). This important result sets a concrete research trajectory to enhance autonomous motivation to transfer in PDI participants. Additionally these results sustain the theoretical standpoint of SDT (Ryan & Deci, 2000). Contrary to our expectations, Hypothesis 2 was not supported by the results of our study. An unexpected association was found between need satisfaction and controlled motivation to transfer. Further analysis was carried out to understand this unexpected association. A refined structural model was developed encompassing need satisfaction (and excluding need frustration) as predictor of the four regulations established by SDT: identified regulation, intrinsic regulation (autonomous motivation to transfer), and introjected regulation, external regulation (controlled motivation to transfer). The refined model suggested an association between need satisfaction and intrinsic regulation ( $\beta = .44$ ) and identified regulation ( $\beta = .59$ ). On the other hand, need satisfaction was found to be but marginally associated with introjected regulation ( $\beta = .11$ ). Finally, external regulation was found to be related negatively to need satisfaction at a non-significant level ( $\beta = -.02$ ). Therefore, the positive association in the original structural model between a need satisfaction and a controlled motivation to transfer is explained by the latter's association with introjected regulation.

Other studies have reported similar findings. Gegenfurtner et al. (2009) reported a similar association between 'attitudes towards training' and a controlled motivation to transfer in adult learners. Haerens et al. (2015) also found a positive association between need satisfaction and controlled motivation. In the same way, their refined structural model found that 'introjected motivation' was the linking factor between need satisfaction and controlled motivation. These findings do not challenge SDT, for autonomous and controlled motivation are conceived as a continuum and not as being mutually exclusive. However, SDT sustains that a controlled motivation is not sufficient to maintain long term effects (Haerens et al., 2015). This can be contrary to the definition itself of the concept of 'transfer', for it is defined as the continuous application of the learning acquired in training (Noe, 1986). The situated context of the participants in our sample may have also played an influential role. Policies of higher education in Ecuador establish that university teachers should fulfil hours of training to secure tenure. This policies might have influenced university teachers' motives to be engaged in PDI, as suggested in other instances (Jaramillo-Baquerizo et al., 2018). Additionally, the association between need satisfaction and controlled motivation to transfer suggests that external factors influence the decision making of university teachers in terms of transfer of learning. These factors should also be taken into consideration during the design and implementation of PDI.

Hypothesis 4 was supported by our analysis results. Need frustration was found to be associated with controlled motivation to transfer. That is, when university teachers feel that their needs are frustrated, their motivation to transfer tends to associate more with external factors (controlled motivation to transfer). This result suggests elements related to need frustration should be avoided during PDI. For example, using controlling language, not allowing participants to choose how and when to apply their learning, not providing the reasons behind the activities they undertake during training, are associated with controlling learning environments (Reeve, 2009). These elements may frustrate their needs and may affect negatively an autonomous motivation to transfer. On the contrary, evidence consistently indicates the benefits of behaviours related to an autonomous motivation for its long-term results, when compared to learning environments and behaviours fostering a controlled motivation (Deci & Ryan, 2000; Haerens et al., 2015; Vansteenkiste, Lens, & Deci, 2006).

The results of this study play a key role in this dissertation, especially in the design of our intervention study. Our findings indicate an important avenue of research and practice to improve transfer of learning. That is, by including elements of need support, namely satisfying the autonomy, competence, and relatedness of university teachers during a PDI, their autonomous motivation to transfer will increase. In this way, we expect to boost transfer during PDI by including elements of need support in its design.

### **Development and evaluation of the impact of a need-supportive PDI on university teachers' need satisfaction and motivation to transfer (RO3)**

The build-up of the studies in this dissertation prompted the design of a PDI intervention study. As noted before, Study 1 provided an understanding of the current approaches of the design and implementation of PDI in higher education. It found little consideration given to important variables affecting transfer, such as 'characteristics of the learner'. In this same study, it was also found that little attention was paid to the basic psychological needs of university teachers, particularly to the need of relatedness. Specifically, universities lacked a systematic accompaniment and support throughout the professional development and transfer process. Also, PDI was found to neglect the need for 'autonomy' in participants. Most current PDI especially satisfied the need of 'competence', that is, efforts concentrate around university teachers acquiring new skills through PDI. Then, Study 2 added a clear picture of the significant linkage between need satisfaction and autonomous motivation to transfer.

Building on the findings of the two first studies, and due to the limited amount of research applying the SDT framework to the design of need-supportive PDI in higher education, Study 3 was set up.

#### **Content and structure of the PDI intervention**

The intervention study was implemented in a major public university in Ecuador, the same institution where Study 2 of this dissertation was carried out. This university maintains a centralized unit in charge of the professionalization of their teachers. This centralized unit requested the content of the PDI to be on teaching strategies. Following this request, the content of the PDI was as follows: 'Cognitive Levels of Classroom Questions', 'Think-Pair-Share', the 'Flipped-Classroom', and 'Effective Oral Presentations'. This PDI consisted of five interrelated parts: Part 1: face-to-face sessions; Part 2: design of a lesson plan; Part 3: application in a real setting; Part 4: reflection of practice; and Part 5: follow-up sessions. An open invitation was made to all university teachers from this university. The invitation was accepted by over 50 university teachers who enrolled for a three-month PDI. At the conclusion of the PDI, 36 university teachers took part of all the sessions.

The actual PDI consisted of four main parts. Part 1 consisted of four face-to-face in-service training sessions imparted by the author of this dissertation. These sessions lasted for two hours and were held every two weeks at the university premises. In each of the four sessions, the facilitator presented one of the four teaching strategies. The use of images and videos

facilitated the understanding of the nature of each strategy, its method of application, and its effect on student learning. In these sessions, participants familiarized themselves with the teaching strategy and received clarifications on its application. Additionally, the face-to-face sessions facilitated the establishment of interpersonal relations among participants. Due to the large size of the university, some participants met their colleagues for the first time during this PDI. The presentations slides were also uploaded to the online learning environment together with supplementary reading and visual materials for participants to review the lesson and visualize examples of application.

In Part 2, participants were encouraged to design a lesson-plan that would include the newly learned strategy. Then, the lesson plan was uploaded to an online learning environment where the facilitator provided feedback and answered any questions raised by the participants. The use of technology was incorporated to facilitate the completion of activities, i.e. a combination of face-to-face sessions and an online environment to improve the professional development of participants (Matzat, 2013; Owston, Wideman, Murphy, & Lupshenyuk, 2008).

In Part 3, participants applied a teaching strategy of their choice in one of their classes. An ample period of two weeks was allowed to facilitate the application of the teaching strategy in a class of their choice. The facilitator provided feedback during the application period through the online learning environment as well as during the face-to-face sessions.

During Part 4, participants reflected on their experience of application. The facilitator provided them with guiding questions such as: How did the students react to the new strategy? What difficulties did you find when applying the new strategy? This reflection was also uploaded to the online learning environment. Finally, in Part 5 participants gathered during two face-to-face sessions where they presented examples of application and received immediate feedback from their peers and the facilitator.

#### Elements of need support

Building on previous research on need support in learning environments (Aelterman et al., 2013; Reeve, 2009), this study included elements destined to support university teachers' basic psychological needs of autonomy, competence, and relatedness.

To foster the need of autonomy, PDI participants were encouraged to choose the moment (when) and manner (how) of application. In other words, they chose the setting (an actual class where they normally teach) where to apply the new strategy. They were also encouraged to

adapt the strategy to their own needs according to the characteristics of their students and content of the lecture. Considering that university teachers may have various teaching approaches (Postareff, Lindblom-Ylänne, & Nevgi, 2007; Trigwell, Caballero Rodriguez, & Han, 2012), the strategies contemplated two broad teaching styles: a student-centred approach (Think-Pair-Share and the Flipped-Classroom) and a teacher-centred approach (cognitive levels of classroom questions and effective oral presentations). To satisfy the need of autonomy, particular attention was given provide rationales (Ryan & Deci, 2000). That is, to explain the nature and utility of each strategy. In addition, the facilitator presented each strategy using elements from previous studies on need-supportive training (Aelterman et al., 2013; Su & Reeve, 2011). Namely, adopting an emphatic attitude, providing choice, and using non-controlling language (see Reeve & Jang, 2006).

To satisfy the need of competence, care was given to provide a well-structured learning environment (Aelterman et al., 2016; Reeve & Jang, 2006). To provide structure, important design elements were included such as: explanations of the constitutive parts of each teaching strategy, in-class presentation of examples of applications through images and videos, time to apply the teaching strategy in a real classroom, reflection of application, feedback on application by peers and the facilitator during the face-to-face sessions and an online environment providing elements of support and communication. According to SDT, the need of competence often co-occurs with the need of relatedness (Reeve & Jang, 2006). Hence, to satisfy the need of relatedness, elements of support and accompaniment were included. Namely, feedback throughout the training from facilitator and peers, and two follow-up sessions to present examples of application.

### **Data collection**

Next to pre and post-data from all 36 participants, additional data was collected through interviews from 12 university teachers. The quantitative data could be compared with the baseline data collected in Study 2 of this dissertation. Thus, representing the control group for this study. This control condition are participants from traditional PDI courses offered by the same university. To study the potential impact of the need-supportive PDI design, the following hypotheses were put forward:

Hypothesis 1: University teachers involved in the intervention study will reflect a significantly higher need satisfaction as compared to those in the control condition.

Hypothesis 2: University teachers involved in the intervention study will reflect a significantly lower need frustration as compared to those in the control condition.

Hypothesis 3: University teachers involved in the intervention study will reflect significantly higher autonomous motivation to transfer as compared to those in the control condition.

Hypothesis 4: University teachers involved in the intervention study will reflect a significantly lower controlled motivation to transfer as compared to those in the control condition

In relation to hypothesis 1, the **quantitative** results of this study suggest that university teachers participating in the intervention study reflect a higher perceived satisfaction of the need of autonomy and competence. This confirms the SDT literature stating that autonomy support and competence are fostered through non-controlling language, acknowledging negative feelings, providing a clear rationale, clear instructions, and well-structured sessions (Su & Reeve, 2011). All these elements were present in this particular PDI. In contrast, the university teachers participating in the intervention study reported a significantly lower perceived satisfaction of the need of relatedness compared to the university teachers in the control condition. This unexpected result can be explained by the difference between the two groups' modality of participation. Participants in the control condition attended an intensive one week 40 hrs PDI that lasted from Monday to Friday. This modality seems to have fostered a stronger sense of belonging among participants at the time of the data collection. On the other hand, the shorter face-to-face sessions – spread over a period of three months – in the intervention study might have granted less opportunities to create bonds among participants. To foster the need of relatedness, participants need to experience a sense of communion and to feel as members of a group (Ryan & Deci, 2000). In the work setting, relatedness is linked with a perceived supervisory support (Van den Broeck, Vansteenkiste, Witte, Soenens, & Lens, 2010). However, participants from the intervention study reported in their interviews a lack of perceived institutional support. Hence, their lack of support may have deepened during the three-month PDI period. These results highlight a great challenge, which is to design further studies bringing light on what design elements foster the need of relatedness during PDI during, especially during the brief periods available for university teachers to engage in PDI activities. Our study expected a significant lower frustration of the needs perceived by those in the intervention study (hypothesis 2). However, our results found no significant difference. Further research is needed expecting to shed more light into the way PDI may decrease need frustration in participants.

In view of hypothesis 3, the results indicate a (marginal) significant larger level of autonomous motivation to transfer in teachers participating in the PDI intervention, compared to those in the control group. This unexpected marginal result led to a further analysis. According to SDT, autonomous motivation encompasses intrinsic and identified regulation. Hence, autonomous motivation to transfer was split up into these two constructs: ‘identified regulation’ and ‘intrinsic regulation’ (Deci & Ryan, 2000). The results of this refined analysis indicated that participants in the intervention study reported a statistically significant higher identified motivation (regulation) to transfer. However, the reported intrinsic motivation (regulation) to transfer in the intervention study – although higher as compared to the control group – was not significantly different. According to SDT, intrinsic regulation and identified regulation do have important differences despite their consistent correlated nature. Intrinsic regulation – being the most autonomous regulation – reflects the desire to act due to an inherent interest (Ryan & Deci, 2000). On the other hand, identified regulation refers to an individual recognition of the importance and the apparent value of a behaviour and its integration into the self (Ryan & Deci, 2000). Burton, Lydon, D’Alessandro, and Koestner (2006) have found that identified regulation is linked with academic performance, e.g., student grades, and that it may predict performance independently of intrinsic regulation. In light of these results, we can conclude that university teachers are motivated to transfer not because of an inherent interest but because they have understood the importance of applying the content learned to a new setting. Even if fostering intrinsic motivation is challenging, it seems promising to foster the identified regulation of university teachers. Also, it is important to consider that PDI-related activities may not be necessarily inherent to participants. However, a need-supportive PDI may help the interiorization process thus fostering an identified regulation as it was the case in our intervention study.

About hypothesis 4, we found that participants in the intervention study reported a significantly lower level of controlled motivation to transfer compared to those in the control group. Although SDT conceives controlled motivation part of a bipolar continuum, it encourages learning environments that promote autonomous motivation in the learner (Reeve, 2009). For example, studies have found that controlled motivation to transfer may negatively affect classroom functioning (Reeve & Jang, 2006). On the other hand, autonomous motivation has been found to foster psychological well-being, performance, and engagement (Reeve et al., 2014). Hence, the application of SDT’s framework of autonomy support, namely using non-controlling language during the sessions, providing a rationale behind the new content, nurturing inner motivational resources, and a clear well-structure program (see Reeve, 2009), seems to limit the perception of a controlling environment in PDI participants.

The qualitative results of this study help putting a discussion of the above results into perspective. The results revealed that in view of the need of **autonomy**, university teachers need to grasp the usefulness of the material presented in a PDI to facilitate the process of appropriation of the new content learned. This finding can relate to previous studies identifying the 'perceived utility' as an influential variable of transfer (De Rijdt et al., 2013; Grossman & Salas, 2011). In addition to the usefulness of the PDI and the content relevance, the results of Study 3 suggest that university teachers – being highly trained professionals – need to be presented, among other elements (see Reeve, 2009), with a rationale behind every PDI-related activity in order to foster their need of autonomy, thus supporting the theoretical standpoint of SDT (Deci, Eghrari, Patrick, & Leone, 1994).

Regarding the need of **competence**, participants reported the benefit of having ample time between each face-to-face session to be able to apply what was learned in an actual classroom. This is in line with previous research emphasizing the possibility of real scenarios of application during training (Bowers, Fitts, Quirk, & Jung, 2010). Consistent with SDT, to satisfy the need of competence it was necessary to provide a clear structure to the PDI, including theoretical explanations as well as hands-on and practical tips of application (see Aelterman et al., 2013). Additionally, participants reported the benefit of designing their own lesson-plan as a way to apply their learning to a real scenario accompanied by feedback from the facilitator and peer. Finally, Part 4 of the PDI, in which participants were encouraged to reflect on their own practice, was highly appreciated in view of satisfying their need of competence. It seemed that these elements helped them to appropriate the training content and to reinforce their sense of self-efficacy, and to identify their own strengths and weaknesses (Popovic & Fisher, 2016).

On the other hand, participants also reported frustration of their need of competence. This frustration related to the perceived lack of time to participate in PDI-related activities and to properly prepare the application of the new learning. Again, as suggested by the study of Shernoff, Sinha, Bressler, and Ginsburg (2017), teachers' report 'the lack of time' as a barrier to collaborative plan their work with their peers and modify their instruction. Other challenges reported in our study referred to a need to improve the infrastructure of the university, the disposition of the students to adapt to new teaching styles and, in some cases, the large number of students per class.

The qualitative results, gathered from 12 interviews, confirmed the quantitative analysis presented above. Among the three needs, **relatedness** was perceived by participants as the least satisfied. It was difficult for participants to perceive an institutional accompaniment and support. Again, the intensity of the face-to-face sessions did not facilitate the establishment of



new relations among participants. These results suggest that more needs to be done to create PDI environments that foster relatedness not only among peers but a systematic process of accompaniment and support by the institution itself. These reiterated results appear in other studies (see Schneider, 2014). In view of improving PDI outcomes, accompaniment and support needs to be fostered during the transfer process (Awais Bhatti, Ali, Mohd Isa, & Mohamed Battour, 2014; Bhatti, Battour, Sundram, & Othman, 2013).

Finally, the qualitative results provided insight into the way their **motivation to transfer** was influenced by the PDI. For example, in elements related to an autonomous motivation to transfer, 'openness to experience' was reported by participants to be related to their desire to apply their learning. This is in line with previous studies that have found curiosity in trainees to promote adoption of new skills (Burke & Hutchins, 2007) as well as transfer of learning (De Rijdt et al., 2013). In the same way, providing choice during training seemed to foster their motivation to transfer. As the literature suggests, allowing participants to exercise their volition is an essential element in autonomy-supportive environments (MacLellan, 2008). In the same line, a perceived utility of the content of the PDI was appreciated by participants who linked this experience to an autonomous desire to transfer. Previous studies report that perceived utility is an influential factor in transfer of learning (De Rijdt et al., 2013; Grossman & Salas, 2011). On the other hand, elements related to a controlled motivation to transfer were also reported. For example, participants mentioned a sense of duty as a factor influencing their motivation to transfer, that is, a desire to fulfil the expected requirements from the course. This relates to a controlled motivation to transfer thus prompting the need to encourage PDI participation due to internal convictions and desires (Gorozidis & Papaioannou, 2014). To conclude, Study 3 resulted in empirical evidence thus far hardly found in the PDI-related literature involving university teachers. This means that supporting the psychological needs of participants during PDI could prove a valid path to enhance autonomous motivation to transfer. The fact that this study was carried out in one university belonging to a particular context, means that more research is needed to understand the way to enhance autonomous motivation in PDI participants in different settings. This leads to the discussion of the various limitations of the present dissertation.

## General discussion

After describing the nature of the three studies that make up this dissertation, and discussing their main findings, it is important to emphasize some important points. First, in view of improving transfer, we recapitulate the importance of concentrating research efforts on the variable: motivation to transfer. Second, the emphasis on motivation to transfer, as an autonomous act of the individual (compared to a controlled behaviour) is reiterated. Finally, an argument is made to expand the existing research on need-supportive learning environments to the context of PDI in higher education, in view of improving – among others – transfer of learning to the workplace.

First, we restate the focus of this dissertation on one key influential variable of transfer. As presented in the introductory chapter (Chapter 1), motivation to transfer is considered one of the most influential variables in the process of transfer of learning (De Rijdt et al., 2013). Consistently, being identified as an important predictor of actual transfer of learning (Paulsen & Kauffeld, 2017; Pugh & Bergin, 2006). Given the numerous variables reported as influential in the transfer process, the decision to focus on this particular variable is based on the specific characteristics of the learner, in this case, the university teacher. These are highly trained professionals who enjoy – without excluding accountability – academic freedom and a strong sense of autonomy at work (Raya, Ramos, & Tassinari, 2017). For this reason, it seemed appropriate to concentrate our research efforts on deepening the understanding of how to motivate university teachers to transfer their learning. A different option would have been to opt for strategies based on elements of coercion or persuasion. That is, strategies founded on external conditions, such as rewards or institutional pressure. Building on previous research on motivation to transfer (Bauer, Orvis, Ely, & Surface, 2016), it seems suitable to pursue the design of PDI from a motivational approach aimed at fostering a free and conscious response from the PDI participant. Allowing them to freely decide when and how they apply their learning to a new context. This is particularly important for university teachers who are responsible for the design of their own classes and to choose their method of instruction.

A second point worth discussing is the emphasis made on the concept of autonomous motivation to transfer in the context of higher education. This dissertation underlines the concept of motivation to transfer conceived in its different dimensions. Instead of focusing on the ‘amount’ of motivation to transfer, this dissertation focused on the ‘kind’ of motivation to transfer present in university teachers (see Gegenfurtner, 2013). The application of SDT allows a comprehension of this multi-dimensionality by differentiating between an autonomous motivation to transfer and a controlled motivation to transfer. As it was explained in Chapter

1, previous studies (e.g, Reeve et al., 2014 ) link an autonomous motivation with various expected educational benefits (e.g., engagement, long-term effects) contrary to the effects produced by a controlled motivation (e.g., amotivation, stress). This dissertation states the importance of promoting an autonomous motivation to transfer in PDI participants, instead of fostering a motivation to transfer based on external conditions. This approach can be an answer the various calls promoting PDI centred on the learner (Cho & Rathbun, 2013; De Rijdt et al., 2016; Jaramillo-Baquerizo et al., 2018). In other words, by designing PDI that foster an autonomous motivation to transfer in participants, they will necessarily include elements that address the needs of the learner. In this way, PDI design will address a crucial element of transfer, which is, to motivate in a non-invasive manner, the main actor of the transfer process: the learner.

A final point worth mentioning – that compliments the previous two themes discussed above – can be summarized by the following question: What kind of PDI design can address the need of the learner? This question does not lack complexity. The learner, in this case the university teacher, learns and transfers in a particular context with particular needs. The institution, the classroom, the students, also have particular needs. Although these are all important points worth discussing, the argument we sustain is solely based on improving the transfer process. For this, we argue that a PDI environment that addresses the needs of the university teacher should be grounded on elements that enhances an autonomous motivation in the learner. In other words, to foster motivation in university teachers during PDI, their basic psychological needs should be addressed. In this way, university teachers may exercise their free will (autonomy), feel confident with the new learning (competence), and experience support and accompaniment (relatedness). Our intervention study, reported in Chapter 5, is an initial attempt to apply the knowledge acquired in previous studies on need-supportive learning environments to the PDI context, as a way to enhance autonomous motivation to transfer in university teachers. Besides the results found in our study, further research is needed to understand whether need-supportive learning environments is in fact a prominent answer to improve transfer of learning. This give rise to other challenges and sets limitations that are now discussed.

### Limitations and directions for future research

Despite the careful planning and focused set up of the studies in this PhD to pursue the research objectives, a number of limitations must be acknowledged. These limitations immediately serve as guidelines for future research. We structure the discussion of the limitations following the scope of the studies, the research methodology of the different studies, their theoretical foundation, and by looking at the results. Lastly, we present the practical limitations of this dissertation.

#### Limitations related to the scope of the studies

As presented in Chapter 1, this dissertation aimed at providing insight into how to improve transfer of learning by fostering a key influencing variable: motivation to transfer. To achieve this goal, we focused on the perspective of PDI designers (Chapter 2 and 3) and university teachers (Chapter 4 and 5), without taking into consideration the perspective of the students. This would have shed more light into the various ways university teachers apply their learning to the workplace. Further studies could, for example, analyse the way need-supportive PDI influences university teachers' autonomous-supportive teaching and thus student outcomes. These ambitious studies could facilitate the understanding of the way PDI influence teachers' behaviours and attitudes, an important element in PDI (Fernández Díaz, Carballo Santaolalla, & Galán González, 2010; Guskey, 2007). Lastly, we did not focus on the professional status of the PDI designers and PDI implementation staff. As research in the field of teacher educators is growing (see e.g., Lunenberg et al., 2014; Tack & Vanderlinde, 2014, 2016), comparable questions could be asked about the professionalization of the PDI designers/facilitators at the university level.

Though the focus on university teachers is of prime importance to understand their motivation to transfer, we focused in our studies on the 'individual' university teacher. Looking back at our introductory chapter where a variety of PDI-models were described (based on Kennedy, 2005), we can criticize our individualistic approach since alternative and promising approaches stress co-construction of courses and solutions (see e.g., the community of practice approach, the coaching and mentoring approach). Future research could add this collaboration dimension to alternative PDI interventions in empirical studies. PDI in higher education can as such learn a lot from practices and research in the field of primary and secondary school professional development; see e.g., the studies about:

- Professional learning communities (Battersby & Verdi, 2015; Vanblaere & Devos, 2018);

- The self-study approach (e.g. Tack & Vanderlinde, Vanassche & Kelchtermans, 2016);
- Teacher communities (Vangrieken, Meredith, Packer, & Kyndt, 2017);
- Collaborative design approaches (Voogt et al., 2015);
- Teacher design teams (Binkhorst, Poortman, & van Joolingen, 2017).

Another aspect of interest is the perception of university authorities on how they would support and accompany university teachers during the transfer process. Although in Study 1 we did scrutinize university level PDI design, we did not delve deeper into the rationale behind the choices being made. It could have been important to create a space where also university authorities – next to the PDI designers – described their perspective, priorities, and challenges, when setting up PDI and when pursuing transfer of learning. Especially developing a perspective on institutional support during the transfer process could have enriched the current findings. It could also have helped to better understand the way the need of relatedness could have been fostered in Study 3. Research shows how an institutional collaborative culture plays a key role (see e.g., Hargreaves & Dawe, 1990).

In addition, the studies could have analysed policies and organisational structures related to PDI. In the current studies the latter were considered as black boxes. In Study 2 when mapping the needs satisfaction and motivation of transfer of 409 university teachers, variables at the institutional level could have been tracked and included in the analysis. Within group differences could have been studied when data were collected about faculty level or discipline-related PDI differences; requiring a multilevel approach to analyse the related data. Kennedy (2014) adds to this that the impact of professional development policies will also require alternative theoretical frameworks to describe and explain PDI impact. Additionally, authors also stress that leadership plays a role in this context (see e.g., Alexandrou & Swaffield, 2014). In the literature the link between professional development and leadership is often mentioned as a ‘missing link’ (see e.g., Whitworth & Chiu, 2015). But, also policies at the macro level of a national educational system could have been considered in more detail. At different stages in this PhD we referred to changing national university policies affecting accreditation and quality assurance and how this could have affected teacher and institutional involvement in PDI. Chapter 2 of this dissertation shed some light into the way national policies emphasizing academic output and quality assurance influenced the design of PDI. For instance, this increasing focus could explain a higher engagement in certain types of research-focused PDI. Douglas and colleagues (2015) stress in this context how state policies strongly affect collective participation in PDI. In the literature the linkage between emerging new ‘standards’ and professional development is often discussed (see e.g., Allen & Penuel, 2015). Important efforts are being implemented in some Latin American countries (e.g., Colombia, Peru, Mexico), for

example, teaching is now recognized and even rewarded as a means to foster the professionalization of the university teacher (Jacob, Xiong, & Ye, 2015).

In this PhD we mainly focused on one single characteristic of university teachers as learners that affect motivation to transfer: motivation. In the introductory chapter, on the base of the literature review, a larger set of variables has been identified; e.g., self-efficacy, attitudes, and others. This limitation fuels the need to set up additional studies to look at the complex interplay between these individual-level variables. But they also feed a new perspective where these individual variables are aggregated at an institutional or organisational level, thus introducing a focus on the professional development climate or culture of the university (see e.g., Garet, Porter, Desimone, Birman, & Yoon, 2001).

Similar to the study of Aelterman et al., (2013) it would have been interesting to evaluate other aspects of the PDI such as: the content, the duration of the training, the PDI-strategies applied during PDI. Although, some of these topics emerged during the interviews, specific studies analysing the perceptions of the participants on these aspects could contribute to our understanding of PDI design. Further studies could evaluate how a need-supportive PDI could centre on these aspects.

#### Limitations related to the methodology

In the second study, data were collected from a large sample (N = 409). Nevertheless, these university teachers were from only two universities. And as suggested above, faculty level, departmental level, discipline-level differences in policies or practices were not considered. Adding this dimension to the already available data could have helped tapping into PDI design differences that depend on other variables than those studied in the current framework, differences such as time during the year when the PDI is offered, type of instruction, language used by the facilitator (controlling or autonomy-supportive), among others.

In Chapter 4 we studied the relation between need satisfaction and motivation to transfer. To collect data on 'need satisfaction' we used the validated instrument of Chen et al., (2015). To measure 'motivation to transfer' we developed and validated a new instrument based exclusively on SDT. Due to the limited access to real sessions, the data was collected only at the end of the PDI, thus limiting our knowledge on the progress that might have occurred during PDI. In our study, it would have been inconsistent with the research objectives to collect data at the beginning of the PDI because of the nature of the constructs we expected to measure. But, asking questions about need satisfaction without experiencing actual PDI seems irrelevant.

University teachers needed first to experience PDI and secondly, they needed to be exposed to the content before being asked about their motivation to transfer, as well as, about their perceived need support. Moreover, applying the instruments at the start could also have affected their future responses.

An important limitation in the design of the need-supportive PDI in Chapter 5, was the lack of a direct participation of the university teachers in its design. The findings of Study 1 suggested a lack of inclusion of university teachers in the design of PDI. To foster the need of autonomy, it would be important to design a PDI with the active participation of university teachers. In this way, their characteristics would be considered in the design, thus increasing the potential of transfer (De Rijdt et al., 2013). As it was discussed in Chapter 3 of this dissertation, there are various initiatives to place the learner (university teacher) at the centre of PDI. For example, there are attempts to professionalize teachers through collaboration by forming communities of practice (Nixon & Brown, 2013; Vangrieken et al., 2017), and to collaboratively design the curriculum (Voogt et al., 2015). Others, such as that of Cho and Rathbun (2013), suggest the inclusion of online environments and problem-based learning to place the teacher at the centre of the PDI. The analysis of Evans' (2014) presents a 'teacher-centred leadership approach,' which implies that university leaders should consider teachers as individuals whose needs ought to be considered in the various dimensions of change that occur during training: attitudinal, intellectual, and behavioural. Nonetheless, it is still not clear how to actively involve university teachers in the design of their own PDI.

#### Limitations related to the theoretical base

A strong point of this PhD is its grounding on the framework of the Self-Determination Theory (SDT). This framework drawn from an authoritative psychological macro-theory, provided the necessary means to study the key motivational variable of this dissertation (motivation to transfer) and a set of clear processes to direct the design and/or adaptation of the research instruments, as well as, to direct the instructional design of the PDI intervention study. Nonetheless, in the introductory chapter (Chapter 1), other theoretical frameworks were discussed that could have grounded a different approach towards motivation and specifically towards motivation to transfer. The recent review study of Lazowski and Hulleman (2016) is helpful in this context. Next to the SDT, these authors also referred to the rich contribution of expectancy approaches and expectancy-value approaches towards motivation. These theories can complement the design of need-supportive PDI, for example, by implementing design

elements that increase the confidence of participants to complete the application of new learning. Also the study of Bauer, Orvis, Ely and Surface (2016) is worth mentioning. They focus on theoretical groundings of motivation to transfer and how, for example, the expectancy-value theoretical approach towards motivation to transfer emphasizes to a larger extent the relevance of what is being learned for the future job. The former implies that – though the choice for the SDT is well founded – the adoption of an eclectic approach could enrich future studies and especially the PDI-design.

Furthermore, the SDT framework does indicate the importance of supporting the need of relatedness. However, its actual application during PDI is quite challenging. Chapter 5, the intervention study of this dissertation, shows the challenging task of satisfying the need of relatedness in university teachers. During the interviews, elements of need frustration appeared particularly related to their perception of supervisory support. Further theoretical implications, and empirical studies, are needed to understand what specific PDI design elements foster the need of relatedness in PDI participants. The need of relatedness can be linked to the characteristics of the work environment. As noted before, it is reported as the most challenging area to tackle during PDI interventions (Schneider, 2014).

#### Limitations related to the results

Another set of limitations relate to the results of the studies. In Study 1, the emphasis was on the voice of the designers of PDI. Although that was our aim, the study did not set out to corroborate the results with the opinion of university teachers and students from each institution. This limits the results of Chapter 2 and 3. Additionally, at the time of the data collection the context of reform was perceived as extremely influential in the responses of the PDI designers. A later study should be performed to identify whether this influence persists, and more importantly if the content of the PDI differs according to the guidelines set by the Ecuadorian government. That is, if the content learned of PDI responds solely to government requirements or whether they respond to the needs of the institution and, more importantly, to the needs of the learner.

In Chapter 4 (Study 2), we measured the perception of need satisfaction and motivation to transfer of university teachers during a PDI. An important factor not controlled in our study was the differences between each group of participants. In other words, it would have been



interesting to control the influence of the facilitator in each group, as well as other differences such as content of the PDI, the professional background of each participant, and time of the year when the PDI was offered. These elements might have provided results to understand the 'why' and 'how' of different perceptions and especially their motivation to transfer the content. In this sense, we did not control how other factors may have influenced the responses of participants.

In the intervention study (Chapter 5), the marginally significant result of a higher autonomous motivation to transfer in the experimental group raised further questions. First, extraneous variables such as, age of participants, years of experience, personality traits, that may have influenced the respondents' perception were not controlled for. Second, the size of the intervention group – being much smaller than the control group – was also an influential factor. Furthermore, the lower satisfaction of the need of relatedness reported in the intervention group is another challenging factor. It may seem that the duration of the PDI influences their perception of a lack of institutional support. Further studies may seek to provide an understanding into this important area. That is, to understand which PDI design factors enhance the need of relatedness in participants. In addition, further research may include PDI design elements aimed at increasing participants' perception of supervisory support. For example, the active participation of university authorities in PDI may enhance the need of relatedness in university teachers. As SDT emphasizes, loneliness and isolation may frustrate the need of relatedness in individuals (Ryan & Deci, 2000). Worrisome is that a lack of institutional support may hinder the performance of professionals (Lew, 2009).

#### Limitations as to the PDI modality

Although we included elements of blended learning in our PDI, by including the online environment, we never analysed or discussed alternative modalities to deliver a need-supportive PDI. The focus was on how to foster need satisfaction mainly through face-to-face approaches. Participants did mention their appreciation of the online environment, but it served mainly as a means of communication and not as a learning environment. This contrasts with current innovative approaches that either develop online professional development initiatives or develop blended approaches in which online is mixed with face-to-face models. Inspiring examples are: the building on informal online professional development communities (see e.g., Macià & García, 2016); the Massive Online Open Courses (MOOCs) as a solution for massive online professional development (Vivian, Falkner, & Falkner, 2014); the online communities of practice for professional development (see e.g., Tseng & Kuo, 2014); and the

self-assessment driven online professional development (Rhode, Richter, & Miller, 2017). Elements from successful practices in online environments can foster, for example, the need of relatedness. That is, through online environments, PDI participants can experience support from peers through the transfer process.

Moving to the adoption of other modalities could be linked to our discussion about PDI design and how it affects needs satisfaction. Research suggests that online professional development fosters – among others – personalisation (Gamrat, Zimmerman, Dudek, & Peck, 2014) motivation (Baran & Correia, 2014; M. Elliott, Rhoades, Jackson, & Mandernach, 2015), and self-efficacy (Kao, Tsai, & Shih, 2014; Yoo, 2016). In addition, shifts in modalities can foster institutional policies (Kennedy, 2014), reconcile the tension between professional development and the daily work-demands (Bates, Phalen, & Moran, 2016; J. C. Elliott, 2017; Michael S Garet, Porter, Desimone, Birman, & Yoon, 2001). Though promising, the adoption of alternative modalities also introduces new challenges. As reflected e.g., in the flipped classroom literature, this requires a strong rethinking of what and how instructional design elements are mixed into a new instructional cocktail that could result in more successful short term and long-term development (see e.g., Thai, De Wever, & Valcke, 2017).

## Implications

### Theoretical implications

This study aimed at providing insight into the way need support fosters motivation to transfer in university teachers by applying the theoretical framework of SDT. This implies that further research is needed into how other theories may improve the design of PDI to foster motivation to transfer. SDT itself, as well as other theories, should aim at providing insight into how to design PDI that place the teacher at the centre instead of designing initiatives that seek to fulfil institutional requirements and achieve their goals. For this reason, motivation to transfer was also studied to help emphasize the important role the characteristics of the learner play in the improvement of PDI.

The study by Gegenfurtner et al. (2009) presented a solid attempt to find predictors of motivation to transfer in adult learners also by applying elements of SDT. Nonetheless, to accomplish their research objectives, they used SDT only to analyse the construct of ‘relatedness’ – not including the need or autonomy and competence in their model. The other two predictors in their model were: attitudes towards training content and instructional satisfaction. These were analysed using Expectancy Theory and the Theory of Planned

Behaviour. The results of their study found no association between the need of relatedness and autonomous motivation to transfer.

This state of affairs calls for the application of additional motivational theories that deepen the understanding of how to motivate university teachers, and adult learners in general, to transfer their learning to the workplace. Specifically, theories should provide insight into what design elements of PDI work best to foster motivation and continuous application of the knowledge acquired in training. Congruent to the context and emphasis of our study, theoretical implications related to the study of PDI should gear at fostering an autonomous motivation to transfer, that is, theoretical models centred on the learner.

### Methodological implications

This dissertation was an attempt to further our comprehension of the current state of PDI in higher education. The application of frameworks based on the literature and on theoretical foundations proved to be an effective way to analyse current PDI designs. For example, the framework provided by researchers on the main influencing variables of transfer proved a valuable resource to analyse the suitability of current PDI in view of transfer (Blume et al., 2010; De Rijdt et al., 2013).

Following the results of our studies, relatedness seems to be the most difficult psychological need to satisfy during training in view of motivating participants to transfer. What is needed is the design of intervention studies that evaluate the way different PDI design models foster a feeling of support and accompaniment during the transfer process. Despite the vast number of studies pointing out the benefits and the influence of support in the transfer process (De Rijdt et al., 2013; Gegenfurtner, Veermans, & Vauras, 2013; Govaerts & Dochy, 2014) gathering evidence on how the satisfaction of the need of relatedness during PDI relates to autonomy motivation seems to be challenging. Again, the study of Gegenfurtner et al. (2009) did not find autonomous motivation to transfer to be predicted by the need of relatedness. More research is needed identifying ways to foster relatedness and link it to participants' motivation to transfer.

As reported in Chapter 5 of this dissertation, university teachers expressed in their interviews a desire for institutional support and accompaniment during the transfer process, specifically after the PDI ends. PDI interventions should aim at providing a systematic process of accompaniment and support for university teachers once the PDI finishes and analyse its influence on university teachers' perception and actual transfer.

Since individual characteristics of university teachers (Agyei & Voogt, 2014; Gegenfurtner & Vauras, 2012), and the work environment (Blume et al., 2010; Renta Davids, Van den Bossche, Gijbels, & Fandos Garrido, 2017) do influence actual transfer, further studies may seek to find 'what' works best under 'which' conditions and for 'who'.

### Implications for practice and policy

A final aspect is the implications for practice and policy. The application of SDT to the design of need-supportive learning environments in the context of PDI may prove an important research path to foster motivation to transfer in participants. Practical implications for the design of PDI are delineated in Chapters 2 and 3. Chapter 2 presents a framework of analysis to study PDI in view of their suitability for transfer. This framework is constituted by the three main influencing variables of transfer: characteristics of the learner, intervention design, and work environment (Blume et al., 2010; De Rijdt et al., 2013; J.K. Ford & Kozlowski, 1997). This framework could serve as a source of analysis to design future PDI in view of transfer. For example, the three clusters of influencing variables can be applied to design a PDI. Each cluster can serve as a platform to reflect on which variables need to be considered in the design of PDI. For example, as it has been explained in this dissertation, the characteristics of the learner as well as the work environment are hardly considered. This is also a conclusion in the work of Schneider (2014) highlighting the lack of consideration given to variables related to the work environment during the transfer process. What this dissertation argues is that – to improve transfer of learning – the three clusters of variables should be considered in the design of PDI. Consequently, more consideration needs to be given to the characteristics of the learner to boost transfer, namely to consider characteristics reported in the literature such as the perceived utility of the PDI (Blume et al., 2010; J. Kevin Ford & Weissbein, 2008; Jaramillo-Baquerizo et al., 2018). In other words, PDI should aim at helping participants to understand the utility of the content they are learning to enhance their motivation to transfer. This implies setting up activities prior to the start of a PDI. Centralized units could prepare university teachers by providing information of the content of the PDI and how it may help their careers and performance.

Along the same lines, the framework applied in Chapter 3 to analyse the suitability of PDI in view of fostering need support and autonomous motivation in university teachers may also be applied to screen existing and/or design future PDI or re-design current programs. The framework based on SDT's basic psychological needs of autonomy, competence, and relatedness (Deci & Ryan, 2000), can serve as a design guideline to include elements that centre

on the learner, in this case, the university teacher. This may constitute an attempt to respond to the call by researchers to design teacher-centred PDI (Cho & Rathbun, 2013; Jaramillo-Baquerizo et al., 2018). The results of this dissertation suggest that the most difficult need to satisfy is relatedness. This confirms the need to seek ways to foster the need of relatedness of university teachers in the design of PDI. The inclusion of university authorities, and a systematic accompaniment after the conclusion of PDI may help university teachers in the transfer process. The argument we present is that university teachers should not be left alone during the transfer process. This implies a systematic process of accompaniment during and after the conclusion of PDI. A successful PDI is one that accompanies the learner before, during, and after transfer has taken place. Learning new content and transfer the new content are two separate actions. This dissertation is a call to create policy at the institutional and governmental levels that facilitate the participation of PDI not only for university teachers, but also for university authorities. To encourage participation in PDI activities time and resources should consistently be allocated to the professionalization of university teachers and for initiatives to innovate through PDI and not only to remediate accounted problems. Some organizations such as The Staff and Educational Association (SEDA) of the UK promote innovation through PDI in higher education by, for example, supporting higher education leaders in the design and implementation of PDI for their university teachers (Nixon & Brown, 2013). This organized system of accompaniment may prove useful in the Ecuadorian context, for at the time this dissertation is written and to the best of our knowledge, there are no specific organizations aimed at strengthening the professionalization of university teachers. At the university level, initiatives like the Twente Educational Model (TEM) of the University of Twente in the Netherlands, promotes collaborate work among their teachers in multidisciplinary teams to create their own modules and in this way improve their teaching experience and performance (Gast, I., Schildkamp, K., & van der Veen, 2015). These initiatives necessarily need support from governmental agencies in charge of institutions of higher education.

The results of Chapter 4 – confirming the positive association (although marginal) between need satisfaction and autonomous motivation to transfer – implies that PDI should include design elements aimed at supporting the autonomy of university teachers. This non-intrusive approach to motivate participants of PDI to transfer their learning may be a suitable substitute to strategies that coerce university teachers to transfer their learning by elements of rewards or any other form of external influence. Highly trained professionals, such as university teachers, need to be provided with a rationale (autonomy), and feel confident with their learning (competence), and received the necessary accompaniment and support (relatedness)

during the transfer process. Not addressing one or more of these elements may jeopardize actual transfer of learning.

Policies at the institutional level should help university teachers to conceive their professionalization as a means to flourishing and not merely to meet institutional requirements. This dissertation criticizes institutional policies based on rewards to encourage the participation of PDI. By focusing on motivational variables, this dissertation calls for policies at the institutional and governmental levels that not only recognize the participation of university teachers in PDI-related activities, but also actual transfer of learning should be acknowledged. Currently, policies only reward the number of PDI certificates a university teacher possesses. Actual implementation of the content learned goes unnoticed. Successful change in instructional practices due to PDI should also be recognized by institutions and the government to encourage not only participation in PDI but also transfer of learning to the workplace.

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Academic output



### Journals (A1)

Jaramillo-Baquerizo, C., Valcke, M., Vanderlinde, R. (2018). Professional development initiatives for university teachers: Variables that influence the transfer of learning to the workplace. *Innovations in Education and Teaching International*. Published online May 28, 2018. <https://doi.org/10.1080/14703297.2018.1479283>

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## Appendices

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## Chapter 2

### Interview to PDI designers on the inclusion of the main variables

Guiding questions for the interviews:

**Introductory Question:**

What are the critical features of the Professional Development programs of your university?

**Characteristics of teacher as learner:**

How do you organize the participation of the professoriate?

**Design of PD intervention:**

How do you set up your PDI?

**Characteristics of work environment:**

How do you support the implementation of their learning after their PDI experience?

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## Chapter 3

### Interview to PDI designers on the inclusion of the basic psychological needs

Guiding questions for the interviews:

#### **Need of Autonomy**

In which way do you provide freedom and choice to the teachers during the design of the PDI?

#### **Need of Competence**

In which way do you address the need of teachers to learn new competences?

#### **Need of Relatedness**

In which way do you create environments of support and accompaniment during your PDI?

## Chapter 4

Questionnaire measuring the basic psychological needs during training. Adapted from Chen et al., (2015)

1	2	3	4	5
Totalmente en desacuerdo	En desacuerdo	Ni de acuerdo ni en desacuerdo	De acuerdo	Totalmente de acuerdo

	Durante la capacitación...					
1	Sentí que tenía la libertad y la posibilidad de expresar mis opiniones.	1	2	3	4	5
2	Sentí que las sugerencias brindadas encajaban con lo que yo haría.	1	2	3	4	5
3	Me sentí conectado al grupo de participantes.	1	2	3	4	5
4	Me sentí conectado con el profesor.	1	2	3	4	5
5	Me sentí excluido del grupo de participantes.	1	2	3	4	5
6	Me sentí excluido por el profesor	1	2	3	4	5
7	Me sentí capaz de aplicar las estrategias propuestas.	1	2	3	4	5
8	Tuve serias dudas sobre poder aplicar las estrategias propuestas.	1	2	3	4	5
9	Sentí que la manera en que se hizo esta capacitación era tal como yo quería que fuera.	1	2	3	4	5
10	Me sentí forzado a hacer muchas cosas que yo no hubiera elegido hacer.	1	2	3	4	5
11	Me sentí vinculado con los otros participantes.	1	2	3	4	5
12	Me sentí vinculado con el profesor.	1	2	3	4	5
13	Tuve la impresión de que los otros participantes no me respetan.	1	2	3	4	5
14	Tuve la impresión de que el profesor no me respetaba.	1	2	3	4	5
15	Sentí que era capaz de lograr los objetivos planteados.	1	2	3	4	5
16	Me sentí decepcionado de cómo afronté los ejercicios y actividades	1	2	3	4	5
17	Me sentí presionado de pensar y actuar de una manera específica.	1	2	3	4	5
18	Me sentí obligado a actuar y pensar de una manera específica.	1	2	3	4	5
19	Me sentí afín con los otros participantes.	1	2	3	4	5
20	Me sentí afín con el profesor.	1	2	3	4	5
21	Sentí que los participantes eran distantes conmigo.	1	2	3	4	5
22	Sentí que el profesor era distante conmigo.	1	2	3	4	5
23	Me sentí capaz de aplicar las estrategias propuestas en mi práctica	1	2	3	4	5
24	Me sentí como un fracasado por los errores que cometí o por las opiniones que expresé.	1	2	3	4	5



25	Sentí que los temas realmente me interesaban.	1	2	3	4	5
26	Me sentí obligado a hacer cosas en contra de mi voluntad.	1	2	3	4	5
27	Experimenté un buen vínculo con los participantes.	1	2	3	4	5
28	Experimenté un buen vínculo con el profesor.	1	2	3	4	5
29	Sentí que las relaciones con los participantes eran superficiales.	1	2	3	4	5
30	Sentí que la relación con el profesor era superficial.	1	2	3	4	5
31	Sentí que podía hacer las actividades de manera exitosa.	1	2	3	4	5
32	Me sentí inseguro de mi capacidad para aplicar las estrategias en mi práctica docente.	1	2	3	4	5

## Questionnaire measuring motivation to transfer learning

0	1	2	3	4	5	6
Strongly Disagree	Moderately Disagree	Slightly Disagree	Neither Agree nor Disagree	Slightly Agree	Moderately Agree	Strongly Agree

THE REASON WHY I WOULD LIKE TO PUT INTO PRACTICE WHAT I LEARNED DURING THIS PROFESSIONAL DEVELOPMENT PROGRAM IS:								
1	I find the recommended content of this course to be personally important [MTL_AU_IdReg]	0	1	2	3	4	5	6
2	Others would criticize me if I wouldn't do so [MTL_CO-ExtReg]	0	1	2	3	4	5	6
3	I feel that I have to do it [MTL_CO-InReg]	0	1	2	3	4	5	6
4	I find it a personal challenge to do so [MTL_AU-InMot]	0	1	2	3	4	5	6
5	Others expect me to do so [MTL_CO-ExtReg]	0	1	2	3	4	5	6
6	I believe it will improve my performance in my job [MTL_AU_IdReg]	0	1	2	3	4	5	6
THE REASON WHY I WOULD LIKE TO PUT INTO PRACTICE WHAT I LEARNED DURING THIS PROFESSIONAL DEVELOPMENT PROGRAM IS:								
7	I would feel guilty for not taking advantage of this professional development program [MTL_CO-InReg]	0	1	2	3	4	5	6
8	I enjoy trying out different ways of doing my job [MTL_AU-InMot]	0	1	2	3	4	5	6
9	Others will only show appreciation if I do so [MTL_CO-ExtReg]	0	1	2	3	4	5	6
10	I am supposed to do it [MTL_CO-InReg]	0	1	2	3	4	5	6
11	I am curious to know whether it makes any difference in my job [MTL_AU-InMot]	0	1	2	3	4	5	6
12	Otherwise others will be upset with me [MTL_CO-ExtReg]	0	1	2	3	4	5	6
THE REASON WHY I WOULD LIKE TO PUT INTO PRACTICE WHAT I LEARNED DURING THIS PROFESSIONAL DEVELOPMENT PROGRAM IS:								
13	I think what I learned yields important benefits for me and my students [MTL_AU_IdReg]	0	1	2	3	4	5	6
14	I believe it is the right thing to do [MTL_AU-InMot]	0	1	2	3	4	5	6
15	I have to prove to my students that I am a capable good teacher [MTL_CO-InReg]	0	1	2	3	4	5	6

16	It is my duty to apply what I learn in this professional development program [MTL_CO-InReg]	0	1	2	3	4	5	6
17	I believe it is important to be a better teacher [MTL_AU-InMot]	0	1	2	3	4	5	6
18	I have to show my colleagues and authorities that I am a model/efficient teacher [MTL_CO-InReg]	0	1	2	3	4	5	6

0	1	2	3	4	5	6
Strongly Disagree	Moderately Disagree	Slightly Disagree	Neither Agree nor Disagree	Slightly Agree	Moderately Agree	Strongly Agree

- 33. What methodologies would you have preferred to be used during this Professional Development program?
- 34. If you were to develop a Professional Development program, what would be some design principles that you would suggest?

35. What is your gender?	40. How many years do you work in this institution?
36. How old are you?	41. What is your highest academic degree?
37. What is your employment status as a professor in this institution?	42. What was the duration of this Professional Development program?
38. What is your categorization as a teacher in this institution?	43. What teaching methodology was used during the Professional Development program?
39. How many years of experience do you have teaching in higher education?	44. What was the content of this Professional Development program?

**KEY**

**CONTROLLED:**

[CO-ExtReg] External Regulation: 2, 5, 9, 12

[CO-InReg] Introjected Regulation: 3, 7, 10, 15, 16, 18

**AUTONOMOUS:**

[AU-IdReg] Identified Regulation: 1, 6, 13

[AU-InMot] Intrinsic Motivation: 4, 8, 11, 14, 17

## Chapter 5

### Interviews to university teachers on their perceived need satisfaction and motivation to transfer

Guiding questions for the interviews:

#### **Autonomy**

In which way did this PDI address your need to feel free and to make choices?

#### **Competence**

In which way did this PDI address your need to learn new skills?

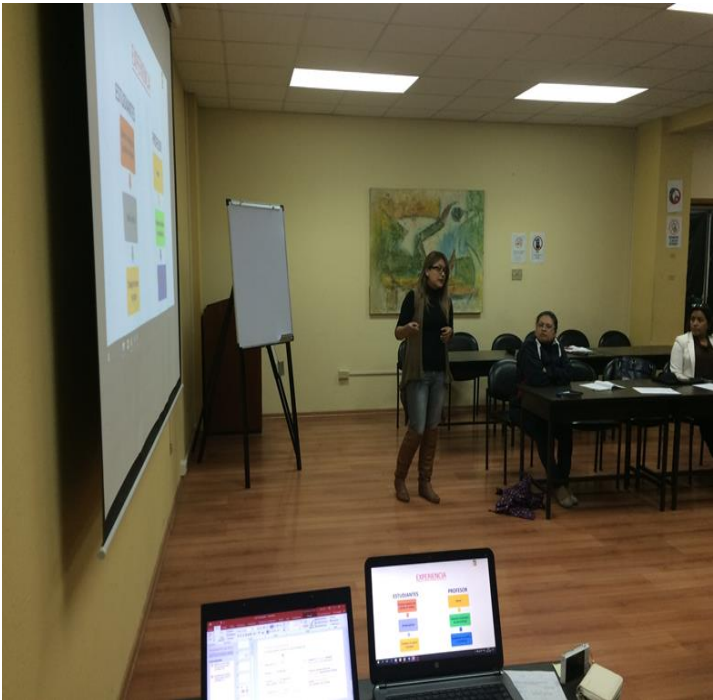
#### **Relatedness**

In which way did this PDI address your need to feel supported and accompanied by others?

#### **Motivation to transfer**

Why would you implement the learning you acquired during the PDI?

Pictures of the intervention study





## Summary





## Summary

Professional development initiatives (PDI) have always played an important role in educational reforms, as well as, in processes of quality assurance due to their influence on teachers' acquisition of new skills, behaviours, and attitudes – consequently improving the overall quality of education (Avalos, 2011; Desimone, 2009). Related to this important area of research, transfer of learning, that is, the application of the learning acquired in training to the workplace (Ford & Kozlowski, 1997), has increasingly captured the attention of researchers trying to understand the way to optimize this critical PDI outcome (De Rijdt, Stes, van der Vleuten, & Dochy, 2013). Authoritative studies on transfer consistently identify motivation to transfer as a key variable in the transfer process, however, little research is available on PDI design guidelines aimed at fostering motivation to transfer in university teachers (Baldwin & Ford, 1988; Bauer, Orvis, Ely, & Surface, 2016; Blume, Ford, Baldwin, & Huang, 2010; Dreer, Dietrich, & Kracke, 2017; Gegenfurtner, Veermans, Festner, & Gruber, 2009). Consequently, the aim of this dissertation is to provide insights into the ways PDI can enhance motivation to transfer in university teachers.

To present a sound proposal, this dissertation first analyses the current state of PDI in higher education and their suitability to foster transfer of learning to the workplace. Accordingly, we carried out a review of the literature on the main variables influencing transfer. Our review reported various studies consistently identifying three main clusters of variables as influential in the transfer process: characteristics of the design intervention, characteristics of the work environment, and characteristics of the learner (Blume et al., 2010; De Rijdt et al., 2013; Ford & Kozlowski, 1997). After identifying these main variables, we formulated the following research question: To what extent do PDI in higher education consider the main variables of transfer in their design process? To answer this research question, interviews with PDI designers from 12 Ecuadorian universities were set up to examine their design process in light of the above-mentioned framework. Our results suggest that current PDI focus mainly on the characteristics of the design intervention, neglecting other important areas such as characteristics of the work environment, and the characteristics of the learner. The application of the main influencing variables of transfer as a framework of analysis can be a promising new approach to examine the suitability of current PDI. Additionally, it can serve as a basis to design

PDI centred on the main actor of transfer: the university teacher. This can serve as an answer to the call by various studies suggesting the importance of teacher-centred PDI (Cho & Rathbun, 2013; De Rijdt, Dochy, Bamelis, & van der Vleuten, 2016; Paskevicius & Bortolin, 2016).

Among the many influential variables in the transfer process, a particular variable emerged: motivation to transfer. This variable belonging to the characteristics of the learner, is identified by the literature as a key factor in the transfer process (De Rijdt et al., 2013; Gegenfurtner et al., 2009). What called our attention was the lack of literature in higher education providing guidelines on how to motivate teachers to transfer. For this, we set up to explore the way in which current PDI provide learning environments that foster motivation in university teachers. Applying Self-Determination Theory (SDT), a well-known motivational theory, we investigated the way in which current PDI design considers the basic psychological needs of autonomy, competence, and relatedness, that according to SDT, promote fulfilment and motivation in individuals (Ryan & Deci, 2000). Hence, a second analysis was carried out to the same sample examining the suitability of current PDI design to create need-supportive learning environments, that is, design process that include the basic psychological needs of autonomy, competence, and relatedness of university teachers. The results of our analysis suggest that PDI designers mainly focus on the need of competence, hardly considering the need of autonomy and relatedness. In the same way, the application of the framework based on the three basic psychological needs, can be a promising research trajectory to examine the suitability of PDI environments to foster need support in university teachers in view of motivating them to transfer their learning.

In the next phase of this dissertation, we present a quantitative study that gathers evidence on the relationship between need satisfaction and motivation to transfer. The lack of evidence on the relationship between these two important variables as well as transfer predictors prompted the need to collect data from 409 university teachers participating in actual PDI at their own institutions. Applying a structural equation model, we found a relation between need satisfaction and autonomous motivation to transfer. This finding implies that PDI may include elements of need support to motivate teachers to apply their learning in an autonomous way, instead of recurring to external factors.

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The third and final study presented in this dissertation is an ambitious attempt to design and implement a need-supportive PDI for university teachers to determine its influence on their perceived need support and motivation to transfer. This particular PDI includes elements from SDT aimed at satisfying the basic psychological needs of autonomy, competence, and relatedness of university teachers. This study aims to contribute to the literature by providing insight into how to support the psychological needs of university teachers during PDI to foster need satisfaction and an autonomous motivation to transfer. The results of this study open a research trajectory to include motivational theories in the design of PDI to improve their design guidelines, and consequently to boost transfer of learning to the workplace.



## Samenvatting



### Nederlandstalige samenvatting

Initiatieven voor professionele ontwikkeling (POI) hebben altijd een belangrijke rol gespeeld bij onderwijshervormingen en bij processen van kwaliteitsborging door hun invloed op het verwerven van nieuwe vaardigheden, gedragingen en attitudes door docenten. Hierdoor voorziet men dat de algehele kwaliteit van het onderwijs verbeteren (Avalos, 2011; Desimone, 2009). In de context van onderzoek hierover gaat er veel aandacht naar de transfer van wat geleerd werd, dat wil zeggen de toepassing van wat geleerd werd naar de werkplek (Ford & Kozlowski, 1997). Transfer is namelijk een kritische factor in professionele ontwikkelingsinitiatieven (POI) en effecten (De Rijdt, Stes, van der Vleuten, & Dochy, 2013). Gezaghebbende studies over transfer van POI wijzen op een consistente manier naar motivatie voor transfer als de belangrijkste variabele in het transferproces. Er is echter weinig onderzoek beschikbaar dat richtlijnen aanbiedt voor het ontwerpen van POI dat meteen de motivatie voor transfer in universitaire lesgevers bevordert (Baldwin & Ford, 1988; Bauer, Orvis, Ely, & Surface, 2016; Blume, Ford, Baldwin, & Huang, 2010; Dreer, Dietrich, & Kracke, 2017; Gegenfurtner, Veermans, Festner & Gruber, 2009). Dit brengt ons tot het hoofddoel van dit proefschrift: het ontwikkelen van inzichten om transfer motivatie te bevorderen bij een POI voor universitaire lesgevers (verder docenten genoemd in deze tekst).

Dit proefschrift start met een analyse van state-of-the-art van aanpakken voor POI in het hoger onderwijs en in welke mate die aanpakken transfer naar de werkplek bevorderen. Op basis van dit literatuuronderzoek werd gezocht naar transfer-gerelateerde variabelen. Dit leverde drie clusters aan variabelen op die gekoppeld blijken te zijn aan transfer: ontwerpkenmerken van de PO-interventie, kenmerken van de werkomgeving en kenmerken van de docent (Blume et al., 2010; De Rijdt et al., 2013; Ford & Kozlowski, 1997).

Op basis van deze clusters aan variabelen kon een eerste onderzoeksvraag worden geformuleerd: In welke mate houden POI-ontwerpers in het hoger onderwijs rekening met de

drie clusters aan variabelen in het ontwerpproces? Om deze onderzoeksvraag te beantwoorden, werden interviews opgezet POI-ontwerpers van 12 Ecuadoraanse universiteiten. In het interview werd hun ontwerpproces besproken in het licht van die drie clusters aan variabelen. De resultaten suggereren dat de huidige aanpakken voor POI vooral kijken naar de ontwerpkenmerken van POI. Er is weinig aandacht voor kenmerken van de werkomgeving en kenmerken van de docent. Die laatste worden vrijwel verwaarloosd. Een verdere focus op de variabelen die POI-transfer bepalen biedt verder een beloftevol raamwerk aan voor het beoordelen van de geschiktheid van POI-aanpakken. Bovendien kan het raamwerk ook dienen als basis voor het ontwerpen van nieuwe POI, met een nadrukkelijke focus op de kernactor die bij transfer van wat geleerd is een rol speelt: de docent. Dit is meteen ook een antwoord op de dikwijls gestelde vraag naar de opzet en ontwikkeling van meer docent-gecentreerde POI aanpakken (Cho & Rathbun, 2013; De Rijdt, Dochy, Bamelis, & van der Vleuten, 2016; Paskevicius & Bortolin, 2016).

Zoals hierboven al aangegeven is een van de vele invloedrijke variabelen die transfer bij POI bepalen, motivatie voor transfer. Deze variabele sluit aan bij de kenmerken van de docent, en wordt in de literatuur gezien als een sleutelfactor in het transferproces (De Rijdt et al., 2013; Gegenfurtner et al., 2009). Wat vooral onze aandacht trok, was het gebrek aan (onderzoeks) literatuur - in het hoger onderwijs - over POI-richtlijnen die motivatie voor transfer bij docenten helpen bevorderen. Dit was de inspiratie voor een tweede onderzoek naar de manier waarop de huidige POI-leeromgevingen die motivatie voor transfer bij universitaire docenten helpen bevorderen. Op basis van de zelfdeterminatietheorie (ZDT), een goed verspreide motivatietheorie, onderzochten we de manier waarop het huidige POI-ontwerp de psychologische basisbehoeften voor autonomie, competentie en verbondenheid in rekening brengen. Die drie basisbehoeften zijn volgens de ZDT essentieel om motivatie bij actoren te bevorderen (Ryan & Deci, 2000). In dit onderzoek werd bij dezelfde groep universiteiten als hierboven een tweede analyse uitgevoerd maar nu met de focus op de mate waarin een POI-ontwerp de drie psychologische basisbehoeften ondersteunde; dit wil zeggen in welke mate het ontwerpproces aansloot bij de elementaire psychologische behoeften voor autonomie, competentie en verbondenheid bij universitaire docenten. De analyseresultaten suggereren



dat POI-ontwerpers zich vooral richten op de behoefte aan competentie, waarbij nauwelijks rekening wordt gehouden met de behoefte aan autonomie en verbondenheid. De resultaten van de analyse verrijken meteen het raamwerk dat we hierboven al aanstipten, om bestaande POI-aanpakken te analyseren voor wat betreft de mate waarin ze de psychologische basisbehoeften van docenten ondersteunen; en dit met et oog op het versterken van hun motivatie voor transfer van wat ze leerden naar de werkplek.

In een volgende stap in het proefschrift werd een kwantitatieve studie opgezet om de relatie te onderzoeken tussen behoeftebevrediging – zoals bepaald door de ZDT - en motivatie voor transfer. In de literatuur is weinig empirische evidentie voorhanden over deze relatie. Daarom werd een grootschalig onderzoek opgezet bij 409 universiteitsdocenten die actief deelnamen aan een POI in hun universitaire context. Bij die doelgroep kon de ervaren link tussen de ZDT-bepaalde kenmerken van de POI en de mate waarin de POI hun psychologische basisbehoeften bevredigde, onderzocht worden. Op basis van de toetsing van een Structural Equation Model kon een empirisch verband blootgelegd worden tussen enerzijds behoeftebevrediging (autonomie, belonging en competentie) en anderzijds de mate aan ervaren autonome motivatie voor transfer. Deze resultaten geven dus steun aan onze stelling dat POI-ontwerpkenmerken inderdaad docenten kunnen motiveren tot transfer en dat ze dit hierdoor zelfs doen op ene autonome gemotiveerde manier. Externe druk is dus niet direct nodig (gecontroleerde motivatie).

In een derde studie in dit proefschrift werd een ambitieuze poging ondernomen om zelf een behoefte-ondersteunende POI voor universitaire docenten te ontwerpen en te implementeren. Op die manier kon op een gecontroleerde manier de ervaren behoefteondersteuning volgens de ZDT en de motivatie voor transfer in kaart worden gebracht. In deze aangepaste POI werden ontwerpkenmerken meegenomen die de elementaire psychologische basisbehoeften van autonomie, competentie en verbondenheid versterken in de universitaire docenten; bv. het geven van keuzemogelijkheden, het samenwerken met andere docenten, het krijgen van feedback, .... De studie helpt hierdoor rechtstreeks de lacune

in het empirische onderzoek te beantwoorden wat betreft onderzoek naar ZDT-gebaseerde POI-ontwerpen, ervaren ondersteuning van basisbehoeften en motivatie voor transfer bij universitaire docenten. De resultaten van de studie zijn positief en onderbouwen de ZDT-gebaseerde hypothesen over POI-ontwerp en motivatie voor transfer. Het onderzoek opent hiermee een innovatief onderzoekstraject waarbij motivatietheorieën het ontwerp van POI helpen richten en de transfer van wat geleerd is naar de werkplek helpen stimuleren.

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## Data storage fact sheets



## Data Storage Fact Sheet 1

Name/identifier study: Chapter 2 and 3 (Study 1)

Author: Christian Jaramillo Baquerizo

Date: 12 July 2018

### 1. Contact details

#### 1a. Main researcher

- name: Christian Jaramillo Baquerizo

- address: Henri Dunantlaan 2, 9000 Ghent, Belgium

- e-mail: Christian.JaramilloBaquerizo@UGent.be

#### 1b. Responsible Staff Member (ZAP)

- name: Martin Valcke (supervisor PhD research)

- address: Henri Dunantlaan 2, 9000 Ghent, Belgium

- e-mail: Martin.Valcke@UGent.be

If a response is not received when using the above contact details, please send an email to [data.pp@ugent.be](mailto:data.pp@ugent.be) or contact Data Management, Faculty of Psychology and Educational Sciences, Henri Dunantlaan 2, 9000 Ghent, Belgium.

### 2. Information about the data sets to which this sheet applies

\* Reference of the publication in which the data sets are reported:

Jaramillo-Baquerizo, C., Valcke, M., & Vanderlinde, R. (2018). Professional development initiatives for university teachers: Variables that influence the transfer of learning to the workplace. *Innovations in Education and Teaching International*.

<https://doi.org/10.1080/14703297.2018.1479283>

Jaramillo-Baquerizo, C., Vanderlinde, R., Vansteenkiste, M., Tack, H., Vermote, B., Valcke, M. Professional development initiatives in higher education: studying the link between psychological need satisfaction and motivation to transfer. Manuscript submitted to publication in *ISI Web of Science Journal*

\* Which data sets in that publication does this sheet apply to?

All data sets used in the study.

### 3. Information about the files that have been stored

#### 3a. Raw data

\* Have the raw data been stored by the main researcher?  Yes /  No

If No, please justify:

\* On which platform are the raw data stored?

researcher PC

- research group file server
- other (specify):

\* Who has direct access to the raw data (i.e., without intervention of another person)?

- main researcher
- responsible ZAP
- all members of the research group
- all members of UGent
- other (specify):

### 3b. Other files

\* Which other files have been stored?

File (s) describing the transition from raw data to reported results. Specify: The coding scheme used for the content analysis of a) the main influencing variables of transfer, and b) the basic psychological needs.

File(s) containing processed data. Specify: NVivo-data set file containing the set of variables.

File(s) containing analyses. Specify: SPSS-output file and reports about the results of the data analysis.

Files(s) containing information about informed consent

A File specifying legal and ethical provisions

File(s) that describe the content of the stored files and how this content should be interpreted. Specify: ...

other files. Specify: audio recordings of the interviews

\* On which platform are these other files stored?

- individual PC
- research group file server
- other: ...

\* Who has direct access to these other files (i.e., without intervention of another person)?

- main researcher
- responsible ZAP
- all members of the research group
- all members of UGent
- other (specify): ...

### 4. Reproduction

\* Have the results been reproduced independently?  Yes /  No

\* If yes, by whom (add if multiple):

- name:
- address:
- affiliation:
- e-mail:

## Data Storage Fact Sheet 2

Name/identifier study: Chapter 4 (Study 2)



Author: Christian Jaramillo Baquerizo

Date: 12 July 2018

## 1. Contact details

### 1a. Main researcher

- name: Christian Jaramillo Baquerizo
- address: Henri Dunantlaan 2, 9000 Ghent, Belgium
- e-mail: Christian.JaramilloBaquerizo@UGent.be

### 1b. Responsible Staff Member (ZAP)

- name: Martin Valcke (supervisor PhD research)
- address: Henri Dunantlaan 2, 9000 Ghent, Belgium
- e-mail: Martin.Valcke@UGent.be

If a response is not received when using the above contact details, please send an email to [data.pp@ugent.be](mailto:data.pp@ugent.be) or contact Data Management, Faculty of Psychology and Educational Sciences, Henri Dunantlaan 2, 9000 Ghent, Belgium.

## 2. Information about the data sets to which this sheet applies

\* Reference of the publication in which the data sets are reported:

Jaramillo-Baquerizo, C., Vanderlinde, R., Vansteenkiste, M., Tack, H., Vermote, B., Valcke, M. Professional development initiatives in higher education: studying the link between psychological need satisfaction and motivation to transfer. Manuscript submitted to publication in ISI Web of Science Journal

\* Which data sets in that publication does this sheet apply to?

All data sets used in the study.

## 3. Information about the files that have been stored

### 3a. Raw data

\* Have the raw data been stored by the main researcher?  Yes /  No

If No, please justify:

\* On which platform are the raw data stored?

researcher PC

research group file server

other (specify): ...

\* Who has direct access to the raw data (i.e., without intervention of another person)?

main researcher

responsible ZAP

all members of the research group

all members of UGent

other (specify): ...

### 3b. Other files

\* Which other files have been stored?

file (s) describing the transition from raw data to reported results. Specify: The coding scheme used to analyse the survey data.

file (s) containing processed data. Specify: SPSS-data set file.

file(s) containing analyses. Specify: SPSS-output file, AMOS-output file, and reports about the results of the data analysis.

files(s) containing information about informed consent

a file specifying legal and ethical provisions

file (s) that describe the content of the stored files and how this content should be interpreted. Specify: ...

other files. Specify: paper questionnaires

\* On which platform are these other files stored?

individual PC

research group file server

other: paper questionnaires in physical file

\* Who has direct access to these other files (i.e., without intervention of another person)?

main researcher

responsible ZAP

all members of the research group

all members of UGent

other (specify): ...

#### 4. Reproduction

\* Have the results been reproduced independently?  Yes /  No

\* If yes, by whom (add if multiple):

- name:

- address:

- affiliation:

- e-mail:

### Data Storage Fact Sheet 3

Name/identifier study: Chapter 5 (study 3)

Author: Christian Jaramillo Baquerizo

Date: 12 July 2018

#### 1. Contact details

##### 1a. Main researcher

- name: Christian Jaramillo Baquerizo

- address: Henri Dunantlaan 2, 9000 Ghent, Belgium

- e-mail: Christian.JaramilloBaquerizo@UGent.be

##### 1b. Responsible Staff Member (ZAP)

- name: Martin Valcke (supervisor PhD research)

- address: Henri Dunantlaan 2, 9000 Ghent, Belgium

- e-mail: Martin.Valcke@UGent.be

If a response is not received when using the above contact details, please send an email to data.pp@ugent.be or contact Data Management, Faculty of Psychology and Educational Sciences, Henri Dunantlaan 2, 9000 Ghent, Belgium.

## 2. Information about the data sets to which this sheet applies

\* Reference of the publication in which the data sets are reported:

Jaramillo-Baquerizo, C., Valcke, M., & Vanderlinde, R., Aelterman, N. The influence of a need-supportive professional development initiative on university teacher's need satisfaction and motivation to transfer: Qualitative and quantitative findings. Manuscript submitted to publication in ISI Web of Science Journal

C. Jaramillo-Baquerizo, M. Valcke, R. Vanderlinde, M. Vansteenkiste (2017). The impact of an innovative blended-learning professional development program in higher education on motivation to transfer learning, INTED2017 Proceedings, pp. 4813-4819. doi:10.21125/inted.2017.1124.

\* Which data sets in that publication does this sheet apply to?

All data sets used in the study.

## 3. Information about the files that have been stored

### 3a. Raw data

\* Have the raw data been stored by the main researcher?  Yes /  No

If No, please justify:

\* On which platform are the raw data stored?

researcher PC

research group file server

other (specify):

\* Who has direct access to the raw data (i.e., without intervention of another person)?

main researcher

responsible ZAP

all members of the research group

all members of UGent

other (specify): ...

### 3b. Other files

\* Which other files have been stored?

file(s) describing the transition from raw data to reported results. Specify: SPSS, and NVivo-coding file.

file(s) containing processed data. Specify: SPSS file, AMOS files, NVivo-reports of codified data.

file(s) containing analyses. Specify: NVivo, SPSS, AMOS reports about the results of the data analysis.

files(s) containing information about informed consent

a file specifying legal and ethical provisions

file(s) that describe the content of the stored files and how this content should be interpreted. Specify: ...

other files. Specify: paper questionnaires, and audio recordings of the interviews

\* On which platform are these other files stored?

individual PC

research group file server

other: ...

\* Who has direct access to these other files (i.e., without intervention of another person)?

main researcher

responsible ZAP

all members of the research group

all members of UGent

other (specify): ...

#### 4. Reproduction

\* Have the results been reproduced independently?  Yes /  No

\* If yes, by whom (add if multiple):

- name:

- address:

- affiliation:

- e-mail: