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Alvarez, Gary Alberto Cifuentes

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BY
GARY ALBERTO CIFUENTES ALVAREZ

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AALBORG UNIVERSITY
DENMARK

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Thesis submitted:	August 2015
PhD supervisor:	Associate Prof. Pär-Ola Zander Aalborg University
Assistant PhD supervisor:	Professor Paola Valero Aalborg University
PhD committee:	Professor Pirkko Raudaskoski (Chair) Aalborg University, Denmark
	Professor Inez Dussel DIE-CINVESTAV, Mexico
	Professor Gert Biesta Brunel University London, Scotland, United Kingdom
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CV

Gary Cifuentes is an educational researcher with a focus on the integration of information and communication technologies (ICT) in education. His experience and interest are devoted to critical analysis of education policies, ICT leadership in institutions, and assessment on virtual learning environments. He studied psychology and later on he obtained a Master's in philosophy in 2007. He became an educational researcher in 2004 when he started to work at Los Andes University (Colombia). As an assistant professor at CIFE (Education Research and Training Centre) he is the formal leader in the group on ICT and education. His participation in a national project with the Colombian Ministry of Education initiated his interest in ICT policies and was the starting point for a critical reflection on technologies, policies and their enactments.

ENGLISH SUMMARY

This thesis problematizes the political dimension of ICT integration in higher education. I argue that this dimension has not been researched sufficiently, and a deeper examination of how policies are understood and what people do in the name of those policies is necessary. Therefore, a more comprehensive and broad understanding of the political dimension of ICT integration is adopted in this thesis, proposing a shift from an implementation rationale to a policy enactment analysis in higher education. In other words, a necessary interrelation of the material, the hermeneutic and the discursive dimensions of ICT policies is posed as a critical stand toward the prevalence of an implementation rationale.

The research question this work addressed was how ICT policies are enacted in higher education institutions. For that purpose, an empirical study was carried out in a Colombian region where a set of seven higher education institutions driven ICT integration processes. Two stages comprised the research process. First, an exploratory stage enabled understanding the contested and non-linear nature of ICT policies in the seven institutions. A second stage was designed as a multiple case study in three (out of the seven) selected institutions where practices of enactment were analysed more deeply beyond an implementation rationale. Three specific practices became the focus of analysis: ICT leadership, policy translation, and government of faculty members. Each practice led me to an alternative conceptualization of ICT policies as artefacts, entanglements of human and non-human entities, and technologies of government.

As a paper based thesis, this work is divided into three parts. The first part describes the research problem and the research design in terms of a movement from an implementation rationale to a more critical analysis of the enactment of ICT policies. In the second part, the enactment of ICT policies is conceptualized through the analysis of three concrete practices, i.e., ICT leadership (Paper 1), policy translation (Paper 2), and the government of subjects (Paper 3). In that conceptualization, the nature of ICT policies is re-examined. The third part provides further considerations to this research via two additional contributions. One of them examines closely ICT units, which are

underexplored and special settings within institutions that enact what I call the 'will to innovate' in Colombia (Paper 4). The last paper discusses those who are critical to ICT integration as relevant policy positions. Their analysis enlightens and expands a policy enactment theory in higher education (Paper 5).

The thesis concludes by discussing three of its main contributions: first, the need for conceptualizing ICT policies; second, the relevance of revising and expanding a policy enactment model for higher education; and third, making alternative enactment zones visible for research. Finally, I argue that the ontological, epistemological and methodological implications of a policy enactment approach should be considered in further research addressing the political dimension of ICT integration in higher education.

DANSK RESUME

Denne afhandling fokuserer på den politiske dimension i integreringen af IKT indenfor det videregående uddannelsesområde. Jeg argumenterer for, at denne dimension ikke er blevet tilstrækkeligt forskningsmæssigt belyst, og at det bør undersøges nærmere, hvorledes politiske tiltag forstås, og hvordan mennesker handler i forbindelse med IKT-integration. Denne afhandling anbefaler således en mere omfattende og bred forståelse af sådanne politiske tiltag, og foreslår, at man erstatter en implementeringstankegang med en analyse af, hvordan mennesker aktivt skaber og former (enact) IKT-integration indenfor det videregående uddannelsesområde. Med andre ord argumenteres for nødvendigheden af at se materialitet, hermeneutik og de diskursive dimensioner af IKT politikker som interrelaterede forhold, som er en modsætning og kritik i forhold til et implementeringsrationale.

Det forskningsspørgsmål, som dette arbejde belyste, var, hvordan IKT-politikker skabes og formes i praksis på videregående uddannelsesinstitutioner. Til det formål blev en empirisk undersøgelse gennemført i et område af Columbia, hvor en række videregående uddannelsesinstitutioner har arbejdet med IKT-integration. Forskningsprocessen blev inddelt i to faser. Først var der en eksplorativ fase, som gjorde mig i stand til at forstå den non-lineære karakter af IKT-integration i syv institutioner. Den næste fase blev udformet som et multipelt case-studie indenfor tre (ud fra de syv) udvalgte institutioner, hvor gennemførelsespraksisser blev belyst og undersøgt på en måde, der var udover implementeringsrationalet. Tre specifikke praksisser blev analyseret: IKT-ledelse, oversættelse af politikker, og ledelse af akademisk personale. Hver enkelt praksis førte til en ny og anderledes konceptualisering af IKT-politikker som artefakter, sammenviklinger af humane og non-humane enheder, samt styringsteknologier.,

Da afhandlingen er baseret på artikler, er den inddelt i tre afsnit. Den første del beskriver mit forskningsemne og min forskningsmodel med hensyn til bevægelsen fra et implementeringsrationale til en mere kritisk analyse af gennemførelsen af IKT-politikker. I anden del konceptualiseres IKT-politikkernes gennemførelse gennem en analyse

af tre konkrete praksisser: IKT-ledelse (artikel 1), oversættelse af politikker (artikel 2) og styringen af subjekter (artikel 3). I denne konceptualisering undersøges IKT-politikkernes natur igen. Afhandlingens tredie del indeholder yderligere to bidrag. Et af disse bidrag er en dybere undersøgelse af IT-enheder, som er specieller enheder, som gennemfører hvad jeg kalder »vilje til at innovere« i Colombia (artikel 4). Disse enheder har ikke været undersøgt tilstrækkeligt i forskningen. Den sidste artikel diskuterer de mennesker, som er kritiske i forhold til IKT-integration, og præsenterer dem som relevante i forhold til gennemførelse af IKT-politikker. Analysen af disse kritikere informere og udvikler yderligere politikteori som 'policy enactment' (artikel 5).

Som konklusion diskuteres tre af de væsentligste forskningsmæssige bidrag: For det første, behovet for en konceptualisering af IKT-politkker; for det andet, relevancen af at revidere og udvide policy enactment modellen indenfor det videregående unddannelsesområde; for det tredje, at gøre alternative 'enactment'-zoner synlige for forskningen. Til slut argumenterer jeg for, at de ontologiske, epistemologiske og metodologiske implikationer, som følger af afhandlingens 'enactment'-begreb, bør overvejes i den videre forskning, som adresserer den politiske dimension i IKT-integration i videregående uddannelsesinstitutioner.

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The doctoral research you are about to read is not a solo project. It was an entanglement of different entities that made this intellectual artefact possible. I want to mention some of the human entities that were at the forefront of this endeavour.

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Finally I want to thank the national department of science, technology and innovation (COLCIENCIAS) in Colombia. This institution was the second funder of my doctoral research through the scholarship 'Generación del Bicentenario' they granted me. I am fully convinced that education policies are worthwhile artefacts for researching and problematizing.

DEDICATION

To my mother Mirtha and my father Flavio, who provided me with what I needed to become who I am: a man with intellectual passions.

To my beloved wife Vanessa, who supported me both as a spouse but also as a research assistant, enduring hard times by my side. She showed me the value of patience, and that love is possible even when you were not expecting it.

To my daughter Valentina, a becoming, an advent…

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LIST OF RESEARCH ARTICLES

This thesis is structured as an article based thesis. Therefore, in Part II and III the reader will find enclosed the research papers that have been submitted, and some of them published. This is the list of papers:

Paper 1: Cifuentes, G. & Vanderlinde, R. (2015). ICT leadership in higher education: A multiple case study in Colombia. *Comunicar*, 45, 133–141. Doi: 10.3916/C45-2015-14

Paper 2: Cifuentes, G. & Valero, P. (2015). Tracing translations of ICT policies in higher education. *Education Policy Analysis Archives* (EPAA) (Forthcoming publication in special issue on September 2015).

Paper 3: Cifuentes, G. (2015). Educational governance and innovation: Technology as an end and a means of government. *Policy Futures in Education*. (Submitted)

Paper 4: Cifuentes, G. (2015). The will to innovate in Colombia: Conceptualizing the practice of ICT units. *Journal of Higher Education Policy and Management* (Submitted)

Paper 5: Cifuentes, G. & Castro, W. (2015). Crítica e innovación con TIC en educación superior. *Culture and Education* (Submitted)

INTRODUCTION

As an educational researcher, I have been involved in many different projects and educational programs for the integration of technology in higher education. Based on that personal experience it was common that when my research colleagues and my master students were thinking about ICT for education, the main concern was technological or pedagogical, e.g., what type of technology could enhance learning or how theories of learning could shed light on daily processes of teaching and learning in the classroom. However, over these years I have witnessed the lack of reflections on the political viewpoint of ICT integration. In this regard, I have also found problematic the common divorce between two different fields of knowledge, i.e., ICT integration for education, and education policy analysis.

Undoubtedly, information and communication technologies (ICT) have become a major concern for education policies not only within my country (Colombia) but also at a global scale. Nevertheless, it seems that a narrow and limited conceptualization on the nature and meaning of policies has undermined further explorations in this regard. As a result, the political dimension has been taken for granted, usually reserved to the production of institutional, national or international reports that local settings could even disregard.

This thesis is about understanding the political dimension of ICT integration in higher education. In other words I attempt to understand ICT integration from a political point of view. For that purpose I examine a broader conceptualization of education policies. As Ball mentioned 'For me, much rests on the meaning or possible meanings that we give to policy; it affects "how" we research and how we interpret what we find' (Ball, 2006, p. 44).

In general, the literature on ICT integration has considered the political dimension within the domain of organizational aspects, i.e., as institutional conditions that promote ICT integration. Hence, institutional policies include aspects such as leadership (Dexter, 2008; Granger et al., 2002), ICT support (Strudler & Hearrington, 2008), provision of infrastructure (Albirini, 2006; Granger et al., 2002) and other organizational features for integrating technology into educational processes (Goodison, 2002; Hayes, 2007). A more recent research trend has focused on ICT policy plans, which are a blueprint

of what education should look like through the use of ICT (Fishman & Zhang, 2003) both at a national and institutional level. The general assumption is that ICT policies increase the success of ICT integration in educational contexts (Bates, 2001; Gulbahar, 2007; Hew & Brush, 2007; Wang, & Woo, 2007).

However, I argue that the political dimension of ICT integration in higher education has not been considered sufficiently. Indeed, a deep examination of how policies are understood, and what people do in the name of those policies (Wedel et al., 2005) has remained underexplored. Using a Latourian expression, the aim of this thesis implies moving from matters of fact to matters of concern (Latour, 2005). Put differently, I propose a displacement from a contemporary rationale of 'evidence-based research' and 'what works'[1] to the analysis of emerging controversies when ICT polices are enacted within institutional contexts.

Following this line of reasoning, I consider that once the central role of ICT policies in the global agenda for education is acknowledged, it is necessary to supersede an implementation rationale that has been dominant in the analysis of ICT policies in higher education. Therefore, I address the critique of an implementation rationale that underpins a positivist and functionalist stand. In this regard, a necessary process in my account was to build an image of my opponent, which I characterize through some of his assumptions (linear cause-effect relations, evidence-based approach, intentional fallacy, managerialism, and taking context for granted). As Rizvi and Lingard (2010) claimed a rational-instrumental approach takes status quo for granted, and is only concerned with 'how best to solve problems and determine the best course of action to take to realize given ends' (p. 123). Hence, the problem of how ICT policies have related to local practices of ICT integration has been reduced into a technical problem of implementation. Indeed, the starting point of my research process was addressed from an implementation approach – how ICT policies were implemented – but further theoretical and empirical insights reoriented the research process to policy enactment as a field of problematisation. What is inevitable in this endeavour is that two different fields of study

[1] In this regard, a very interesting critique has been recently developed by Bob Lingard (2013) on the contemporary rationale of evidence-based policy and impact research.

– ICT integration in education and education policy analysis – are interrelated from a critical perspective.

As I show in this work, policy enactment theory became a very useful toolbox both theoretically and methodologically. Theoretically this framework provided me with a broad definition of policies that was not limited to the realm of public policies despite considering national ICT policies within my analysis[2]. Policies pose problems that deserve to be considered both as text and processes (Ball, 2000), but also as discursivities that shape what can be said, and who can speak from a certain position (Foucault, 1991). Only when considering policies from these theoretical accounts can ICT policies be revisited differently with new categories of analysis developed throughout the different papers contained in this thesis.

Methodologically, a policy enactment model leads to the analysis of concrete practices in situated contexts. Hence I wanted to move away from previous traditions in education policy studies, which are common when researching ICT for education. On the one hand, a positivist paradigm underpins impact assessment analysis. From this trend, evidence-based research should inform cause-effect relations on how a certain policy or program affects a population. On the other hand, a critical theory paradigm underpins approaches such as discourse analysis, which focuses on policy texts in order to reveal hegemonic ideologies that exert power through the language of policies. Despite recent approaches in critical discourse analysis aiming to include texts in context (Fairclough, 2003; Taylor, 2004), the focus still remains on documents, language and its effects.

Conversely, a policy enactment model drives the analysis to local practices in which education policies are enacted. In this regard, my work can be subscribed to what has been called policy sociology (Ozga, 1987), a critical stand within sociology of education that has been influenced by poststructuralism, postcolonialism and postmodernism, in opposition to positivist and functionalist methodologies in education policy research (Rizvi & Lingard, 2010). I argue that the literature on

[2] It is important to mention here that policy and politics are only distinguished in English and Dutch as two words with different meanings. In other languages such a distinction is absent because in practice they are inseparable (Hudgson & Zoe, 2007). Throughout this work I will use policy as the main expression for analysis.

ICT integration in education can be enlightened through the dialogue with a policy enactment model.

Nevertheless, this framework was not simply 'applied', remaining uncontested. Indeed I established a critical dialogue and connections with other approaches that enhanced my analysis, and contributed to the development of a policy enactment model situated in higher education. Considering the work of Spillane on distributed leadership (2006), Latour on sociology of translations (2005), and the analytics of government (Foucault, 1991), each one of the papers of this thesis summarizes singular encounters, and a fruitful conversation with these perspectives.

The first part of this work is divided into two sections. The first section poses the field of problematization asking *why* enactment of ICT policies is a matter of concern; in other words, why ICT policies as a field of inquiry deserves to be analysed from a policy enactment point of view. The next section develops a methodological account of the journey I experienced as a researcher refining my research question. In that sense, the inquiry is posed in terms of *how* ICT policies are enacted in a set of higher education institutions in Colombia.

The second part comprises three different articles that develop the research problem, aiming to answer the research question. If policies pose problems for subjects in local contexts (Ball, 2000) I want to situate and take this statement further. First, ICT policies pose problems within institutions that promote ICT leadership, and in that respect I analyse the struggles emerging in those contexts (Paper 1). Second, ICT policies pose problems of translation, something more complex than achieving an 'appropriate understanding of a policy message in order to implement' (Paper 2). Third, ICT policies pose problems for governing people; thus, practices of shepherding, accountability and governing at distance are means to cope with issues like staff reluctant to use ICT (Paper 3). Another way to see these papers is in terms of the analysis of concrete practices of enactment. Thus, ICT policies are analysed as practices of distributed leadership, policy translation, and the government of subjects.

The third part contains two additional articles providing further implications of the research problem. These articles are subsequent reflections that attempt to open new directions and perspectives on policy enactment for ICT. What I call a will to innovate (Paper 4) – a discursive formation in the contemporary education policy – is enacted

in Colombian higher education institutions through the daily work of ICT units. Conceptualizing the practice of these units is another contribution that I undertake within the literature on ICT integration. As a collaborative work, the last paper is devoted to extending one of the aspects of a policy enactment model – the policy positions – but draws on a different theoretical perspective from ICT integration, i.e., barriers for innovation (Paper 5). This paper gives voice to faculty members in order to analyse the critique as a relevant policy position when problematizing ICT integration processes.

At the end, three main conclusions are described in terms of contributions: first, conceptualizing ICT policies beyond an implementation rationale; second, the necessity of revising and expanding a policy enactment model in higher education; third, making alternative enactment zones visible for research with some subsequent methodological issues posed as further research opportunities in this arena. All in all, this endeavour allows for superseding an implementation rationale by interrelating the material, hermeneutic and discursive dimensions of ICT policies.

PART I

1.1 POSING THE PROBLEM: FROM IMPLEMENTATION TO ENACTMENT

The question addressing this section is why enactment of ICT policies expresses matters of concern instead of only matters of fact (Latour, 2005). As matters of fact ICT policies are rendered in terms of questions such as how to implement a policy properly, what solutions better deal with implementation failure, or how to collect objective data to understand implementation. Conversely, this research assumes that policy implementation is *also* a matter of concern (Latour, 2005). In other words, a range of controversies emerges when dealing with implementation in local contexts. Instead of closing the debate by collecting enough 'data', context becomes a *gathering* where different entities participate in order to shape what later will be described as policy enactment.

I start by defining the field of inquiry – ICT policies – demonstrating that such a field has an increasingly important role in the agenda of contemporary education policies. However, their comprehension has been limited to what I describe as an *implementation rationale*, which is aligned with matters of fact in the current analysis of ICT policies. In other words, these policies are analysed in terms of cause-effect relations, a positivist and evidence-based approach, assumptions on the transportation of meaning from one side (policy-makers) to another (receivers or implementers), managerialism, and also taking context for granted.

In the following, I describe how these features have become prevalent in the international, national and research domains. I argue that an implementation rationale can dismiss a nuanced understanding of controversies that ICT policies pose in local contexts. In that regard, I claim that a policy enactment theory is a relevant theoretical framework in the Colombian context, where ICT policies are at the forefront of the educational agenda. After posing the research problem I claim the need for a methodological approach that supports my research question, developed in the next section.

1.1.1 ICT POLICIES IN HIGHER EDUCATION: SETTING THE FIELD OF INQUIRY

Policies represent an effort to imagine a future for both individuals and populations. They represent an assemblage of responses to perceived problems, equally imagined and therefore contested (Rizvi & Lingard, 2010). A clear way to reveal the relevance of ICT policies is through the analysis of three domains in which they have been considered: the international, the national and the research domains. Through a brief review of these domains I argue that an implementation rationale has prevailed, addressed as matters of fact (Latour, 2005). Later, I show the need to go beyond that rationale since implementation of ICT policies poses problems and controversies (Latour, 2005) that deserve an alternative perspective. In that regard, I advocate for a policy enactment theory in the following segment.

1.1.2 INTERNATIONAL DOMAIN: ICT POLICIES AS A GLOBALIZED MATTER

Within the production of discourses on ICT policies for education, international organizations (IO hereinafter) represent an obligatory entry point. The reports deployed by these IO are discursive frameworks within and in which a set of solutions are sought (Ball, 2010). Underpinned in educational change, economic development or social equity, institutions like United Nations (2005), the Organization for Economic Cooperation and Development (2001, 2006) and the World Bank (2003) highlight the significance of ICT policies for addressing the economic and social needs around the world.

In particular, UNESCO has been one of the most worldwide authoritative institutions deploying reports on this topic. Based on major arguments in the contemporary educational arena such as curricular reform and educational change, this IO promotes ICT policies in education around the world. These policies are not only about infrastructure or new pedagogies, but also a matter of planning, considering concerns about what to use, how and when as political dimensions that require strategic and coherent decisions (UNESCO, 2014).

According to this IO ICT policies matter for several reasons. They articulate and clarify goals; they declare a vision and suppose a

strategy with measurable outcomes. Particularly in education, policies provide a coordinated framework that allows priorities for reform. In this regard, policies for the integration of ICT are a special case because they take into consideration different policy areas such as education policies, information policies, trade or cultural and linguistic policies. Therefore, they deserve an interdisciplinary analysis beyond narrow approaches (UNESCO, 2014).

Despite all these statements operating at a global scale, nations are delegated to fulfil promises of educational change, economic development or social equity through ICT policies. In this regard, a first tension emerges between general patterns and apparent commonalities of education policies, and the particularities of policy-making in a local setting (Ball, 2010). Contemporary educational discourses operate supranationally but influence the nation-state production of education policies differently (Olssen et al., 2004). As I will show later, this influence is not linear and implies complexity in the analysis.

A well-known author that has been producing reports and knowledge for and from IO is Robert Kozma (UNESCO, 2010; 2011). According to him, ICT policies and the programs they operationalize are means to achieve those promises delegated to ICT for education. Different reasons from this perspective justify a deep study on these policies. National ICT policies are strategic as they provide a rationale, a set of goals and a vision of an educational system improved with ICT (UNESCO, 2011). They are also strategic given that coordination of disparate efforts is necessary in educational settings. Put differently, without national guidance local innovations cannot easily be sustained, and even if they achieve change it will not affect the educational system broadly (UNESCO, 2011).

According to Kozma, ICT policies are framed differently if they are simply operational policies or if they follow a 'strategic rationale'. As operational policies they are merely technocratic, i.e., focusing on purchase of equipment or teacher training without a pedagogical purpose. Conversely, strategic policies organize goals and visions according to a particular 'rationale'. Kozma (UNESCO, 2010; 2011) depicted such a 'rationale' in terms of three different positions:

- *Support economic growth*: Includes preparing a future workforce and supporting economic development. Underpinned on approaches like human capital, lifelong learning and twenty-

first century skills, different educational reforms justify the need for training in ICT as a way to steer productivity.

- *Promote social development*: Under this rationale ICT policies are socially oriented policies. Social needs like access to education, an active participation in an information-driven society or social inequities are addressed through these education policies.

- *Advance educational reform*: Like any education policy undertaking major changes, ICT policies are linked to three kinds of reforms: curricular reforms, pedagogical changes, and assessment programs to improve the educational system.

As expected from this framework, these three rationales are not exclusive and many different national ICT policies combine two or more to achieve their goals. What Kozma names 'rationale' or 'positions' could be related to particular ideologies in which nation-states are 'free' to choose or combine. However, from a critical standpoint only the first position – support economic growth – has prevailed in what has been called the 'market solution' or the 'new reform package' of contemporary education policies (Ball, 2010). This rationale includes two complexly related policy agendas struggling with each other: one of them ties education to national economic interest; the second one decouples education from direct state control. As Ball stated: 'The first involves a reaffirmation of the state functions of education as a "public good", while the second subjects education to the disciplines of the market and the methods and values of business and redefines it as a competitive private good' (Ball, 2010, p. 125).

From my point of view ICT policies are framed under an implementation rationale in order to solve these kinds of contradictions. That is precisely what the international domain depicts through the operationalization of ICT policies[3]. According to Kozma (UNESCO, 2010), strategic and operational ICT policies are different. If the former provides a vision for sustained change in education, the latter is

[3] As I will show later for the national domain, alignment of policies, leadership and management become examples of technical aspects to solve local problems.

important as a means to achieve that vision. Framed as action plans, programs and projects, operational policies consist of some of the following components (Kozma, 2011):

Professional development: A professional teacher development program is an essential component of any ICT policy and should be beyond teacher training represents; both represent key elements for educational change. In early stages it is common that ICT policies include operational skills in hardware and software; however, in order to integrate ICT into the curriculum, more advanced skills are required for any teacher-training program (UNESCO, 2008).

Pedagogical change: A key element is the articulation of ICT related changes with innovative pedagogical practices. Teachers are expected to structure and provide resources and model cognitive and social processes.

Curricular development: A shift is expected to occur from ICT literacy to advanced skills. The curricular emphasis implies the integration of ICT throughout the curriculum to support learning.

Assessment reform: The shift is depicted as a continuous assessment of a new set of 21st century skills that consistently apply new assessment methods (performance tasks and portfolios for example).

Restructuring the school: A new disposition or allocation of space, time and resources for each institution.

Technological infrastructure: Typical of early stages in any national ICT policy is the allocation of technical resources.

This 'operationalizing in order to implement' perspective raises a very common problem in policy studies, i.e., failure of implementation. Several issues are identified here: policies have no specific programmes or resources to implement them or affect change (Elmore, 2004); teachers have a reluctant attitude when they perceive policy-based change as imposed; a disconnection between policies and concrete practices of teaching (Cohen & Hill, 2001); or simply because ICT

policies are focused on other issues rather than educational change (Kozma, 2011).

All in all, the main concern with these reports is how to administer and tackle the gap between policy and practice. As I stated above, these strategic and operational policies belong to the social imaginary of education policies (Rizvi & Lingard, 2010). They are ensembles of technical responses to perceived problems. However, the question about how these globalized discourses are put into practice has been limited to a technical model of policy implementation. Recently critical scholars have pointed out the lack of comprehension in that model. The remaining question is 'how it is that people internalize them (…) how is ideology translated into actual material practices steering our sense of possibilities and conceptions of the future?' (Rizvi & Lingard, 2010, p. 132). In other words, it is important to ask how this new orthodoxy – or the market solution – is realised within very different national and cultural contexts, but also how it is 'affected, inflected and deflected by them' (Ball, 2010, p. 127).

In short, when ICT policies are considered at an international level they are framed as a technical implementation concern. Before I expand on the issue of implementation of ICT policies as a research problem I will refer to the national domain in the country where this research was carried out following Kozma's assumption that 'nations are delegated' to fulfil promises for educational change.

1.1.3 NATIONAL DOMAIN: ICT POLICIES IN COLOMBIA

It is necessary to understand by the same token what responses to perceived problems have been imagined through ICT policies in Colombia. Given that Colombia is the focus of analysis where this research was carried out, I will refer to this country as part of the national domain. As Ball mentioned, Colombia can be identified as one of the countries in which the general elements of contemporary international education policies operate[4], just as it occurs in developed economies (Ball, 2010).

[4] 'One immediate limitation upon the generality of my discussion is its focus upon Western and Northern developed economies, although a great deal of what I have to say has considerable relevance to countries such as Colombia, Chile, Portugal, Japan and some of the ex-Warsaw Pact nations of Easter Europe' (Ball, 1998, p. 119)

The panorama of ICT policies in this country is not homogeneous and simple to define. More than 25 years of history and development of policies, programs and projects on ICT for education indicates that Colombia has been one of the most active countries in Latin America regarding ICT integration for education. Actually, only few countries in this region have developed policies in this field (Sunkel, 2009), establishing a public policy on ICT for education, as I will show later.

In Colombia, different initiatives at different times from different sources have produced a diversity of ICT policies: several legal acts, plans of government, educational decennial plans, social policy documents, reports and national guidelines comprise the landscape of initiatives launched by the last governments (UNICEF, 2014). Instead of reviewing particular programs or initiatives, I consider paying attention to some issues highlighted in the Colombian case to be more relevant. In general the initiatives in Colombia have been divided into programs and projects with four different emphases:

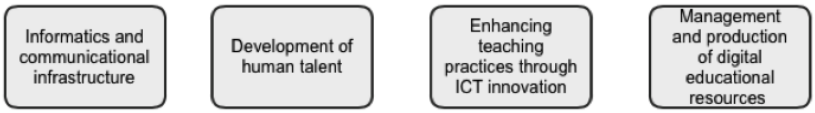

Figure 1.Four emphases of ICT policies in Colombia (UNICEF, 2014)

It is necessary to pay attention to the issues that are highlighted in relation to the implementation of these policies. One of them is their *alignment*: 'It is important to discuss at a high level what should be the mechanisms to align national strategies with regional and local strategies that implement ICT policies in Colombia' (UNICEF, 2014, p. 12). Beyond the Colombian context, Kozma (UNESCO, 2010) has also considered alignment as a relevant recommendation for policy-makers. For him, a main problem is when policies are analysed in isolation, i.e., as if they could work independently of other policies and local conditions. Three types of alignment are suggested for consideration, rendering a technical solution. A strategic and operation alignment, i.e., national ICT policies should be aligned with other strategic and operational policies insuring a link with broader goals and rationales; a horizontal alignment, i.e., coordination with other policies

within the educational system and with other ministries; finally a vertical alignment, i.e., coordinating national ICT policies with regional, municipal and institutional policies (UNESCO, 2010).

Another issue is related to the *management* of educational innovations and the lost potential of these initiatives from the government and universities. Hence, the posed question is 'How to take advantage of the potential from the innovations with ICT from universities?' (p. 18). Colombia has a decentralized national administrative context, in which responsibility and resources are delivered to departments, district and municipal levels (UNICEF, 2014). In this regard, the Ministry of Education deploys national guidelines and articulates efforts with other sectors (Ministry of ICT, COLCIENCIAS[5], SENA[6]). In other words, vertical and horizontal alignment is intended (UNESCO, 2010). However, secretaries of education in different territories across the country are in charge of channelling these guidelines and national efforts at municipal and local levels; therefore, another issue when analysing ICT policies for education in Colombia concerns the *leadership* of these policies.

All in all, these issues indicate that an implementation model based on managerialism is dominant when analysing ICT policies and their relation to educational institutions. Hence, alignment of initiatives, management of innovation, and leadership are expressions of an implementation model for understanding ICT policies in education. As I will explain further in the fourth paper in this thesis, critical approaches to contemporary governance of universities has referred to this managerial rationality (Cowen, 2009), which is enacted through the allocation of quality insurance systems, and accountability practices for administrative and academic staff. This 'new public management' and institutional performance rationale (Ball, 1998) also includes discourses of efficiency that have to be enacted through practices of managerialism in educational institutions (Short et al., 2013; Teelken, 2012).

A conceptual clarification is necessary at this point. I do not want to claim that an implementation rationale is only a matter of ideology. However, when I say it is 'dominant' it seems to become hegemonic given the two features that define this term: on the one hand,

[5] National department of science, technology and innovation.

[6] Servicio Nacional de Aprendizaje – National Service for Learning.

it is dominant; on the other, subjects assume such discourse as legitimate, embracing and accepting it (Gramsci, 1971). However, in my account I want to go beyond the ideology 'behind' an implementation rationale, and understand practices, realizations and ultimately, enactments. I will return to this after describing my theoretical framework.

Recently there have been attempts from the Colombian government to elaborate a discourse on ICT policies in terms of a system. In 2013 the Ministry of Education launched a National System for Innovation with ICT. From my point of view, two aspects deserve attention in relation to an implementation rationale[7]. On the one hand, this attempt from the government evidences a 'dispositive for innovation' or a 'will to innovate', in which ICT policies are depicted as solutions for economic and social problems. Indeed, the connection between the three positions stated by Kozma (2011) – support economic growth, promote social development, advance educational reform – can be traced in the formulation of this national system, in which 'implementation of ICT' promises an enhancement of quality in the educational system of education: 'The national system of innovation aims to settle innovation as a condition and aspect that frames educational practice, enhances conditions and capacities regarding ICT integration in the Colombian educational sector, and attends to the necessities of educational communities' (NME, 2013, p. 16). In order to achieve that goal, five different strategies are depicted: teacher professional development, promotion and enhancement of research, management of digital educational content, e-learning, and ICT availability and access.

[7] I develop these two aspects thoroughly in the third and fourth papers enclosed in this thesis.

Figure 2. National System for Innovation with ICT (Source: Ministerio de Educación Nacional, 2013)

On the other hand, this national system was not the outcome of one specific government as it is usually described from a state-centred and top-down analysis. Instead, such a system was possible because of the mobilization and support from institutions, both public and private, and also at school and higher education levels.

Considering the third position or 'rationale' of national ICT policies related to advancement in educational reform (Kozma, 2011) Colombia represents a particularly relevant case in regard to higher education. Educational reform in higher education has a long history in Colombia (Orozco, 2013), including recent failed attempts like a national student mobilization that in 2011 brought down a governmental initiative for elaborating new regulations in this sector. Despite this and many other struggles, a recent policy-making process within the country has mobilized a proposal for a public policy in higher education – the 'Agreement 2034' led by the Council of Higher Education –, which aims to renew and go beyond the previous 'Act 30 for higher education' (CESU, 2014).

Particularly relevant in this plan –envisaged as a path for the next five governments– is the role of ICT as a key for educational transformation in relation to new educational modalities. Hence, new technologies are once again imagined as a tool to enhance the educational system, and a pump for higher education reform (CESU, 2014). Therefore, whenever an educational reform is proposed for the

contemporary educational system, at least in the Colombian case ICT plays a key role.

After acknowledging the power of ICT to foster change, the same document opens a list of thirteen problems posed by the implementation of ICT in higher education. Among these problems, a lack of legal regulations in order to define boundaries and pedagogical implications of e-learning and blended-learning programs are mentioned; a need for updating quality standards for those programs; a legal gap for teacher salary considering e learning as a different practice than traditional classroom; a lack of definition on requirements for recruiting staff in this modality; the difficulty to verify quality conditions of e-learning and blended learning programs for accreditation processes; and also the lack of collaboration between higher education institutions (HEIs) within the different Colombian regions missing opportunities for educational improvement (CESU, 2014).

As I will show in this work, the integration of ICT in higher education poses problems at different levels that challenge an implementation rationale. If both education policies and information and communication technologies represent technical responses to perceived problems (Rizvi & Lingard, 2010) there is still a need to emphasize the struggles that emerge within a national domain beyond their technical implementation. In the following I review how the last domain – the research community – has considered the study of those policies, focusing my inquiry in higher education.

1.1.4 RESEARCH DOMAIN: ICT POLICIES AS AN OBJECT OF STUDY

As a field of research, the integration of information and communication technologies in education comprises different approaches. The research community has divided them into three different trends: 1) the study of the effects on student performance; 2) the study of the qualitative use of ICT in local settings; and finally, 3) the study of the conditions that support the use of ICT for teaching and learning (Vanderlinde, 2011).

Policies for the integration of ICT are a special case in this regard because within each trend different questions can be posed. For instance, how ICT policies can steer learning outcomes (trend 1), what

technology can be strategically incorporated for a qualified use in schools (trend 2), or what institutional conditions are required for the formulation of an ICT policy (trend 3). However, in the literature, ICT policies in education have been located in the third trend, i.e., the institutional conditions that affect ICT integration.

Certainly, only recent attention has been paid to this trend beyond teacher level variables (Hew & Brush, 2007). Particularly, the literature review focuses on organizational features (Goodison, 2002; Hayes, 2007); leadership (Dexter, 2008; Granger et. al, 2002); ICT support (Strudler & Hearrington, 2008), and obviously infrastructure (Albirini, 2006; Granger et al., 2002). Despite this increased interest, the vast majority of studies on institutional conditions focus on the school level, and only few of them are located in higher education (Toro & Joshi, 2012)

Among the few studies analysing ICT policies it is relevant to notice the assumptions and methodological approaches that frame some of those analysis. For instance, an international comparative study tried to understand the institutional policy-based responses of HEIs when integrating ICT (Collis & van der Wende, 2002). Among the research questions, researchers paid attention to the strategic responses of institutions to ICT integration, external conditions influencing those responses, and their implications for teaching and learning. Three main conclusions were obtained: HEIs do not expect ICT to bring radical change but they are adapting their procedures and models in a slow pace; ICT policies evidence a tendency for blended models, combining existing traditional face-to-face practices with ICT integration; finally, faculty members are increasing their workload as they are asked to integrate technology in the classroom, but at the same time they are not receiving awards for that effort which ends up in lower levels of satisfaction and engagement to use ICT (Collis & van der Wende, 2002).

Within such ambitious studies that attempted to compare seven countries (Netherlands, Germany, Norway, the United Kingdom, Australia, Finland and USA) data was collected through a web-based questionnaire tailored to three different response groups: decision makers, support staff, and instructors (Collis & van der Wende, 2002). In other words, when understanding a complex phenomenon such as ICT integration in HEIs, a survey was designed for that purpose.

From my point of view –and as I will show in other studies– this is a limited framework because it is based on an implementation rationale. In this model, the general assumption for researchers is that clear formulation of policies, with measurable goals, can be monitored and assessed. Embedded in that model questionnaires or surveys apparently capture the implementation processes. In this regard I am not declaring these types of studies to be useless. Certainly this is a matter of fact (Latour, 2005) or objective data obtained from more or less sophisticated statistical analysis and comparison. However, when studying ICT policies based on some assumptions from an implementation model, there are conceptual and methodological problems that I would like to underline.

To clarify my reasoning it is relevant to pay attention to critical analysis that challenges the *intentional fallacy* of many implementation researchers. An intentional fallacy assumes that the meaning of a text corresponds to what an author intended to express, transforming the text into evidence of such intention (Olssen et al., 2004). A technical-empiricism model researching policy documents would assume the task of interpreting the correct meaning of policy texts, which are expressions of a real meaning to uncover.

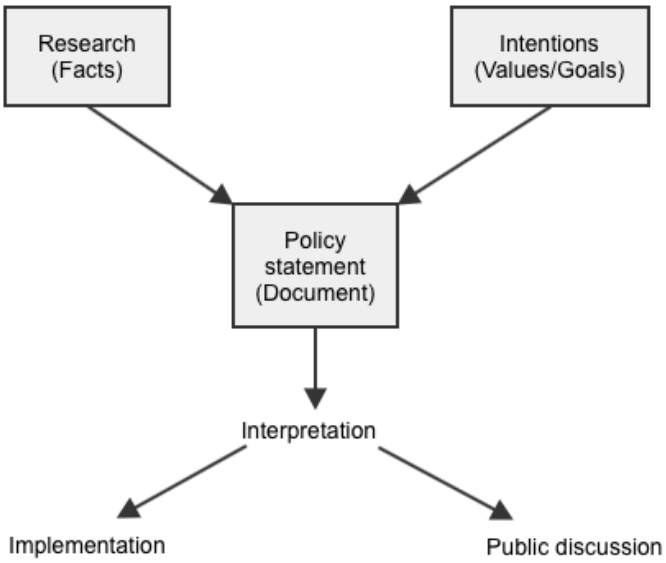

Figure 3. Technical-empiricist model of the policy document

The assumption under this approach is that the meaning expresses the real purpose or intention from a policy maker, and policy researchers have to decipher such intentions on every document. This approach represents an idealistic assumption that searches for the real meaning behind the text produced: 'When there is controversy surrounding the meaning of a document, it is assumed that some readers have misunderstood what was meant. One of the tasks of the policy analysis within this approach therefore, is to clear up such confusions and establish an authoritative interpretation' (Olssen et al., 2004, p. 60). Implementation of education policies would become once again a matter of delivering clear messages through the formulation of measurable goals, and researchers would locate those messages within official documents.

Another relevant study on ICT policies in Latin America concerns the design and implementation of policies for ICT in education drawing on a set of indicators: level of policy development, the status of implementation, and the potential outcomes or impact of these policies (Hinostroza & Labbé, 2011). Although this report focuses

on the school level system, some of the findings and the rational for analysing national ICT policies are relevant to highlight some of the features that I itemized above in relation to an implementation rationale. In this case, not only managerialism but also an evidence-based approach and dealing with context are equally present.

Thus, in this particular study authors claimed as the following: 'From a regional perspective, the introduction and use of ICT in education in Latin America is no different than in the rest of the world. Where the region differs from many developed countries is that there is very little evidence on the characteristics of policies and the extent to which they are being implemented' (Hinostroza & Labbé, 2011, p.12)

As mentioned from the previous study, this report was also based on a survey applied to appointed staff at the Ministries of Education in 17 countries, and an additional workshop in which a representative member from each country was invited to discuss the three indicators mentioned above. It is worth to mentioning that the rate of response on characterization of policies or initiatives for ICT was high, but responses to questions regarding implementation were 'substantially lower' (Hinostroza & Labbé, 2011, p. 20).

When characterizing ICT policies in Latin-America, the report referred to policy institutionalization, i.e., when there is an official national policy. According to the study this formalization was linked to the establishment and functioning of a dedicated unit involved in the implementation of such ICT policy at a national level. Therefore, leadership and management of ICT policies were once again part of the discussion just as they were traced at the international or national domain.

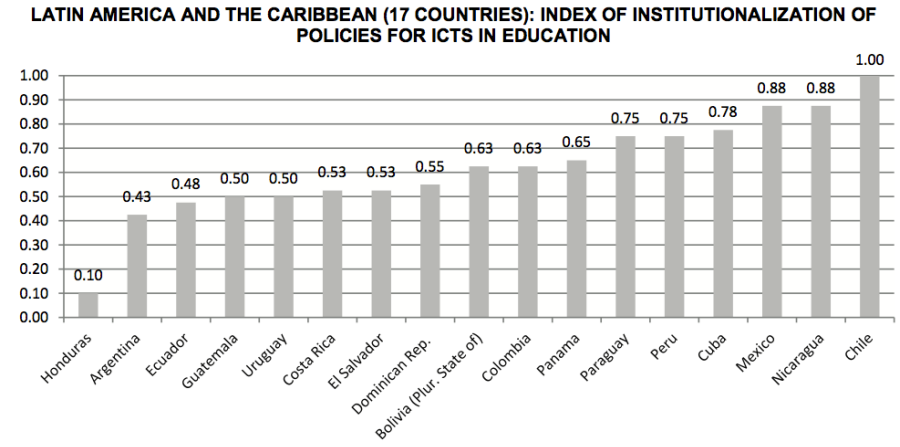

Figure 4. Index of institutionalization of ICT policies (Hinostroza & Labbé, 2011)

Hence the implementation of ICT policies becomes a technical issue. Once a formalized document is released and there is an appointed unit within or outside the government, it should be feasible to analyse the implementation and the impact of these policies. However, when facing the analysis the rationale in this report was goal-oriented, and inspired by technical-empiricists model. It means that this study looks for the achievement of what is intended in the official documents, mainly related to ICT infrastructure, technical support, teacher training and use of ICT. Goal-oriented means also that all the dynamics and complexity of institutions must be absent if impact assessment is pursued. Furthermore, the report mentioned that due to context variables policy implementation was 'quite heterogeneous' (Hinostroza & Labbé, 2011). However, the approach and data from the study makes it difficult to find out what this means. Once again, the lack of information is claimed as the reason for not having a 'clear picture of the situation'. Therefore, implementation of ICT policies becomes a matter of fact (Latour, 2005). And once again, within this goal-oriented rationale the gap between formulation (policy design) and implementation arises. Therefore, impact of ICT policies in this kind of

report becomes a problem, both because of lack of data and context variables.

Despite a distinction between implementation research and evaluation research, when both are linked to a positivist overview the implementation rationale is at the forefront. For instance, one of the most well known trends in evaluation research has been impact assessment of education policies (Gertler et. al., 2011; Khandker et al., 2010). Impact evaluations belong to a particular type of evaluation that seeks to answer cause-and-effect questions (Khandker et al., 2010). Such an approach assumes determining the specific effect of a policy over a population as a main task. The assumption of this approach is that policy makers need reliable information (evidence-based) for decision-making. However, such analysis is built on the belief that one policy should be the cause of one desirable effect: 'The central challenge in carrying out effective impact evaluations is to identify the causal relationship between the project, program or policy and the outcomes of interest' (Gertler et. al., 2011, p. 4).

Another element from the implementation rationality regards generalization. It implies that if success is demonstrated in one setting, future implementations will work the same: 'The question of generalizability (known as 'external validity' in the research methods literature) is key for policy makers, for it determines whether the results identified in the evaluation can be replicated for groups beyond those studied in the evaluation if the program is scaled up' (p. 14). Thus, the idea of implementation belongs to a theory of change that focuses on the result-chain model. This model carries out the instrumental assumption of delivering inputs, activities and outputs by a central agency in charge of monitoring and measuring a project´s performance (Gertler et al., 2011).

1.1.5 ICT POLICIES AS MATTERS OF CONCERN

What I have shown to this point is the prevalence of an implementation rationale on three different domains (international, national and research). Such an *implementation rationale* is aligned with matters of fact in the current analysis of ICT policies. In order to explain different features have been described about this rationale such as cause-effect relations, a positivist evidence-based approach, assumptions on the transportation of meaning from one side (policy-

makers) to another (receivers or implementers), managerialism in higher education, and considering context as granted. Compared to this rationale, I argue that ICT policies represent more than documents containing policy messages: 'Even as textual entities, objects overflow their makers, intermediaries become mediators' (Latour, 2005, p. 85). Policies are an open field for the analysis of particular contexts in which educational reform is full of controversies. Put differently, if impact of education policies represents a viewpoint from matter of fact, the context in which those policies are entangled becomes a matter of concern. Therefore, a different perspective for understanding reality and particularly policies is necessary, as objects have been portrayed simply as matters of fact, for instance considering 'evidence-based policies'. Instead of that, matters of concern 'signify the messy assemblages and attachments through which politics and policy can be enacted' (p. 469).

The world of issues, framed as matters of fact, looks different than the world of issues framed as matters of concern. Indeed, the latter is not less real than the former but more lively. This renewal of empiricism is undertaken 'by mapping scientific controversies about matters of concern' (Latour, 2005, p. 114). This is not a question of claiming for one reality (therefore one ontology) and multiple interpretations, i.e., 'multiple points of views on the same thing'. Similarly, this is not about a world of interpretations where things could be less real, invented and even false. Instead, there are multiple ontologies in which objects become things, rendered both as facts and concerns. In this point a Latourian perspective is aligned with Foucault in terms of a transgressive ontological critique rather than a transcendental metaphysical stand on politics (Fenwick & Edwards, 2011).

In the following I describe the theoretical framework that underpinned my research project, in order to tackle the problem of implementation as matters of concern. As Ball (1998) mentioned 'policy analysis requires an understanding that is based not on the generic or local, macro or micro-constraint or agency but on the changing relationships between them and their interpenetration' (Ball, 1998, p. 127).

1.1.6 ENACTMENT OF EDUCATION POLICIES AS A THEORETICAL FRAMEWORK

As I have shown in the previous section, ICT policies represent a field of controversies, a matter of concern that goes beyond an implementation model. So far, I have moved away from that model considering different problems in such an approach. In education policy analysis a technical-implementation model assumes that policies solve problems by legislation or other local or national prescriptions that should be inserted into practice. However, when doing this, a wide range of policy activity is overlooked. As Ozga stated 'policy making at all its levels and in all its sites also involves negotiation, contestation or struggle between different groups who may lie outside the formal machinery of official policy-making' (Ozga, 2000, p. 113). Therefore, I would like to introduce a different expression that embraces a more nuanced comprehension of policy-making and all the lively practices occurring in local settings. Instead of using the word *implementation* as a problem solving rationale that prescribes actions to be followed, I will use a different expression: *enactment* stands for this alternative perspective.

In etymological terms, enact is both juridical and performative. According to the Merriam Webster dictionary the word 'enact' is defined in two different ways: a) to make (a bill or other legislation) officially become part of the law; b) to perform (something, such as a scene play). Likewise, the Oxford English Dictionary provides several definitions, not only related to legislative authority (making into an act, ordaining), but also performing (a ceremony, a scene) and 'putting into practice' (an idea or suggestion). Thus, enact refers to both the enforcement of law (an order), and also the performance of a practice. In short, enact implies performing and becoming active, not only to obey or to follow an order.

As I will explain in the next section, during my research process there was a need to shift from a view of implementation to a view of enactment of policies. Mainly because I noticed all the creative interpretations and translations of policies in local settings where I carried out my study. This policy play (Koyama & Varenne, 2012) emerged despite determined attempts by leaders to 'implement' or 'enforce policy messages'. Once again, I am not denying matters of fact. HEIs are pushed to implement policies of different types, and such

endeavours constrain actions. However, beyond the enforcement of mandatory regulations, there is also an open space for action. In this thesis I wanted to explore the way policies were performed and how they dealt with creativity, exploration and even distortion. For that reason, a policy enactment theory became necessary as an analytical framework; in other words, as a toolbox to unfold the enactment of ICT policies.

If traditionally the focus has been placed on the implementation of policies in a linear rationality, usually understood as a top-down or bottom-up process, the enactment of policies is concerned more with the way institutions deal with multiple, and sometimes contradictory policy demands (Ball et al., 2012). The overall objective comprises a grounded theory of policy enactment, understanding how policies become alive. Compared to a technical-implementation model, policy enactment 'is not a straightforward and rational process' despite appearing like that. Instead, there are unintended and undesired outcomes. Given that this theory will frame my analytical strategy along this research, it is important to pay attention to a more operational definition. According to Ball et al. (2012) there are three necessary dimensions to capture, understand and represent policy enactment: the material, the interpretive and the discursive. I will briefly define each of them for analytical purposes.

1.1.7 THE MATERIALITY OF POLICIES

Many implementation studies assume institutions as homogeneous and de-contextualized organizations 'In many of these studies, there is no proper recognition of the different cultures, histories, traditions and communities of practices that co-exist' (Ball et al., 2012 p. 5). The material is related to the context that shapes policy enactments. Actually Ball stated that it is rare to find studies in education and policy studies emphasizing the relevance of context. Indeed, context appears just as a general background that 'sets the scene' but at the end is overshadowed in many studies. Materiality of policies has to do with a typology of contextual factors such as a) a situated context: historical and locational aspects that constitute an institution; b) professional cultures: including teacher and institutional values; c) material context: understood as more tangible aspects such as buildings, infrastructure, budgets and information technologies; d) external context: related to pressures and

expectations from local and national policy frameworks (rankings, ratings, positions, legal requirements) but also regional and local relations with other institutions. Such typology is not exhaustive (Ball et al., 2012); indeed in my own research process I had to challenge some of these contextual factors, as I will describe later. However, this approach became valuable as an alternative to mainstream implementation studies that overlook the material: 'Policies are enacted in material conditions, with varying resources, in relation to particular "problems" (…) Thus, the material, structural and relational need to be incorporated into policy analysis in order to make better sense of policy enactments at the institutional level' (p. 21).

1.1.8 THE HERMENEUTIC OF POLICIES

This refers to the problem of meaning. In this dimension two aspects deserve attention. First of all, Ball et al. (2012) established a key difference between interpretation and translation. The former is related to the initial reading of policies through questions like 'what does this particular policy mean?' or 'What does it ask to do?' Given that interpretation is the language of policies as text, there are authoritative interpretations of policies 'presented to staff in events and meetings or through texts as frames within which practice is to be thought about and constructed or objectives to which practice is to be oriented' (p. 44). Conversely, translation is the language of practice that implies an active readership beyond interpreting a policy. Drawing on the Oxford dictionary definition mentioned above, enactment has to do with 'putting texts into practice'. For that purpose, tactics such as meeting, plans, events and artefact design are included. All in all, translation means that a policy is not a 'closed package' to be implemented but an open source for creativity.

On the other hand, the problem of hermeneutics of policies is equally addressed by outlining a typology of policy positions. Policies produce particular subject positions. Therefore, there is a range of 'policy actors' working with artefacts in various ways, trying to find meaning even in contradictory situations of intertwined policies (Ball et al., 2012). A brief description of some of these positions includes narrators: those explaining policy to colleagues joining disparate policies into a coherent institutional narrative; enthusiasts and translators embodying policy in their practice: the former as policy

models or examples to others, the latter in charge of the production of text, artefacts and events; entrepreneurs: those working on 'policy advocacy', mainly charismatic and persuasive personalities identified with policy ideas, seeking to recruit others; transactors as accounters and fabricators of policy responses through accounting, reporting, monitoring. Administrative staff are key transactors: 'They "interpret" policy in relation to resources and set limits or open up possibilities for translation work (…) Translation activities need to be funded and staffed' (pp. 58); critics as 'a source of potential challenge to and critique of new policy' (p. 62); and receivers, i.e., those coping with, defending and in relation to dependency 'They are looking for guidance and direction rather than attempting any creativity' (p. 63).

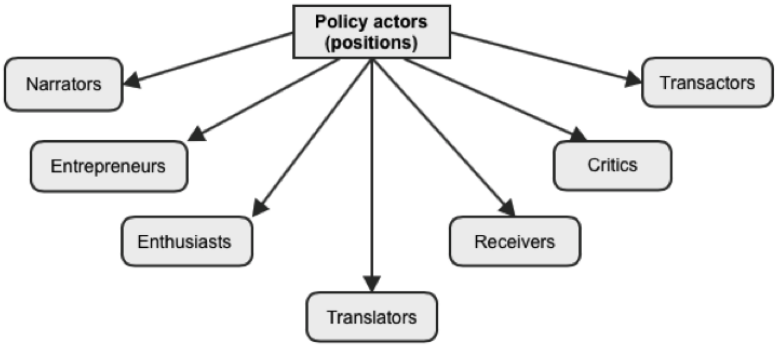

Figure 5. Typology of policy actors (adapted from Ball et al., 2012)

Similarly to the contextual factors, this typology is a heuristic but not an exhaustive list related to policy work within institutions that deserves further examination. In my research journey, some of these policy positions were more relevant than others, and some of these 'labels' were problematized or expanded. Precisely, the last paper explores the critique in relation to institutional ICT policies, and the meaningfulness of this subject position for a policy enactment analysis in more detail.

1.1.9 THE DISCURSIVITY OF POLICIES

The last dimension refers to the *discursive*, given that policies are also a matter of discursive formations, i.e., 'practices that systematically form the objects of which they speak' (Foucault, 1986, p. 49). It is worth

mentioning a previous conceptualization that Ball (1994) developed when defining policies: 'Policy is both text and action, words and deeds, it is what is enacted as well as what is intended' (p. 10). Therefore policy could be conceptualized both as texts and as discourse.

Drawing on literary theory, policy as text refers to representations encoded and decoded in complex ways. As Codd (1988) mentioned, 'for any text a plurality of readers must necessarily produce a plurality of readings' (Codd, 1988 p. 239). The problem of interpretation is linked to the problem of authorship, i.e., a single author does not necessarily produce a policy text, which means they are not closed or complete when they are delivered. Furthermore, they are a product of quibbling and dissensus, leading to blurred meanings and difficulties in identifying what they are intended to achieve. As a result, a space for action and interpretation is disposed in local settings. Texts do not arrive 'out of the blue'; they have history as much as readers and the contexts when both are allocated.

Conversely, policy as discourse reveals another facet, which goes beyond the problem of authorship and meaning. Thus, asking who elaborates representations through policies, and how the meaning is adapted, contested or distorted is mainly a concern of policies as texts. Instead, policy as a discourse disregards agency and intentionality and focuses on the exercise of power through the production of truth and knowledge. The question would not be stated as what is the *meaning* of a policy, but on what it *does*. Hence, discourses are not reducible to language and speech from an intentional and rational subject. Moreover, they are about what can be said, and thought, but also about who can speak, when, where and with what authority (Ball, 2006). Even the state is not a privileged source of discourses but a point in the diagram of power (Foucault, 1991).

Ball insisted that policies as texts do not exclude this second conceptualization. Once again, texts refer to struggle, dispute, conflict and adjustment but all these are actions framed in the rational of discursivity: 'The essence of this is that there are real struggles over the interpretation and enactment of policies. But these are set within a moving discursive frame which articulates and constrains the possibilities and probabilities of interpretation and enactment' (p. 1837). Any policy enactment analysis must acknowledge the web of policy discourses in which educational institutions are embedded. The 'innovative teacher', 'the disciplined student', 'the constructivist

classroom', all of these are discursive formations that frame and constrain a range of possible actions.

As Ball et al. (2012) stated, these three dimensions cannot be separated given the complex reality of educational institutions. The materiality, the hermeneutics and the discoursivity are necessary to understand the relation between policy and practice. Indeed, a policy enactment model pays attention also to practices and artefacts. A practice represents 'the routine and mundane ways in which policies are enacted' (p. 138). Artefacts instead are realisations of policies in relation to practices. Certainly, policies are not possible without artefacts despite most of the education policy analysis overshadow them. Artefacts drive or address policies' directionality, circulating and reinforcing what has to be done. They are microtechnologies and representations of policies; such creation of order, i.e., governmentality, implies the use of signs, policy symbols, and signifiers: 'Cultural productions that carry within them sets of beliefs and meanings that speak to social process and policy enactments – ways of being and becoming- that is, forms of governmentality' (pp. 121). I must underline here practices and artefacts because of the relevance that these two concepts acquired during my research process, as will be seen in most of the articles.

To summarize, a theory of policy enactment represents a clear opponent for an implementation rationale 'Enactments, therefore, cannot be read-off from texts and neither can they be reduced to anything that might be called an "implementation gap" – it is not a matter of policies not being "done" or not being "implemented" "properly". Policy is always contested and changing (unstable) – always "becoming"' (p.119).

Policy enactment theory represents a placement for my analysis. It was not my initial framework and it did not remain intact at the end. As I will explain in the next section, my research journey started by considering the problem in terms of implementation, but later on I moved to the problem of enactment. For that reason, most of the articles are related to this theory, except the first one, which concurs with the moment I shifted from the problem of implementation. Policy enactment theory was part of my turning point and as such, concepts like policy positions, materiality, translation or discourses were key to transforming my own thinking.

However, as with any enactment, this theory was distorted, creatively translated, displaced and forced to dialogue with other authors and concepts that I will describe in the next section. As Ball et al. acknowledged, a policy enactment theory is an open space for inquiry, and the development of such theory suggests further explorations to enhance and lead to new issues: ‘posing questions and problems, the clearing away of a new space for investigation, rather than a set of definitive statements’ (p. 18).

1.2 CRAFTING THE RESEARCH

'The main interest in life and work is to become someone else that you were not in the beginning. If you knew when you began a book what you would say at the end, do you think that you would have the courage to write it? What is true for writing and for a love relationship is true also for life. The game is worthwhile insofar as we don't know what will be the end' (Foucault, 1977)

In this section I describe the process I undertook for answering my research question, i.e., how are ICT policies enacted in a set of HEIs. In order to show how I arrived at policy enactment theory, but at the same time how I translated, discussed and connected that analytical framework within my research problem and the research context, it is necessary to describe a displacement from my initial starting point. All in all, the previous section (posing the problem of implementation) has described such displacement in terms of a shift from matters of fact to matters of concern. That shift compelled me to pose the problem as enactment rather than as a technical problem of implementation.

The following graph shows that the displacement presupposed that theory and method were interdependent. In other words, there was a close relation between the procedures I followed and the theoretical encounters I had along the process. On the left side (Stage 1) a technical implementation model framed my approach to institutions in terms of a top-down rational where facts of implementation were necessary to pursue. The red dotted line represents the movement I experienced from that technical implementation stance (my starting point) to a policy enactment model in which controversies could emerge. Thus, on the right side (Stage 2) a different perspective through different theoretical encounters enlightened my understanding of policy enactment, implying an alternative approach to the problem.

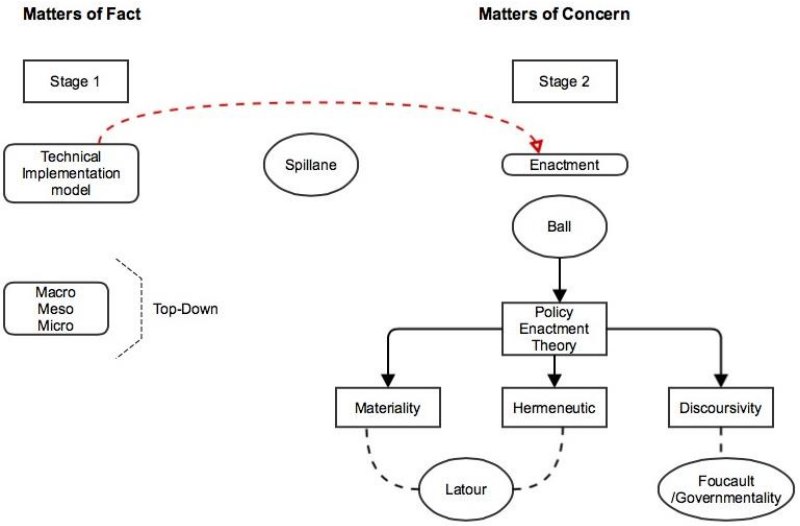

Figure 6. From matters of fact to matters of concern

Considering such interdependency between theory and method, in the following I deploy a methodological account, underlining the way theory informed and qualified my comprehension of the research problem. For that purpose I give a detailed description in the way I approached the problem – particularly how the insights from theory and data improved my own thinking – but also how I established further dialogue with other approaches that led me to unfold what policy enactment consisted of. All in all, this journey indicates that any research process – indeed developing thinking inside and outside the academia – implies non-linearity and uncertainty (Alvesson & Kärreman, 2011).

1.2.1 STAGE 1: COPING WITH IMPLEMENTATION

The journey started by using a particular language and a certain rationale to name what at that initial stage was the best possible understanding of the research problem. The posed question in my initial research proposal and study plan was how ICT policies were *implemented* in HEIs. The term implementation has a technical connotation assuming that someone uses a policy as an instrument to solve a problem. Hence, a rational stance considers goal-oriented policies that solve problems: 'Too often, difficulties in policy implementation are presented as merely technical problems amenable

to fine-tuning of procedures' (Koyama & Varenne, 2012, p. 161). Precisely, the expression 'implementation failure' is common within a traditional trend in policy analysis that considers that some policies are better delivered than others (deLeon & deLeon, 2002; Honig, 2006).

Among the issues that the literature has considered, a major concern has been the conflict between two different approaches in policy implementation: top-down and bottom-up (Elmore, 1983). In the former, a central location of power is envisaged as guiding and producing desired effects from an authoritative and prescriptive perspective. On the other hand, bottom-up envisages policy implementation from the perspective of the target population, and the struggles of local receivers to reach policy goals. Critics of top-down approaches advocate for participatory policies (deLeon & deLeon, 2002) and others propose some kind of interaction between them (Matland, 1995). Despite the critique of hierarchical models for top-down approaches, the consideration of layers has remained in the language. A well-established representation has been proposed in terms of a Macro-Meso-Micro scheme: 'Most reviewers now agree that some convergence of these two perspectives, tying the macrolevel variables of the top-down models to the microlevel variables "bottom-uppers" consider, is necessary for the field to develop' (Matland, 1995, p. 146).

In this regard, policies belong to a macro level that has an 'impact' on local settings, i.e., the micro level. For instance, within the field of ICT integration in education, policies, plans or curricula are related to a macro level that should be considered and redesigned in order to enhance learning and improve teaching practices at the micro level (Altun, Kalayci & Avci, 2011; Chan, 2011; Kozma, 2003; Wang & Woo, 2007). The debate between top-down and bottom-up approaches also yields a consideration on the role of 'street level bureaucrats' (or the meso level) as key for a successful implementation (Hjern, 1982; Lipsky, 1980) because they are able to capture the full range of intricacies in implementation (deLeon & deLeon, 2002). Once two layers have been depicted as separated, these 'street level bureaucrats' are those in charge of connecting the macro and the micro.

All in all, this was the initial language available to me at the beginning of my research. These assumptions framed the first methodological design that I will describe in the following. Based on an exploratory study, I pursued understanding implementation through the lens of three different layers. The following graph schematizes the

methods and sources of data collection underpinned on a Macro-Meso-Micro rationale, trying to understand how top-down meets bottom-up (Freeman, 2000).

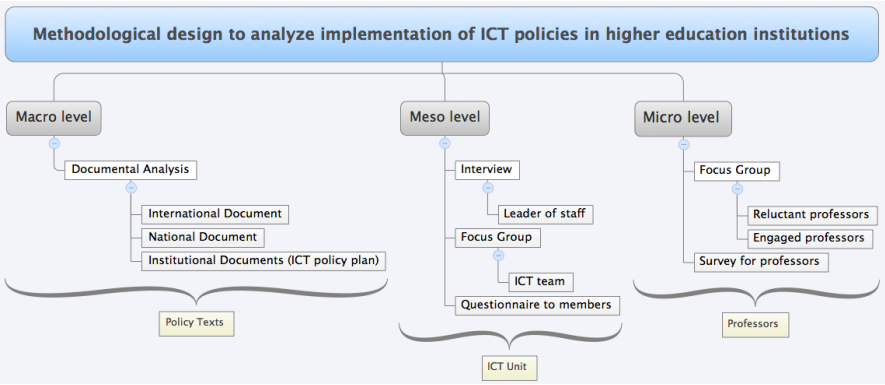

Figure 7. A first stage framed on an implementation and Macro-Meso-Micro rationale (source: PhD study plan, 2012)

As I explain in the first paper (Cifuentes & Vanderlinde, 2015), I started this exploratory stage by analysing a concrete national ICT policy that helped me to introduce problem of implementation. Several reasons led me to select this national program, as a starting point despite being aware that my aim was to understand policy implementation rather than undertaking the impact assessment of a particular policy.

PlanEsTIC was a national initiative that compared to other ICT policies across Latin America was oriented towards the strategic planning of ICT. It focused on higher education institutions supporting the elaboration of guidelines to formulate and implement an institutional ICT policy plan. More than 100 HEIs participated in PlanEsTIC elaborating, implementing and to some extent evaluating their own plan (Osorio, Cifuentes, & Rey, 2011). It was expected that all the institutions ended up with at least two outcomes: the formulation of an ICT policy plan and an established ICT unit[8]. For those institutions that had not appointed an ICT unit, the Ministry of Education provided technical assistance to foster its foundation.

[8] Papers 1 and 4 explain from a conceptual standpoint what an ICT policy plan and an ICT unit are. The latter is equally detailed later on when I describe the methodological design of my research.

I decided to work in the Coffee Region (Eje Cafetero), one of the Colombian regions in which PlanEsTIC had been adopted since 2007. Three departments comprise this region: Caldas (capital city Manizales), Risaralda (capital city Pereira), and Quindio (capital city Armenia) which are amongst the ten most developed cities on research, science and technology in the country. Similarly, Caldas, Risaralda and Quindio have aimed to become 'Digital departments' which is part of a national ICT policy from the Ministry of ICT and Education allocating high tech-classrooms and also promoting teacher training on ICT. The increase of students' enrolment in higher education in this region is indicative of the relevance given to a knowledge economy. Thus, Quindio went from 22.7% (2002) to 55.5% (2009); Risaralda went from 17.6% (2002) to 40.7% (2009); and Caldas from 22.4% (2002) to 34.8% (2009). Different initiatives run across this region on ICT for innovation both in education and within the industry, through the allocation of networks that integrate science and technology projects, but also enterpreneurship for innovation and research.

Figure 8. Geographical location of the Coffee Region

I established contact with the appointed leader in the region for PlanEsTIC project, who allowed me to discuss the best criteria for

selecting institutions. In the Coffee Region there are 18 HEIs[9]. From these institutions 13 participated in PlanEsTIC. Instead of selecting all the participant institutions, I chose those that had engaged most intensively with PlanEsTIC. It is important to explain these criteria. After all, I could choose HEIs that did not participate in PlanEsTIC or at least select a 'comparison group' of participants versus non-participants to see differences. However, my exploratory approach focused on those institutions that were integrating ICT for educational purposes given that they were *explicitly mobilizing efforts* of all kind to achieve that goal. Therefore, seven institutions were selected based on their performance in PlanEsTIC, i.e., how much involvement they had in the project, the quality of the participation and the outcomes along the process. This was my first encounter with those who later on became my case studies, i.e., the ICT units.

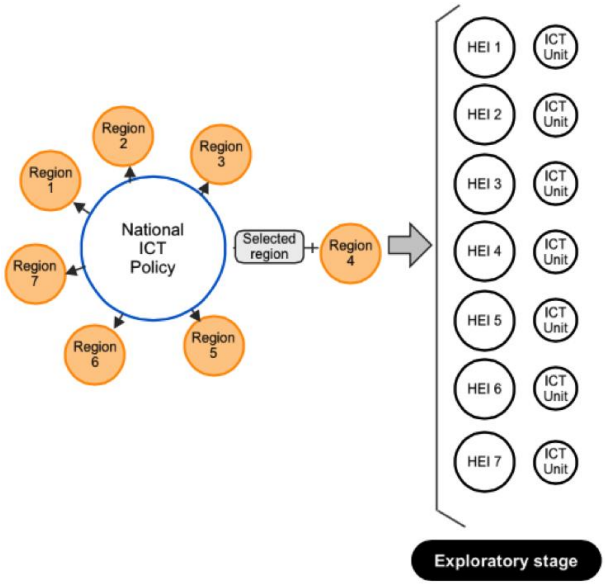

Figure 9. Exploratory stage

Although many HEIs around the world have a team in charge of IT support, in Colombia PlanEsTIC arranged organizational conditions

[9] Retrieved from the Ministry of Education webpage through the SNIES (Sistema Nacional de Información de la Educación Superior). This information belongs to 2013 given that the SNIES data base is always two years behind the current year.

both visibilizing or leading ICT integration beyond IT support. One of the guidelines from PlanEsTIC was to appoint a team within each participant institution. This team was supposed to include three different roles: technological, pedagogical, and planning.

Drawing on the policy implementation rationale, and considering the role of 'street level bureaucrats', the meso level was highlighted early on in this stage. Hence, ICT units were the connection between 'Macro political forces' and the 'Micro classroom practices'. Put differently, as these units were in charge of implementing national and institutional policies, they became even more relevant for my analysis to understand how top-down meets bottom-up (Freeman, 2000). These ICT units were 'key informants' and the main entrance to the institutions. As I depicted in detail in Graph 7 above, all of these ICT units kindly provided me with the information I was pursuing. For each one of the seven institutions I could 'apply' different methods following this top-down approach, such as document analysis, interviews, questionnaires, focus groups to academic staff, and additional sources of information.

In terms of a technical-implementation approach, all the information was useful and informative. I obtained enough data related to strategic plans and the way each institutional role was inserted in a rationale logic of implementing pedagogical, technological or organizational tasks to achieve institutional goals. However, during the interviews, focus groups, and informal meetings I found emergent issues difficult to understand from the analytical perspective I was applying at that moment. In other words, I was expecting to find all these institutions with ICT units operating and ICT policy plans formulated. However, I found that implementation was something more intricate. Indeed, ICT policies were not necessarily formulated, and not all the ICT units were operating as planned in these institutions. Furthermore, when these two aspects were fulfilled many different struggles had to be solved by ICT units. These issues captured my attention as a researcher and mobilized my work ahead as exemplified and discussed in the first enclosed paper in relation the sort of struggles within institutions (Cifuentes & Vanderlinde, 2015).

1.2.2 STAGE 2: PROBLEMATIZING A PRACTICE

Methodologically and theoretically speaking, as a researcher I experienced a shift, a turning point that had nothing to do with the 'validity' or the 'lack of data collected' (as if researching on ICT policies in education were only matters of fact). A first encounter that enlightened and expanded my perspective was the work of James Spillane (2002; 2004; 2006). This encounter led me to realize on the need for a second methodological design given new insights from the interplay between theory and data. Nevertheless, this was not a simple and linear process given that Spillane represented a 'junction' or intersection between the first and the second stage. In order to clarify this I have to briefly describe some of his ideas, how they made a contribution to my work, but also some limitations that led me to depart from his work.

From a top-down approach implementing agents are responsible for the failure of policy implementation, mainly because of unwillingness or a limited capacity to change behavior (Lipsky, 1978). In other words, implementing agents intentionally ignore or selectively attend to policies that are consistent with their own interests or agendas (Firestone, 1989). Against these assumptions – and drawing on a cognitive approach – Spillane acknowledged the hard work of local agents for understanding a complex process of sense making, which goes beyond decoding a policy message. If local implementation is difficult (Spillane et al., 2002) there is a need to understand the context, i.e., the socio-cultural situations in which leaders and followers 'implement' policies.

Reading Spillane I could 'make sense' of all the struggles that I found in the first stage of my research. For instance, his concern about local context as a contested field in which a battle for sense making takes place was enlightening to me because such analysis reflected what I was finding at the institutions. In other words, the work of Spillane was useful when providing me with a set of concepts to understand the struggles that I found in the exploratory stage. Concretely, I acquired a nuanced understanding of the *context* (as socio-cultural situations); the role of *artefacts* (not only as devices for achieving goals but as transforming the nature of activities); but also a focus on *practices* (which in the work of Spillane is related to the leadership activity).

Since then, these concepts became relevant for my work. They allowed me to establish future connections with other approaches.

As any theorist the work of Spillane comprises movements and displacements that are necessary to capture when using and discussing his ideas. In some of his early works the cognitive perspective was dominant. If implementation is evolution (Majone & Wildavsky, 1978), a possible way to understand such evolution is through a process of human sense making. The contribution of this cognitive perspective is to unpack how implementing agents construct ideas from educational policies (Spillane, Reiser, & Reimer, 2002). In the attempt to tackle this problem, there is a need to observe local practices within a situated perspective, avoiding the reduction of complexity 'averaging the differences as we sought some mean or modal level of implementation' (p. 413).

Certainly, it is worth saying that Spillane was not unfamiliar with the concept of enactment, even in his implementation and cognitive based works. For instance, when describing the influence of social context for shaping teachers' sense making of policy and its effects on their practice, Spillane et al. referred to 'enactment zones, the spaces where the world of policy meets the world of practices' (p. 407). Three features are identified as distinctive within those zones for transforming the practice of teachers: they are social rather than individualistic; they involve reaching deliberation with other teachers and reform experts; they include material resources (artefacts) supporting those deliberations. All in all, Spillane provided me with conceptual tools suitable for my research problem; however, some of his concerns still lay on assumptions that I associate with a technical implementation rationale.

Concretely, his analyses are devoted to achieving a 'more comprehensive explanation for why policy succeeds or fails at the street level' (p. 421). On the other hand – and it is coherent with a cognitive perspective – there is a concern about the misunderstanding of policies and therefore, on the problem of intentionality: 'Some policy representations are likely to be more effective than others in enabling sense-making on the part of users, helping them to develop better understandings of the intentions of the designers' (p. 417).

Despite this *intentional fallacy* that I referred to in the previous section, the concern of Spillane et al. related to the multiple representations of a policy idea allows for conceiving the policy

enactment in terms of an inevitable distortion of meaning: 'Moreover, it does not exclude the fact that a policy proposal can have multiple versions (e.g. state standards and a state student assessment instrument) or that each version, or even the same version, can represent the policy message differently and that the differences may embodied multiple intentions' (p. 420).

Despite these limitations I find this perspective to be of great value for contributing to a policy enactment inquiry. In my own work, the most relevant theoretical development from Spillane belongs to his collaboration with Halverson when reflecting on artefacts from a distributed leadership framework (Spillane, Halverson, & Diamond, 2004). This socio-cultural orientation was inspiring to my work because to some extent it moves away from his previous cognitive perspective and expands the ideas of context, artefacts and practices. The first paper (Cifuentes & Vanderlinde, 2015) represents this encounter with Spillane, and how I coped with the problem of implementation through his conceptual tools[10].

Although Paper 1 does not extensively mention the role of artefacts it is worth commenting on a previous conceptualization that enhanced my understanding on policies as artefacts, concretely as a network of artefacts. For Halverson (2003) policies can be conceived as artefacts that represent technical and symbolic structures, supporting the daily work of a leader to influence the practice of the community of professionals under his or her command. In short, a system of practice describes the dynamic interplay of artefacts and tasks that inform constrain and constitute local practices (Halverson, 2003). The typology of artefacts as locally designed, received and inherited shed light into my inquiring on the role of policies of a different nature, embedded in a social activity.

According to Halverson (2003) *locally designed* artefacts belong to those created by local actors to address emergent critical and continuing concerns in the institution. *Received* artefacts are those adopted and implemented by the local institution. These artefacts are

[10] It is worth mentioning that in this socio-cultural orientation, Spillane also highlighted the expression enactment to develop his theoretical account on distributed leadership: 'to develop a framework for analysing leadership practice, it is necessary to move beyond the identification and analysis of tasks to explore their enactment' (Spillane et al., 2004, p. 14)

received from identifiable external sources, such as state and district authorities, teacher unions, textbook and curriculum publishers, or professional development providers. Examples of received artefacts include policies regarding assessment, budgeting and planning artefacts, or textbooks or curricula. Local institutions are not responsible for the design of received artefacts, but are responsible for artefact implementation and maintenance. *Inherited* artefacts have a historical background that inevitably give rise to practices and routines for which the original artefacts (whether received or designed) are absent in the present time. Halverson developed several examples at the school level such as the nine-month school year which results from a series of previous long-lost initiatives to ended up structuring the formal school calendar. As he explained, these specific initiatives have been forgotten, and 'what remains are the ways the artefacts have shaped and institutionalized practices. Local leaders may attempt to correct or mitigate the effects of inherited artefacts either through the implementation of received artefacts or the development of locally designed artefacts' (Halverson, 2003, p. 7).

All in all, the work of Spillane represented a lever to my work after the first stage, and for that reason the first paper is devoted to expanding his work in a higher education setting. Nevertheless, in the same way that later on I had to challenge Ball et al. (2012) by pushing the boundaries of a policy enactment theory, at this stage I found a similar situation with Spillane's ideas. As I said before, when analysing social situations his work is to some extent aligned with a technical-implementation rational in which policy failure, policy intentionality and a macro-meso-micro level approach still remain.

So far I have considered the contributions and limitations of Spillane at a theoretical level. However, it is necessary to mention how it informed my research process in terms of a second methodological design. As Robert Stake mentioned (1995) the best research questions evolve during a research process. Thus, after approaching HEIs in terms of implementation of policies, and working under the rationale of 'macro affecting micro', a theoretical and methodological movement took place in the research process. Here it is important to clarify what stage 1 represented. It was not a 'primitive' phase of misguiding ideas that should be dismissed. Instead, stage 1 can be depicted as a first attempt to solve a mystery (Alvesson & Kärreman, 2011). Stated differently, it was a first level of understanding that in itself achieved

some early insights such as ICT units as key mediators, or the sort of struggles they had to cope with when leading ICT policies. Such implementation and macro-meso-micro rationale belonged to general common sense that at some point was an insufficient rationale to undertake the research problem.

What the second stage represented was a shift that refined my perspective instead of denying initial reflections. Similarly, assumptions like linear implementation or policy as a document were revisited and challenged drawing on the gained knowledge. Methodologically speaking, I realized the need for going beyond the rational of pursuing more 'data'. A particular conceptualization of the term 'empirical material' (Alvesson & Kärreman, 2011) is useful as it is aligned with the shift I experienced. Instead of an ultimate validator for knowledge claims, a judge or a mirror of reality, empirical material represents a potential resource for theory development as it encourages critical reflection and problematization of existing frameworks. In this rationale empirical material has a constructed nature, and the researcher acknowledges the complex relation between data and theory, considering the former as inextricably fused with the latter. If data is a construction, the term empirical material denotes that 'the material' is prone to be transformed rather than remaining fixed: 'The metaphorical quality of 'material' indicates that we, as researchers, must actively do something with it –it is more like clay than stone, if one finds it necessary to draw a parallel with the physical world' (Alvesson & Kärreman, 2011, p. 28)

In the process of critical reflection I experienced with the empirical material, there was a need to move beyond the implementation approach in order to unfold this taken-for-granted concept. Thus, later readings on Spillane and Ball became what Alvesson and Kärreman (2011) named as the problematization and reflexive critique, in which initial theories can be problematized and reconsidered in alternative ways: 'Problematization first and foremost involves systematic questioning of some aspects of received wisdom in the sense of dominant research perspectives and theories, while at the same time offering a 'positive' or constructive formulation of interesting research questions' (p. 127).

Put differently, critical reflection and problematization were possible only when I started to realize that, instead of technical answers on implementation processes, I found situated struggles that deserved

new comprehensive perspectives. Therefore, empirical material became a partner for critical dialogue, enhancing my ability to challenge and refine theory instead of becoming a validator of the objective reality (Alvesson & Kärreman, 2011). Here the question on the enactment of policies emerged. To solve the mystery, i.e., to unfold enactment of ICT policies, I had to frame the research design as a multiple case study.

1.2.3 UNFOLDING POLICY ENACTMENT THROUGH A MULTIPLE CASE STUDY

One important reason to carry out case studies is their capacity for theory development (Eisenhardt, 1989), which in my inquiry was related to unfolding policy enactment beyond the descriptive data I had obtained during the first stage. Therefore, I followed a case study approach considering the most suitable approaches to my research problem (Eisenhardt, 1989; Stake, 1995; Yin, 2003). Instead of following each one of those approaches as a 'technical recipe' for designing and implementing instruments, I was inspired by some of their principles and procedures.

Yin (2003) highlighted the role of context when defining the nature and scope of a case study design. Thus, a case study 'investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident' (p. 117). Therefore, context represents a key aspect when a case study must be justified. As I have shown in the previous section, within the materiality of policies 'context matters' and should be taken seriously (Ball et al., 2012). In this regard, I found a clear connection between this methodological design and a policy enactment theory.

Both single and multiple case studies share a similar methodological framework with variations in the research design (Yin, 2003). I decided to implement a multiple case study in my research precisely because I assume that context is a highly relevant factor not only 'affecting' but constituting policy enactment.

One particular distinction within a case study design is related to the context, the cases of study and the unit of analysis (Yin, 2003). If cases and units of analysis are not properly delimited, confusion can arise later on in the research process. As Yin suggested, the research question represents a good driver to identify the cases and the unit of analysis. In the following I give an account of each of these elements

but more importantly, on the criteria I had to select them within the scope of the research project. The following differentiation did not remain intact as each one of these three aspects opened a range of conceptual and methodological issues that I also describe.

> *Context*: In my research this was related to HEIs where ICT units belong. These external conditions were highly relevant to understand the phenomenon without divorcing from it. As Spillane mentioned, context is not an external variable 'affecting' a practice, but it is constitutive of the practice (Spillane et al., 2004). As part of the materiality of policies, context shapes enactment instead of representing a 'previous background' (Fenwick, Edwards & Sawchuk, 2011). Hence, a more accurate conceptualization and theory development within education policy analysis has been claimed[11].
>
> *Cases*: The three selected ICT units are my case studies. Within each institutional context (universities) these were the strategic locations of policy enactment. As I inferred from the first stage, these ICT units were key mediators of the policy making process. Here there is a need to make further considerations on the methodological criteria for selecting these teams (see below ICT units for pedagogical support).
>
> *Unit of analysis*: This was related to the leadership activity as a meaningful practice. Among the many possible focuses for analysing the enactment of ICT policies, in my research I decided to pay attention to concrete practices in which I could elicit a deep analysis. Embedded in a system of practices

[11] This claim comes especially from Robert Cowen: *'Of course "context" is a nuisance. Were it not for "context", the policies of the World Bank or OECD would work –the solutions to many problems are well known to economists. However, trying to master "context" as a set of puzzles which mess up a simple "geometry of insertion" (that would permit policies to work as well in reality as they do in intention) is a problem over the inadequacies of the international policy tool kit – it is not an intellectual problem in comparative education currently. The problem of context, like so much else in comparative education, is in need of re-theorization'* (Cowen, 2011, p. 28).

> (Halverson, 2003) the activity of these teams became a relevant focus that enhanced my understanding rather than looking to other predictable choices such as teacher or students practices in the classroom. Yin acknowledged on this regard that change is inevitable during the research process: 'Your choice of the unit of analysis, as with other facets of your research design, can be revisited as a result of discoveries during your data collection' (p. 160).

A methodological problem arose here because there was a possible confusion between two different units of analysis in my study: the leadership activity and policy enactment practices. In other words, in each ICT unit I could be observing these two different practices as separated phenomena. For that reason, the distinction that Stake (2006) established between case and multiple case studies was enlightening to solve this problem.

Single cases are special, and the first objective should be to understand a case as a specific entity, even if a multiple case study design is carried out. However, the single case is meaningful in relation to other cases even if there is no interest in comparison: 'In multicase study research, the single case is of interest because it belongs to a particular collection of cases' (p. 4). Indeed, a particular feature or condition is common among a set of cases that link them as a "group or example of a phenomena". This common phenomena or "quintain" (Stake, 2006) is useful to understand the distinctive nature of a multiple case study in which the focus is not only about understanding the case but also the phenomena.

Stated differently, each one of my selected cases (ICT units) deserved special attention in its own singularity, and leadership activity was the focus of my analysis for each case. However, as common phenomena the *policy enactment* was the "quintain" that I was trying to unfold despite my interest in the uniqueness of each case. As I said before, there are some considerations to be made on these teams in the following.

1.2.4 ICT UNITS FOR PEDAGOGICAL SUPPORT

Despite that the fourth paper attempts to conceptualize these units by analysing their nature, practices and limits, I would like to

mention briefly what they are, but also why they became so relevant for my research process to the extent of becoming my cases of study.

ICT units are underexplored organizational settings that have not been studied deeply in their practices, i.e., their nature, function and possibilities for action. These units go beyond technological support – a typical service provided in many institutions such as IT support – assuming instead the pedagogical integration of ICT for improving teaching and learning[12]. These units became relevant cases of study because of the type of practices they lead: they centralize and distribute knowledge on ICT for innovation across the institution; they are spaces for policy translation; they have an increased demand of functions in relation to ICT policies (national and institutional), and they are politically laden (See Paper 4).

As I mentioned with regard to the first stage, my exploratory approach focused on those institutions that were *explicitly mobilizing efforts* of all kind to achieve ICT integration for educational purposes. Therefore, seven institutions were selected based on their performance in PlanEsTIC. Different reasons led me to select three cases out of these seven institutions that I had approached in the first stage. It is important to mention that a technical-implementation rational was still underpinning the selection I undertook. All in all, the selected cases were relevant to analyse ICT leadership under particular conditions. For that reason I pursued special cases in which:

[12] A recent exploration was undertaken by one of the participant universities in this project trying to establish the number of ICT units that exist across the country. Out of 356 HEIs that officially exist in Colombia, they found 176 institutions (until 2014) in which at least there was a person responsible for ICT integration in educational purposes. Such a number is only a general referent that should deserve further exploration. To obtain that number a telephone contact was established with each university, and through that communication the inquirers tried to find out who was responsible for ICT integration, and if there was a team in charge. As expected from these kinds of inquires, the communication was not always possible due to no reply or a lack of information within the institutions. The aim of my research was never to establish the real number of ICT units but rather understanding the practice of a particular set of located units once it is acknowledged they were relevant for research purposes. Nevertheless, I consider that it could be important to determine the percentage of ICT units in order to extend a reflection on what I call in Paper 4 as the enactment of a "will to innovate".

- Institutions had an explicit ICT policy plan formulated.
- Institutions had an ICT unit appointed and operating.
- Relation to national ICT policies: As shown in the previous section, in Colombia there is a network of ICT policies of a different nature. The three selected cases were participants on these initiatives[13].

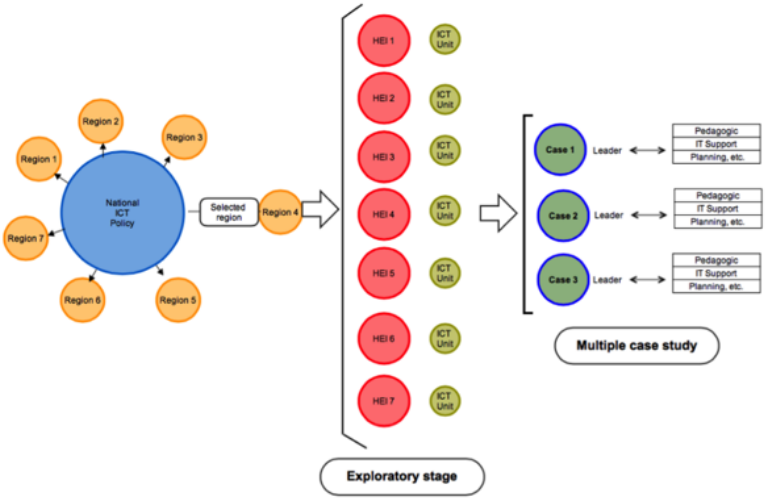

Figure 10. Research process toward a multiple case study

Paper 1 was influenced by an implementation rationale, and the initial case study design was to some extent. Nevertheless, the process

[13] As shown in the previous section, four emphasis characterize ICT policies in Colombia a) Providing informatics and communicational infrastructure, b) Fostering development of human talent, c) Enhancing teaching practices through ICT innovation, d) Providing management and production of digital educational resources (UNICEF, 2014). As I describe in detail in the fourth paper, Methodology (2007), Route (2008), PlanEsTIC (2008), REDA (2011), and RENATA (2007) were ICT policies designed for higher education (despite some of them being included school education). These five national ICT policies were relevant also because they had some resonance for the practice of ICT units.

of selecting and immersing into these three institutions was necessary to move from matters of fact to matters of concern. As I said before, after my first stage something that puzzled me was that even when these first two aspects were fulfilled (and explicit ICT policy plan formulated and an appointed ICT unit operating) many different struggles emerged. Thus, I had to be aware of all these struggles that emerged from my 'empirical data'. This was not about looking for 'good practices' of implementation, leadership or associated factors for both. Certainly, I was forced to find within the different cases a deep comprehension of the struggles that I encountered. Paper 1 represented that first attempt, and for that reason it is structured in terms of struggles beyond the concept of ICT policy planning (Cifuentes & Vanderlinde, 2015). However, I made further insights both from the empirical material and the theories that at that time expanded my understanding of the problem. At the end of this section I briefly schematize the conceptual pathway I followed through the different papers. Before that, I want to describe the methodological procedures I undertook with my three cases based on a multiple case design.

1.2.5 METHODOLOGICAL APPROACH TO MATTERS OF CONCERN

On each one of the three selected institutions I arranged several visits in order to engage with the context in which ICT units were leading ICT integration. The following table shows one example from one of the cases, and some of the activities I undertook for understanding the practice of these ICT units. In order to follow the actors in each institution I had to include other 'enactment zones' such as strategic meetings in which artefacts not only were 'the topic of discussion' but also framed the activities, languages and different mobilizations during the time.

Table 1. Strategy to follow the actors in one of the selected cases

Type	Case
First interview with leader	UAM
Second interview with leader	UAM
Interview key member (about one of selected artifacts)	UAM
Key interview leader (Follow up after first approach)	UAM
Interview key member (About translation of artifacts)	UAM
Institutional ICT policy plan (artifact)	UAM
Redesign of institutional ICT policy plan (artifact)	UAM
Strategy for teacher professional development (artifact)	UAM
Strategic meeting 1	UAM
Strategic meeting 2	UAM
Strategic meeting 3	UAM
Final meeting 4	UAM

As the previous table shows a more ethnographic approach was undertaken aiming to deeply understand the nature, scope and struggles faced by these ICT units. Stake (1995) used the word *issue* to express a conceptual structure that focuses the attention of the researcher when analysing a qualitative case study: 'Perhaps the most difficult task of the researcher is to design good questions, research questions, that will direct the looking enough and not too much' (p. 15). Stake remarked the identification of issues as driving the attention of the researcher 'to become familiar with an entity by observing how it struggles against constraints, copes with problems (…) the nature of people and systems becomes more transparent during their struggles' (p. 16). Hence problems are more concrete, but issues are more abstract. They are linked to political, social, historical, and especially personal context.

The difference between informative questions and issues is equally relevant. The former provides a variety of information facilitating further conceptualization. However, a researcher of case studies should pursue deeper problems in each setting: 'I want something more problematic, at least potentially problematic, something more deeply connected to the context of the case as my conceptual organizers' (p. 19)

The most important factor was to maintain a progressive focus on a case study where research questions (issues) evolve and improve themselves as the comprehension of the phenomena (Stake, 1995). All in all, I could say that the first stage of my research was related to matters of fact. In that regard, informative questions on implementation underpinned my approach to the institutions because I was trying to understand general aspects of ICT implementation. On the other hand, the second stage was pursuing a different understanding. Because many controversies were emerging, as a researcher I had to pose flexible questions, progressively redefining the issues, and sizing opportunities to learn the unexpected (Stake, 1995, p. 29). I could also say that the articles that followed the first one were an outcome of that refinement. At least three practices were meaningful as a researcher on matters of concern:

> *Attending strategic meetings*: Perhaps, one of the most important strategies for understanding the practice of these teams in its materiality was attending meetings. In policy analysis, meetings are still underexplored artefacts that deserve to be analysed, since 'they appear to have been "black-boxed" along with other artefacts and infrastructures of policy making such as documents, budgets and, until recently, other kinds of policy documents' (Freeman, 2010, p. 4). The social and unique nature of meetings (Freeman, 2010) also represents a space for destabilization and change (Jarzabkowski & Seidl, 2008). As an entanglement of artefacts, leaders, followers, laptops, spreadsheets, minutes, etc. these meetings gathered and showed such heterogeneity. Therefore, these meetings allow me to 'follow the actors' (Latour, 2005) in order to trace policy enactments. In each ICT unit these meetings turned out to be fundamental for the enactment of national and institutional ICT policies, so I enrolled in a set of strategic meetings as a non-participant observer. The reports of these gatherings were also included in my data analysis, and became key for the analysis I deployed throughout my papers.
>
> *Elaborating case study reports*: In order to undertake the second approach to the institutions, I elaborated a case study protocol containing the general agenda for each visit. As Yin (2003)

mentioned, these reports are 'desirable under all circumstances, but it is essential if you are doing a multiple-case study' (p. 67). These protocols contained guidelines for the type of activities that I should carry out for obtaining information, such as background and overview of the institutions, case study questions, procedures, etc. Once I had these protocols, and during my approach to the institutions, I started outlining a case study report for each case. In these reports I structured the case in itself, describing common features such as the institutional *context*, the *leadership activity* of ICT units constituted within that context, and the *artefacts* that belong to the systems of practice of those units. As Latour (2005) stated, in order trace social connection there is a need to write down accounts through reports in which text itself is a mediator: 'Good sociology has to be well written; if not, the social doesn´t appear through it' (p. 123-124).

Equipping myself with appropriate categories of analysis: In relation to the analytical strategy along the process, each one of the three cases was analysed first with a vertical analysis that included all the documentation, interviews, focus groups and strategic meetings with members of each ICT unit. A later cross-case analysis was applied not for comparison purposes as I mentioned above, but for understanding the phenomenon, i.e., policy enactment. This twofold process occurred in the second stage in which theoretical codes were included once theory informed my analysis. During the process I used the software Atlas.ti 7 for qualitative analysis. After transcribing all the possible documentation I undertook an axial codification process. Hence, as part of the research design, an analytical generalization was pursued (Yin, 2003). It implies that a set of codes were the initial base. In some cases subcategories came from the theory but in other cases, they emerged from the codification process[14].

[14] I want to thank Steve Wright from Lancaster University for his comments and the fruitful discussion we had on the use of CAQDAS (Computer-aided Qualitative Analysis) about this kind of research. Especially our conversation on the use I gave to Atlas.ti for tracing networks of human and non-human entities in my research was

The following graph summarizes the set of codes that became my lens for the analysis (and construction) of the empirical material. Some of these concepts were drawn from the early theoretical framework (Artefacts, Situations, Leadership activity), and some of them belonged to later encounters (Policy Positions, Governmentality). Policy-making was instead an emergent code that was present throughout the whole analytical process, mainly because I had to problematize the practices of policy enactment, finding many different nuances within it (struggles, translations, etc.). For the rest of the research, the codification was not a linear process or an accumulative endeavour (including more and more concepts). Instead, each paper I enclose in this thesis developed different connections between these concepts.

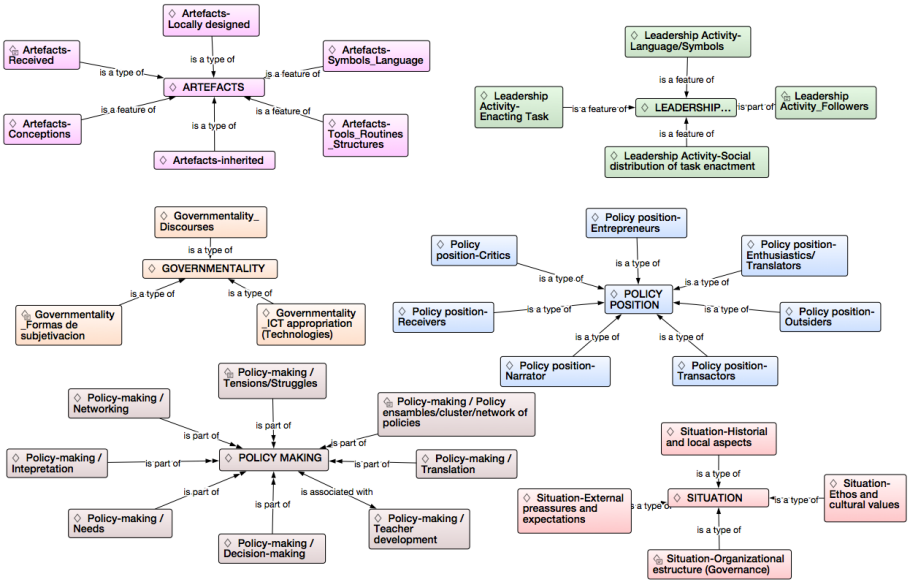

Figure 11. Set of codes for analysis

So far I have summarized the path I have followed as an educational researcher that moved from implementation of ICT policies

enlightening, considering this field of research is still underexplored but enlightening many ANT researchers.

to a grounded analysis of policy enactment practices. Despite having tried to detail all the methodological implications of the movement I experienced, now it is necessary to move ahead to the concrete contributions such a process left as a result of this intellectual effort. In the following I describe the overall purpose of each paper from a conceptual point of view, highlighting its relation to the research problem.

1.2.6 RESEARCH ARTICLES: CONNECTIONS AND CONTRIBUTIONS

In the first paper I claim the need to go beyond a policy document and take into consideration policy making and context, understanding the latter as a sociocultural situation in which leaders and followers interact using artefacts. As I mentioned above, this earlier paper was still influenced by the logic of implementation of policies but key concepts appeared already in this writing.

In the second paper I undertake a critical dialogue with policy enactment theory developed by Ball et al. (2012). Concretely, the division between the materiality and the hermeneutics of policy is challenged from a sociomaterial perspective. Hence, Actor-Network-Theory allowed me to problematize policy translation as a key process to understand the enactment of ICT policies in the three cases in which I traced entanglements of human and non-human entities. In this sociology of translation I go further in my critique of a technical implementation rationale.

In the third paper I analyse ICT leadership from an analytics of government (Dean, 2010). A critique of educational leadership deserves considering the implementation rational as a matter of practices of government. Through the analysis of those practices I can trace the enactment of what I call a dispositive for innovation. Following the previous paper, the distinction between the natural and the artificial is challenged; thus, technologies are not simply external artefacts to achieve rational purposes but they produce subjects. In that regard, I analyse the discursivity of a policy across my cases, and deploy an account of concrete practices of government, also referring to the configuration of the 'innovative teacher' as part of such dispositive.

Table 2. Core papers and their relation to the theoretical framework

	Title	Related concepts	Focus	Relation to the policy enactment framework
Paper 1	ICT Leadership in Higher Education: Findings from a Multiple Case Study in Colombia	Artifacts/practices/discourses	Context	Materiality of policy
Paper 2	Tracing translations of ICT policies in higher education	Artifacts/practices	Translation	Materiality and hermeneutics of policy
Paper 3	Educational governance and innovation: Technology as an end and a means of government	Artifacts/practices/discourses	Technologies of govenment	Discoursivity of policies

As 'matters of fact', leaders at educational institutions have been identified as a key factor for policy implementation and educational change (Fullan & Scott, 2009). But this thesis is about moving beyond those facts. So it could seem contradictory that a particular practice like ICT leadership became my focus of analysis, considering that a policy enactment model should expand rather than limit the scope of analysis. Nevertheless, using this model I have included many different actors and practices. In other words, I have not been analysing individuals but entanglements. Thus, the typology of actors developed by Ball et al. (2012) underlined that leaders are not the only concern. As I have tried to show, Spillane was the first encounter I had for realizing that leaders are interdependent with followers within sociocultural interactions, beyond the common managerial approach on leadership.

Similarly the Actor-Network-Theory broadened my analysis even more by including non-human entities, and Foucault was necessary to understand the technological dimension of policies as artefacts. The concept of technology is useful nowadays when understanding the mechanisms in which power operates. In this regard the connection between papers 2 and 3 is related to the way some images such as "assemblage" or "network" are used within the literature: 'An assemblage is made up of bits and pieces and operates in its coupling with other assemblages. It is a way of thinking about entities as multiplicities rather than unities, as complex ensembles of discontinuous elements and forces bound by heteromorphic relations' (Dean, 1996, p. 55).

Two additional papers were later included and represent an effort of extending my analysis of the analysis of ICT policies and it enactment. The fourth paper attempted to conceptualize ICT units but to be coherent they were based on four features that characterize their practices. In other words, the nature of the enactment of ICT policies

was analysed within the practice of these units. To some extent it summarizes some of the findings and reflections on previous papers, but this time I established connections with the national education policy for ICT. What I called the will to innovate goes beyond 'macro affecting micro'.

In Paper 5 I expanded and achieved a nuanced understanding about one of the policy actors developed by Ball et al. (2012). The critic has been an underexplored policy position that I consider which deserves further exploration in HEIs. By giving voice to those who used to be labelled as reluctant to ICT integration or become inevitably compared to the "innovative teacher", I undertake an analysis of critic staff members. This paper was a later collaboration with another colleague, and for that reason I do not strictly follow the theoretical framework from previous papers. Nevertheless, this last contribution was aligned with one of the aspects of a policy enactment model – policy positions – and aimed to make visible an underexplored zone of enactment of ICT policies in higher education.

Table 3. Focus of the last two papers as additional contributions

	Further contributions	Focus
Paper 4	The will to innovate: Conceptualizing the practice of ICT units	Conceptualization of ICT units
Paper 5	Critique and innovation with ICT in higher education	Hermeneutics of policy - Policy positions (Critics)

PART II

2.1 BUILDING A CONCEPTUALISATION ON THE ENACTMENT OF ICT POLICIES

Paper 1: Cifuentes, G. & Vanderlinde, R. (2015). ICT leadership in higher education: A multiple case study in Colombia. Comunicar, 45, 133–141. Doi: 10.3916/C45-2015-14

2.1.1 ICT LEADERSHIP IN HIGHER EDUCATION: A MULTIPLE CASE STUDY IN COLOMBIA

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ICT Leadership in Higher Education: A Multiple Case Study in Colombia

Liderazgo de las TIC en educación superior: estudio de caso múltiple en Colombia

Dr. Gary Cifuentes is PhD candidate at Aalborg University (Denmark), and Faculty member in University of Los Andes (Colombia) (gcifuent@uniandes.edu.co) (http://orcid.org/0000-0002-0778-0658).
Dr. Ruben Vanderlinde is Assistant Professor and Postdoctoral Researcher at the University of Ghent (Belgium) (ruben.vanderlinde@ugent.be) (http://orcid.org/0000-0002-4912-3410).

ABSTRACT
In this paper we analyze ICT integration in higher education institutions focusing on the leadership practices of ICT policies, a research field that has not received much attention in higher education studies. An empirical study was carried out using a distributed leadership approach to analyze such practice in higher education institutions in Colombia, a country where a national ICT policy has steered and promoted ICT policy plans. In particular, the inquiry attempted to understand how the leadership of ICT is distributed in different higher education environments. Through a multiple case study, that included semi-structured interviews with leaders and team members, focus groups with professors, document analysis and a survey applied to faculty members ICT leadership practices and their implications were investigated. The results indicate a set of struggles that leaders have to cope with when deploying an ICT policy plan, for instance, coping with a lack of institutional regulations, and fostering educational change despite reluctance. Indeed, ICT leadership is a challenging and underexplored practice in higher education. This paper is a systematic attempt to demonstrate this statement and its implications. These findings are of particular relevance for the work of policy makers, ICT coordinators and leaders in higher education around the world.

RESUMEN
En este artículo analizamos la integración de las TIC en instituciones de educación superior. Nos centramos en las prácticas de liderazgo en políticas sobre TIC, un campo de investigación que no ha recibido mucha atención en los estudios sobre educación superior. Usando un enfoque de liderazgo distribuido se analizó dicha práctica en instituciones de educación superior en Colombia, un país donde una política de incorporación de las TIC llevó a promover la elaboración de planes estratégicos en dichas instituciones. En particular, la investigación buscó entender cómo el liderazgo de las TIC es distribuido en diferentes ambientes de educación superior. A partir de un estudio de caso múltiple que incluyó entrevistas semiestructuradas con líderes y miembros de equipos, grupos focales con profesores, análisis documental y una encuesta aplicada a profesores, fueron investigadas las prácticas de liderazgo de las TIC y sus implicaciones. Los resultados indican un conjunto de tensiones que los líderes deben enfrentar cuando incorporan un plan estratégico de TIC, por ejemplo, la ausencia de regulaciones institucionales o la necesidad de promocionar el cambio educativo a pesar de las resistencias. De hecho, el liderazgo de las TIC es una práctica retadora y aún poco explorada en educación superior. Este artículo es un intento sistemático por demostrar este enunciado y sus implicaciones. Estos hallazgos son de particular relevancia para el trabajo de los diseñadores de políticas, coordinadores de TIC y líderes en educación superior de todo el mundo.

KEYWORDS | PALABRAS CLAVE
Higher education, leadership, ICT policies, distributed leadership, educational policy, educational planning, case study.
Educación superior, liderazgo, políticas TIC, liderazgo distribuido, política educativa, planeación educativa, estudio de caso.

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Comunicar, 45, XXIII, 2015

1. Introduction

Within the field of ICT integration in education, one research tradition focuses on the conditions that support ICT use for teaching and learning (Vanderlinde & Van-Braak, 2010). Within this stream, one of the conditions that has only recently received attention is situated at the organizational level, more specifically in what is called the ICT policy planning, referred to as «having a shared vision on technology integration and an ICT policy plan» (Hew & Brush, 2007). The general assumption and common agreement is that ICT policy plans increase the success of ICT integration in educational contexts (Bates, 2001; Wang & Woo, 2007; Gulbahar, 2007). At the national, district or institutional level, ICT policy plans are conceived as a blueprint of what education should look like through the use of ICT (Fishman & Zhang, 2003). Furthermore, such an ICT policy plans outlines learning objectives for the use of ICT, making this process a strategic device and potentially a driver for educational change (Vanderlinde, Van-Braak & Dexter, 2012).

In this paper, we inquire how leadership of ICT is distributed in different higher education environments, highlighting the sorts of problems that emerge in such activity. As we will argue in the next section, the analysis of ICT leadership from a distributed leadership approach is an appropriate perspective from which to study the challenging nature of ICT leadership in higher education. In order to understand how leadership is displayed in higher education institutions (HEI hereinafter) in which ICT policy plans are enacted, we use a distributed leadership perspective as the main theoretical framework. Compared to traditional perspectives, this approach assumes leadership is diffused and dispersed within organizations (Parry & Bryman, 2006). Instead of focusing primarily on the appointed leader and intrinsic traits, the analysis pays attention to the activity of leadership practices and their effects.

Spillane (2006) develops the notion of distributed leadership in contrast to the traditional conception of a charismatic leader who performs tasks in an organization on the basis of individual qualities. Therefore, the unit of analysis should be the activity of leadership (not the individual) distributed through the interaction between leader and followers across situations. Spillane was not the first to develop the idea of distributed leadership practice as a unit of analysis (Gronn, 2002; Copland, 2003). However, he offers a more consistent perspective embedded in theories of learning such as activity theory (Leontiev, 1981; Wertsch, 1991) and distributed cognition (Pea, 1993).

Accordingly, this theory assumes that followers are not individuals separated from the practice of leaders, as there is a social distribution of tasks. Such interdependence of leaders, followers and their situation means that leadership activity cannot be viewed as undertaken solely by any one of them; rather, each one is a precondition for the analysis of the entire activity. Spillane (2006) emphasizes the role of actors in a socio-cultural situation working with artifacts, which represent vehicles of thoughts. These artifacts are not only devices for achieving efficiency but they also transform the nature of leadership activity. According to Spillane tools, routines and structures enact these artifacts, both defined and re-defined by leadership practice (Spillane, 2006). In our analysis the idea of policies as tools, routines and structures is relevant as we assume ICT policy plans as artifacts (Vanderlinde, Van-Braak & Dexter, 2012).

The work of Spillane has underpinned a recent perspective that emphasizes the need of institutions to have leaders guiding and supporting those artifacts through a distributed approach. Technology leadership or ICT leadership represents this process of guidance and support in educational settings (Dexter, 2011). As McLeod and Richardson (2011) state, there has been little research on leadership of technology in general, despite recent interest in studying the key role of leaders in educational institutions to enhance innovation. Although research studies demonstrate the complexity of technology leadership –highlighting the relevance of individual and institutional factors when addressing ICT integration– there has been a gap in such studies in relation to understanding how technology leaders should enact this endeavor (Dexter, 2011).

Previous research has identified factors associated with effective leadership, defining three broad categories of leadership practices: setting direction, developing people and redesigning the organization (Leithwood, Anderson & Wahlstrom, 2004; Leithwood & Jantzi, 2003, 2005). These categories have also been applied in relation to ICT leadership practice, focusing on: 1) the vision for ICT within the institution, 2) promoting ICT teacher development and instructional support, and finally, 3) providing ICT access and technical aid, supportive policies and other conditions (Dexter, Anderson & Ronnkvist, 2002; Zhao & Frank, 2003).

A lack of literature when researching ICT leadership in higher education has been claimed (Van-Ameijde, Nelson, Billsberry & Van-Meurs, 2009). Therefore, following these studies and recommendations, we aim to study how the leadership of ICT in different higher education environments is distributed, focusing on the practice of leadership, paying attention

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to the artifacts, and the situations that should be considered in this unexplored context of higher education.

2. Methodological design of the research

This study was situated in Colombia, where a national ICT policy has been in place since 2007, consisting of the elaboration of guidelines to formulate and implement ICT policy plans in HEIs. Through this policy, named PlanEsTIC, more than 100 HEIs throughout the country were steered to elaborate, implement and evaluate their own plan (Osorio, Cifuentes & Rey, 2011). Although this project was not a single initiative from the government, compared to other regions in Latin America this policy developed a National ICT policy oriented on strategic planning for ICT. Therefore we consider this a relevant case to increase knowledge about ICT leadership. As Hinostroza and Labbé says: «From a regional perspective, the introduction and use of ICTs in education in Latin America is not different than in the rest of the world. Where the region differs from many developed countries is that there is very little evidence on the characteristics of policies and the extent to which they are being implemented» (Hinostroza & Labbé, 2011: 12)

According to the guidelines of PlanEsTIC, a team in each HEI was selected and guided through whole process with coordination at the national level, creating leadership conditions to deliver the individual plans. Our empirical research started with an initial exploratory stage in one of the seven regions in which PlanEsTIC was conducted, focusing on seven institutions of the selected region. Within each HEI, the leader and team members were contacted for an initial interview. It was important to select HEIs that met two minimum conditions: an explicit ICT policy plan and an ICT unit established. Essentially, ICT units are the teams in charge of integrating technology in different areas within an institution. Although many HEIs around the world have a team in charge of IT support, we were looking for ICT units that fulfill one of the guidelines of PlanEsTIC, i.e., they incorporated at least three different roles composed of a technological role, a pedagogical role, and a planning or financial role.

After the implementation of PlanEsTIC, all these institutions should have had their plans and teams arranged, but we wanted to explore initially if these plans were explicitly formulated and teams were still operating. Following initial contact, it became apparent that only three institutions had appropriate conditions to study ICT leadership in relation to developing an ICT policy plan. The graph in Figure 1 shows the structure and composition of selected the cases after the exploratory stage.

To answer the research question, a mixed methods design was carried out with three case studies. More specifically, in organizational studies, it is now considered that qualitative approaches are of particular relevance in analyzing the roles of leaders and their followers (Mumford & an-Doorn, 2001). Especially case studies are illustrative for leadership processes (Bryman, 2004).

> **The analysis of ICT leadership from a distributed leadership approach is an appropriate perspective from which to study the challenging nature of ICT leadership in higher education. In order to understand how leadership is displayed in higher education institutions (HEI) in which ICT policy plans are enacted, we use a distributed leadership perspective as the main theoretical framework.**

Several instruments were applied in each HEI to explore the leadership practices, taking into account that not only the team but also professors are essential in the situated analysis of such practice. In our case, professors engaged and reluctant to use ICT were contacted and a focus group was arranged covering issues in relation to the general strategy to integrate ICT in the institution, as well as their experience of teaching supported by the ICT unit. After these initial approaches, a survey was employed at each institution to measure the general perception of the staff regarding the strategy to integrate ICT in the institution and the achievements and failures of such strategy. Table 1 shows the number and type of methods applied in each HEI.

Document analysis was also part of the methodological design. The documents were predominantly ICT policy plans, official documents (such as those

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relating to foundation of units) minutes from meetings, and several Excel files containing the strategic plans of units and institutions. All structured interviews, semi-structured interviews and focus groups were transcribed and coded. For the analysis of qualitative data, Atlas.ti 7 software was used. Codes were assigned to sections of each transcription.

We used two clusters of codes. The first group was related to tools, routines and structures. The second related to leadership practices, including setting of direction, staff development and the redesign of the organization. When all coding was completed, the Atlas.ti 7 program was used to capture all text segments within one specific code. These reports (Yin, 2003) were useful to obtain main themes that emerged from the qualitative data. For the survey, descriptive data were analyzed. Due to the nature of the problem and the research question, it was found irrelevant to compare or establish statistical generalizations between HEIs. Therefore, the survey was employed to complement the understanding of beliefs and attitudes among academic staff at each institution.

The research design was structured in a case study approach (Yin, 2003). We consider that these cases were a good opportunity to analyze ICT leadership under particular conditions. A first vertical analysis allowed understanding of each case using the reports from Atlas.ti 7 and a later cross-case analysis was applied. As criteria for the quality of the research design, an analytical generalization was pursued: previously developed theory was used as a template to compare empirical results (Yin, 2003).

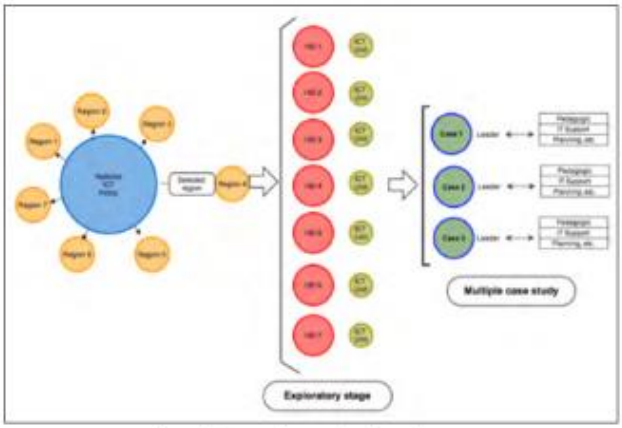

Figure 1. Structure and composition of research cases.

3. Analysis and results

Initial findings from the exploratory stage showed that institutions without an established team or a formal ICT policy plan tended to have two kinds of problems. First, when a plan exists but there is no unit in charge, efforts are pointless; and second, when a unit is appointed but there is no explicit plan to integrate technology in educational processes, there is a lack of vision, efforts cannot be guided, and strategies and activities cannot be measured in the long term. Based on this initial analysis, we selected three cases that fulfilled the conditions stated above (an explicit ICT policy plan and an ICT unit established). As we stated initially, ICT leadership is a challenging and underexplored practice in higher education. To support this argument and to answer the question regarding how the leadership of ICT is distributed in different higher education environments, we structure our findings in three sections.

First, we describe the nature of these units (structure, functions, etc.) and situate the role of artifacts through a vertical analysis of each setting. Second, through a cross-case analysis, we study the leadership activity in these contexts, using as a lens the threefold categories of leadership practice (setting direction, promoting teacher development, and redesigning organizational work) translated into ICT leadership contexts. Finally, we discuss the challenging nature of ICT leadership practice in higher education attending to certain implications for these scenarios.

3.1. Foundation and structure of each unit (within-case analysis)

We started analyzing on each setting the interdependence of leaders and followers in institutional situations in which they enacted ICT policy plans through tools, routines and structures (artifacts). As our point of departure is a deep definition of ICT policy

plans, we paid attention not only to the official documentation but also to the process of delivering and enacting it within the organization. As will be described, units were appointed to deliver an ICT policy plan within each institution. However, there were different conditions for starting such endeavor depending on institutional and organizational structures, meaning different socio-cultural situations (Spillane, 2006).

3.1.1. Case 1

In case 1, the University Council created the unit in 2008. At that time, the Minister of Education was in charge of a national project to give pedagogical support to a set of universities to implement a methodology for the development of an on-line program. From the time the university was selected to take part in the project, this ICT unit was appointed to participate; the appointed leader saw an opportunity to create a broader team within the institution to build a participatory policy on ICT (including professors and students). Therefore, in the same year, an institutional ICT policy was formulated and endorsed by the University Council. This participatory policy (bottom-up) documented needs, activities, and actors in charge; similarly indicators were delineated to achieve each activity. According to the leader, that artifact was an initial attempt to establish ICT leadership but there was a need for a more accurate strategy.

Therefore the team elaborated another artifact, called the «Virtual Strategy», to operationalize the policy to a great extent. This was an overall strategy that set out principles, a methodology and a way for the ICT unit to lead ICT integration within the institution. The process of elaboration of this artifact was built on a distributed perspective, meaning that tasks were spread among the team; even graphic design (one of the areas in the unit) was carefully considered to create an attractive and clear artifact –the Virtual Strategy– potentially known by every member of the educational community. Enhancing the previous version of the policy, this artifact defined a pedagogical model (inspired by international models), the role of teachers and students in virtual learning environments, and quality standards.

3.1.2. Case 2

The foundation of the ICT unit in this case was preceded by an institutional process of reflection on needs and opportunities in using ICT for teaching and learning. That process started 12 years ago and the unit was one of the first outcomes. Founded at that time the unit was in charge of the design of digital content and virtual learning environments. Indeed, PlanEsTIC was a later external artifact that was preceded by an institutional policy-making and ICT leadership process started in 2007. At that time, the ICT unit led to a group of professors and a research group (on educational informatics) to undertake a project on ICT integration to support academic staff. The University Council endorsed this project, linking it to the institutional strategic plan. The next year, the unit started developing the project through six strategies, including an overall diagnosis of different dimensions of ICT integration. At the end of the year, PlanEsTIC was placed as an external artifact, useful in delivering a first draft of an ICT policy plan (2009) and taking advantage of all the know-how brought by the Minister of Education.

However, as the unit leader mentioned in the interview, this external policy was not sufficient to run a formal ICT policy in the institution. Despite the knowledge transferred and organizational learning acquired, another kind of leadership was needed beyond the ICT policy plan which had been developed. Three years later, in 2012, the ICT policy plan was finally endorsed and the University Council approved the document, but only through a long and challenging process of policy-making (explained in the next section). Five strategic lines are described in this artifact: ICT diffusion, pedagogical training, pedagogi-

Table 1. Research methods: Participants, methods and objectives

Source	Method	No.	Objective according to theoretical framework
Team leader	Semi-structured interviews	3	Understand the general strategy formulated and implemented (ICT policy plan/planning). Understand leadership activity and system of practice.
Team	Structured interviews	3	Understand leadership activity (as followers)
Professors engaged with ICT	Focus groups	3	Understand perceptions and beliefs concerning ICT policy planning
Professors reluctant to use ICT	Focus groups	3	Understand perceptions and beliefs concerning ICT policy planning
Professors	Survey	N= 348	Measure overall attitudes toward the ICT policy plan administered

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cal support, monitoring and assessment, and infrastructure. The overall strategy appointed a leader for each one of the strategic lines (our interviewed leader was in charge of one of them). A positive effect from this strategy was that 80% of the academic staff surveyed was aware of a formal ICT training strategy in the institution. Similarly, 58% considered that the institution offers to appropriate conditions for staff to innovate with ICTs.

3.1.3. Case 3

Four stages are described in the historical documentation of the ICT unit in this case. The first stage started in 2003, with a previous process of pedagogical training and an ICT diffusion campaign, which included the participation of the Rector, academic staff and administrative employees. The next year, the unit was founded and a second stage consisted in the formal development of several strategies -locally designed artifacts- by this unit. These strategies included research, communication, outreach services, and teaching and learning. As we could analyze in our case study reports, each of these artifacts was composed of different projects representing tasks to be enacted. For instance, one of the strategic lines (teaching and learning) drove a first training program for teachers that later became a strong and renowned program even outside the institution as an ICT training strategy for teacher development. A third stage of the ICT unit enhanced strategic lines within the university through the production of blended courses in different academic programs. In addition, at this stage, a permanent connection with the Minister of Education was established to develop projects and agreements through outreach services. The fourth stage (to date) was the consolidation of the current team, defining areas of expertise such as pedagogy, quality assessment, support system, financial management and marketing of e-learning, and design and development.

Compared to the other cases, one important feature in this ICT unit is a «shared leadership» practice. This means that since 2006, the appointed director has been sharing the coordination of the unit with another member, distributing administrative and managerial responsibilities to enhance decision-making processes. The unit has also continued to establish projects with the Minister or Education; the leaders mention that the quality of the unit is due to the level of commitment and the «high-pressure style» they are used to coping with when giving reports and detailing outcomes to the Minister. Despite this positive performance outside the institution, the leaders declare that opposition to the overall strategy from staff and other units within the institution is a common source of struggle.

3.2. How is ICT leadership distributed within the organization?

In this section we describe findings from the cross-case analysis. We focus in each category of leadership practice applied in ICT leadership contexts, i.e., setting direction, staff development and redesign of the organization (Dexter, 2011). Having considered both vertical and horizontal analyses, our findings lead to a reading of practices as a set of struggles that leaders and teams encounter in each institution.

3.2.1. Policy-making: Struggles in setting direction

As stated above, an in-depth definition of ICT policy planning highlights the process of leadership rather than the final product (document). Therefore, we paid attention to different kinds of challenges identified when analyzing ICT policy planning. One challenge is the process of development and gaining support from directors. Another is to convince Heads of Departments, coordinators, and –clearly– academic staff of the relevance of the plan. A third common struggle was the pursuit of a common vision of ICT integration within the institution. All our units of study were related to the Academic Vice-Rectory, which implied that they were in a strategic position to promote their vision. Indeed, they were all in an arena in which they could obtain support and gain a reputation that would allow them to achieve ICT integration. However, we found that followers of these units (academic staff who were enthusiastic about and engaged in ICT integration) encountered resistance from their own colleagues.

Equally, we found that levels of support for the ICT policy plan from academic staff tended not to be high among our case studies. From the staff surveyed, only in Case 2 we were able to find majority acceptance (56%), in contrast to the other cases in which favorable attitudes were held by less than 50%. In all the cases, a common feature of the practice of these leaders was a permanent struggle in the implementation of a formulated plan. For instance, promoting a shared vision also implied that leaders and their teams dealt with reluctant academic staff as part of policy-making. As claimed by one of the teams, the strong beliefs held by such staff concerning technology were a major struggle. Some of these staff members perceived the policy-making as «top-down» and «informative» (in a prescriptive sense), despite interviews with leaders mentioning a participatory process.

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3.2.2. Encouraging educational change: Struggles in developing staff

As the literature states, technology leadership has to do with broader functions than technical support alone. Curriculum management and fostering educational change should be part of such an endeavor (Tondeur, Van-Keer, Van-Braak & Valcke, 2008). In our case studies, teams at each university had to struggle not only with implementing an ICT policy plan, but also trying to create conditions for innovation and educational change at different levels.

A common struggle in all the cases concerned time and this was expressed in relation to various aspects: time for academic staff training to develop ICT skills; time for academic staff to implement innovations in their courses; time for members of the unit to attain defined goals. This kind of struggle is relatively straightforward and is connected to a financial issue that intersects all ICT policies. In one of our cases the main achievements was that team members and academic staff were given time for ICT training and support activities on ICTs. However, cross-case analysis showed that this could be explained as an overlapping of different policies. Indeed, in this case, the allocation of time was possible because an administrative policy regarding funding for staff could be approved (one of the members of the team was also a member of the Administrative Council which defined the ICT policy).

As the leader mentioned, one of the most important factors in an ICT policy is the concrete allocation of time for team members and academic staff to engage with related practices, rather than a short allocation for ICT integration.

As we expected, even engaged academic staff complain of lack of time when attempting to innovate: If you want to use all that (pedagogical and technological support from the ICT unit), it requires too much time. Setting up a whole on-line course, involves you spending a lot of time, a lot, a lot (Member of academic staff, Case 1)

3.2.3. Administrative regulations: Struggles in redesigning the organization

As stated above, leadership activity is a situated practice that is constrained and framed according to possibilities and institutional conditions. Among these conditions, we also mention institutional governance as a complex web of factors such as the legislative framework, policy funding, autonomy, and market regulations (OECD, 2003). In our cases, legislative and administrative regulations regarding the payment of staff, types of recruitment (staffing), and even educational models supported by ICT (e-learning, b-learning) exert a considerable influence on ICT leadership.

According to one of the team members, in on-line modalities there is a need to clarify several economic and academic issues. For instance, there are issues concerning the hiring of staff when implementing blended and e-learning programs: what is the rate and cost of time for an on-line member of academic staff, assuming that he/she will invest more time in the beginning of the course? Similarly, rewards for enthusiastic staff members have not yet been formalized; as one staff member stated, «Those of us who have invested time deserve a reward for that extra mile we give» (Member of academic staff, Case 2)

Quality assurance is another struggle for leaders and their teams in relation to the implementation of on-line and blended modalities. One of the leaders in Case 3 described the struggle with the Administrative

> **ICT units have a great responsibility and actually are key mediators for educational change, for instance, promoting new teaching practices as part of staff development. However, such activity leadership implies a permanent struggle with academic and even administrative staff. Indeed, educational change involves both pedagogical and administrative issues (legislative framework, policy funding, etc.) as a way to redesign the organization; any ICT unit should take this into consideration when enacting ICT policy plans.**

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Board of the institution, which demanded that on-line courses have the same number of students (40) as regular classroom courses. The leaders in this case instead defended the idea of a maximum of 30 students per course because when that number is increased «It doesn´t stimulate interaction or social knowledge construction».

4. Discussion and conclusions

In order to answer the research question, this paper has demonstrated how challenging ICT leadership is in a higher education context. To accomplish that goal, we have studied this phenomenon from a distributed leadership approach, as we consider it a powerful framework for analyzing the nature of such activity in a little-explored field. We found that formulating an ICT policy plan and establishing an ICT unit are preconditions to fostering innovation with ICTs in higher education. However, our analysis shows that further attention must be paid to policy making, steering educational change in academic staff, and dealing with administrative regulations. All these aspects constrain and frame ICT leadership practices. Concretely, using the three categories of ICT leadership (setting direction, staff development, redesign of the organization) it is possible to mention the relevance of this study for different roles involved.

For policy-makers and decision-makers at educational institutions this paper reveals the necessity of promoting ICT units envisioning them beyond IT support functions. As a matter of fact, setting direction implies not only an ICT policy plan but also a team in charge of its enactment, two prior conditions that we highlight from our initial findings.

Consequently, ICT units have a great responsibility and actually are key mediators for educational change, for instance, promoting new teaching practices as part of staff development. However, such activity leadership implies a permanent struggle with academic and even administrative staff. Indeed, educational change involves both pedagogical and administrative issues (legislative framework, policy funding, etc.) as a way to redesign the organization; any ICT unit should take this into consideration when enacting ICT policy plans.

For leaders and members of ICT units in higher education, these findings are relevant to understanding leadership as a matter of appropriate distribution of tasks depending on the ICT vision elaborated and the artifacts to hand (locally designed or received). ICT policy planning and policy-making are ongoing processes (Taylor, 1997) revealed in our cases through the persistent (and challenging) work of those teams when elaborating and redefining artifacts to increase possibilities of enacting an ICT policy plan.

Similarly, this study represents a contribution for education policy analysis in the Latin America context. Particularly the analysis of policy enactment in higher education deserves further research as we stated above, considering a deeper definition of ICT policy plans, i.e., a process more than a document to implement.

From this regional perspective, the methodological approach applied can be useful in increasing evidence based knowledge about ICT leadership in the region, since the cases illustrate the issues experienced by ICT teams that attempted to enact ICT policy plans. As literature shows, many countries in Latin America are formalizing ICT policy plans but few of them are incorporating systems for evaluating the enactment of those policies (Hinostroza & Labbé, 2011). In this regard, a possible limitation of the study is the focus on a particular region in Colombia with specific dynamics; further studies should analyze differences among regions, and even countries, on ICT policy planning. Another possible limitation is related the scope of this study on solely institutions with an ICT policy plan. Further studies should, therefore also analyze dynamics of ICT leadership when such a plan is absent.

Leadership practice and associated analytical categories have previously been conceived and tested through school-level research (Dexter, Anderson & Ronnkvist, 2002; Leithwood, Anderson & Wahlstrom, 2004; Leithwood & Jantzi, 2003, 2005; Zhao & Frank, 2003; Vanderlinde, 2010; 2013). Despite these contributions, this study outlines that when applying such framework in higher education, the high complexity of such environments deserves more attention from scholars.

Furthermore, we consider that ICT leadership in higher education should focus on different dimensions which are still under-explored, such as cultural and institutional issues. Indeed context as sociocultural situations shape differently leadership activity (Spillane, 2006). In the context of Latin America, where this study was carried out, research on ICT policy plans and leadership to enhance educational change should take this into consideration for further studies.

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Paper 2: Cifuentes, G. & Valero, P. (2015). Tracing translations of ICT policies in higher education. *Education Policy Analysis Archives* (EPAA) (Forthcoming publication in special issue on September 2015).

2.1.2 TRACING TRANSLATIONS OF ICT POLICIES IN HIGHER EDUCATION

Abstract

Educational policy enactment is a matter of policy translation. A Latourian sociomaterial perspective is proposed to challenge traditional policy implementation frameworks. We offer analytical tools to trace processes of policy translation in practice settings as entanglements of human agents, material actants and activities. The analytical strategy is deployed in the case of three Colombian higher education institutions working with ICT policies for teacher development. The cases show that agency is distributed among different entities constituting assemblages that enact policies in unexpected pathways. Equally, in all these cases routine activities or unobserved artifacts were key to trace such translations of policies. Our analysis and findings provide a critical review of hermeneutics of policies, one of the dimensions of Stephen Ball´s policy enactment theory. In doing so, a more nuanced understanding of policy enactment is achieved, contributing both theoretically and methodologically in the analysis of education policies in Latin America.

Keywords: Policy translation; Policy enactment; ICT policies; Sociomateriality; Higher education.

Moving beyond implementation

When referring to the analysis of education policies Ball states that policies pose problems that must be solved in the context of their subjects (Ball, 2000). We would like to take this idea further to show that policies are not simply implemented but rather unfold creative and challenging processes when appropriated in local settings. Concretely, this paper aims to problematize the idea of policy translation by exploring it in entanglements of practice, since we consider that a more robust concept of policy translation can potentially provide a better account of policy enactment processes.

In the literature of education policy the critique of the idea of implementation as a linear and cause-effect process that can be isolated so that it is possible to account for its impact is not recent (Ball, 2006; Grantham, 2001; Honig, 2006; Matland, 1995). The traditional top-down approach of policy implementation as a linear process of producing official documents from the state to be implemented by a wide range of practitioners belongs to a linguistic idealism "implicit in the work of analysts who seek to clarify the meaning of policy documents [taking] language to be a transparent vehicle for the

expression of experience" (Olssen, Codd, & O'Neil, 2004, p. 63). This trend is also aligned with a concern for ensuring that policy receivers interpret policy messages appropriately as a way of securing that the initial meaning of policies be clearly transmitted to avoid misunderstandings in local settings. Thus, the idea of transparency of language leads to the assumption of transportation of meaning from a specific source to another who will receive it and decode or unpack its "real meaning". The success of the implementation is then conceived as a result of the clarity of the transmission of meaning.

Furthermore top-down approaches assume that policies solve problems by legislation or other local or national prescriptions that should be inserted into practice. However, from this perspective a wide range of policy activity is overlooked. As Ozga (2000) states, policy-making involves negotiation, contestation or struggle at all levels between different groups who may be outside of the official policy-making apparatus (Ozga, 2000). Recently Ball, Maguire and Braun (2012) have argued against the policy implementation approach, highlighting the work of Spillane (2004), Supovitz and Weinbaum (2008) (cit. Ball et al., 2012) who criticize the linear and limited analysis of such approaches. Despite their critical stance, Ball et al. warn that these authors still adhere to a conception of policies as single, unitarian and center/top delivering within institutions.

Finally, traditional implementation studies regard institutions as homogeneous and de-contextualized organizations. In the case of education policy these approaches overlook the different cultures, histories, traditions and communities of practices coexisting, focusing only on single policies in isolation: "individual policies and policy makers do not normally take account of the complexity of institutional policy enactment environments". (Ball et al., 2012 p. 9) Therefore, there is a need to understand how educational institutions manage, negotiate and even conflict with new policies. This is an analytical call to move beyond "deliverology" (Ball et al., 2012).

In brief, even if the concept of policy implementation has been useful so far, it has also proven to be limited when problematizing policy enactment. We consider it necessary to problematize the practice of translation of education policies in order to challenge traditional conceptions of policy-making or agency. In the following, we take Ball et al.´s challenge and broaden his notion of policy enactment and translation by bringing in analytical tools of a Latourian socio-material

perspective. Before we deploy our analytical tools on the three cases studies of Colombian higher education institutions working with ICT policies for teacher development, it is necessary to describe the analytical framework.

Education policies from a sociomaterial viewpoint

Recently, educational research has witnessed a revival and increasing concern with materiality, which is not new in education. Indeed Dewey´s philosophy (Cochran, 2010) or Vygotsky´s historical materialistic psychology (Harry, Cole, & Wertsch, 2007) represent major examples of theories examining how the material world is constitutive of experience, thinking and therefore learning. However, in this tradition, the material is often taken to be artifacts, which are conceived of as mere tools that intentional human subjects are capable of using. Thus, human agency still remains in the focus and the material world becomes a means to enhance and reify such agency.

Recently, a sociomaterial framework has emerged problematizing the separation between the material world and humans (Law, 2004; Suchman, 2007). Indeed, this framework claims that educational practices are affected by materials (Sorensen & Schraube, 2013). Thus, instead of assuming such division, a relational ontology is asserted (Knorr Cetina, 1997; Latour, 2005a). Materiality is not just means or tools to be used by humans to accomplish tasks, but it is constitutive of both activities and identities of humans (Orlikowski, 2007). In other words, the material world is granted agency in entanglements where the intra-actions between human and the material become inseparable (Barad, 2009).

The implications of this perspective for educational research are severe and direct (Fenwick, Edwards, & Sawchuk, 2011). For instance, in education policy studies there is a major concern with understanding how technology *affects* learning or policies *impact* the performance of students. In this regard, some "things" —technology or policies—are assumed to influence "somebody"—student´s learning or performance. Thus, the "things" and the "people" are conceived as separate units, though related. However, from a sociomaterial perspective this assumption of two separate realms —"things" and "people" — as ontologically different is challenged. Indeed, some of the most common notions like impact, interaction or influence from one to another are

equally confronted (Orlikowski & Iacono, 2001; Slife, 2005). As Latour states, "there exists no relation whatsoever between the material and the social world because it is the division that is first of all a complete artifact" (Latour, 2005b, p. 75).

Therefore, sociomateriality becomes a useful approach to comprehend the mundane enactment of educational principles, questioning the taken-for-granted categories emerging from these principles. For instance, it allows us to ask how some categories came to be materialized (standards, policies, competences, etc.), and what patterns of materiality support their continued enactment (Fenwick et al., 2011).

Translation of artifacts

Among the different approaches in education research drawing on a sociomaterial perspective, one of the most devoted to education policy analysis has been Bruno Latour's actor-network-theory, ANT (Fenwick & Edwards, 2010; Fenwick et al., 2011; Koyama & Varenne, 2012). A key idea in ANT is that action is distributed among many sets of agents (Latour, 1987, 1999, 2005b). If the actor is not the source of an action and the latter is not limited to what humans intentionally do, the continuity of any given course of action will imply human and non-human connections, generating unexpected transformations but equally traceable associations.

In policy analysis the concept of *translation* has been a meaningful way to confront implications for the analysis of policy enactment. From this sociology of translations, objects are also participants in the course of any action, which does not mean a technical determinism. In any process of translation there will be mediators instead of intermediaries (Latour, 2005a). If the latter implies the transport of meaning without transformation the former implies a non-predictive output of multiple transformations.

As we stated above, one of the contributions of ANT as a sociomaterial approach is to denaturalize entities that are taken for granted. An education policy for instance, represents an assemblage of many different things, connected and mobilized together. This chain of things tends to become stable; however, as durable networks (Fenwick et al., 2011) they are also precarious and can be unmade. Within an education policy, a set of guidelines or competences could appear as an

immutable black-box. It is by tracing the negotiations and translations of these *durable networks* that ANT unfolds these policy objects.

Certainly, researchers have been using the idea of translation in educational policy analysis (Koyama & Varenne, 2012; Singh & Harris, 2013). Some of them try to understand distributed leadership in the process of policy formulation (Spillane et al., 2004 b). Some others highlight that policy translation in education implies an effort in mobilizing practices (Cowen, 2009). Yet some others understand that policy enactment should be analyzed as a network of artifacts (Halverson, 2003), where polices are artifacts that belong to a system of practice. Building on a sociomaterial stance, translations are distributed actions beyond a single human intentionality. Hence, translations can be understood as a sociomaterial practice in which human and non-human entities participate with the same status. Translations are actualized in concrete entanglements of humans doing things with others (including artifacts) in local but interconnected instantiations where actions of policy make sense. Thus, policies as artifacts are more than tools to be used by humans who intentionally steer the policy-making. This role-playing of objects as mediators has direct consequences for education policy analysis; it highlights the relevance of translation for the analysis of policy enactment. We consider that policy enactment theory from Ball, Maguire and Braun (2012) maintains some commonalities and differences with a sociomaterial perspective relevant at some extent for our analysis.

Ball et al. (2012) define their work as a grounded theory of policy enactment in order to understand how policies become alive as a dynamic and non-linear aspect of the policy process. Enactment is then an "interaction and interconnection of actors, texts, talk, technology and objects (artifacts) which constitutes ongoing responses to policy, sometimes durable, sometimes fragile, within networks and chains" (Ball et al., 2012 p. 3). Considering policy ensembles (or clusters of policies) as interrelated and mutually reinforced, Ball et al. challenge impact evaluation assumptions about the study of a single policy; since the analysis of its effects implies interwoven relations "some collide or overlap, producing contradictions or incoherence or confusion" (p. 7). From a sociomaterial stance this notion of enactment would also refer to an entanglement of human and non-human entities that constitute durable networks.

Equally relevant is the distinction between interpretation and translation when referring to the hermeneutics of policies (Ball et al., 2012). Interpretation refers to an initial reading or sense making of policies (What does it mean to us? What do we have to do?), whereas translation of policies has to do with an iterative process of making institutional text and putting those texts into practice. Therefore, translation as a practice beyond the sole endeavor of interpretation is vital for understanding policy enactment. Indeed, as we will show later the empirical study we carried out focused on the analysis of practices of translation.

According to Ball et al., policies produce particular subject positions. Their typology offers a wide range of "policy actors" working with artifacts in various ways and trying to find meaning even in contradictory situations of intertwined policies (Ball et al., 2012). A brief description of some of these positions includes narrators —those explaining policy to colleagues joining disparate policies into a coherent institutional narrative; enthusiasts and translators — embodying policy in their practice: the former as policy models or examples to others, the latter in charge of the production of text, artifacts and events; critics as "a source of potential challenge to and critique of new policy" (p 62); and receivers —those who are coping with, defending and in relation to dependency—"They are looking for guidance and direction rather than attempting any creativity. Or rather, their creativity is strongly framed or articulated by the possibilities of policy" (p. 63).

Despite the relevance of Ball et al.'s theory to account for this typology of policy actors within a hermeneutics of policy, we consider there are some issues that to some extent move us away from this perspective. Mainly, the threefold division into a hermeneutic, a materiality and a discursivity of policies is rather problematic since it would endorse the gap between the human and non-human tradition already criticized. Put differently, such separation between materiality and discursivity of policies, or the former and the hermeneutics cannot be held from a sociomaterial account. Indeed, one of the objections of Latour (1999) concerns the separation between the materiality and the meaning of things, forcing a rupture between an object and its sign as if they belonged to two different realms (Barad, 2009; Fenwick et al., 2011). Drawing on the same Foucauldian stance, an ANT approach focuses not on what texts and objects mean, but on what they do

(curiously the "discursivity" of policies in Ball et al. is entirely inspired by Michel Foucault).

Despite these issues in Ball et al.'s theory, we still consider this approach of high relevance. Concretely, translation, interpretation and policy ensembles became useful concepts to understand policy enactment, challenging implementation assumptions when understanding agency or policy-making, as it will be shown now.

ICT policies for teacher training: tracing translations in higher education

During the last three decades, several programs and projects to integrate ICT into formal education have been carried out all around the world. Therefore, ICT policies in education are now in the forefront and become a key issue in the policy agenda of many countries (Kozma, 2008, 2011; Sunkel, 2006). Consistently, in Latin America recent governments have developed ICT policies to enhance teaching and learning processes through the formulation of ICT policy plans (Hinostrosa & Labbé, 2011; Sunkel, 2006). Assuming that educational change will emerge from such integration, higher education institutions have increased the use of ICT, promoted at government, municipal and district levels. Furthermore, within the institutionalization of ICT policies have emerged ICT units leading such processes (Hinostrosa & Labbé, 2011).

Colombia is one of the Latin American countries where technology has been increasingly integrated into and formalized in higher education policies (Osorio, Cifuentes, & Rey, 2011). Since 2007, the Colombian Ministry of Education has produced a set of education policies targeting ICT in higher education (NME, 2007; 2008a; 2008b; 2011). All in all, four emphases characterize ICT policies in Colombia (UNICEF, 2014):

a) Providing informatics and communicational infrastructure
b) Fostering development of human talent
c) Enhancing teaching practices through ICT innovation
d) Providing management and production of digital educational resources

As part of a broader study, we chose to carry out a multiple case study on seven different higher education institutions. In particular three institutions that were active in the appropriation of the public policy on

ICT for education were selected for the analysis in this paper. These institutions had prioritized different ICT policies for enhancing teaching and learning. The practice of their ICT units was also distinct. Furthermore, ICT policies were relevant because they had resonance for the practice of ICT units within these institutions. As we have stated above our goal was not to assess the "impact" of a specific policy. Rather, we explored the enactment of ICT policies in each institution by focusing on practices of translation.

According to an ANT perspective, tracing associations should be encountered even in routine and mundane settings. As the description of each case will show, we do not only pay attention to official documents or milestone events within the institution. Instead, we decided to focus on the units in charge of leading ICT policies. Indeed, these units have been underexplored when analyzing ICT integration, even more so in higher education.

Actually in our first approach to the institutions we found these units were expressions of what Ball calls *key mediators* of policies, i.e. someone who is often relied upon by others for relating policy to context (Ball, 2006). These units' main task was to receive a national policy or produce and deliver an institutional policy related to ICT integration. Pursuing the idea of following the actors themselves (Latour, 2005) we wanted to set conditions to trace histories of negotiations, assemblages and the ongoing work to sustain those policies.

Therefore, in each institution we interviewed leaders to understand how policies were received, interpreted and in some cases translated. Subsequent meetings (formal and informal) were necessary to increase our knowledge of this policy work. We also interviewed team members to increase knowledge of this policy-making along the process of interpretation and translation. In our case studies a grounded theory of policy enactment (Ball et al., 2012) also implied involving faculty members to understand their position and effects on their practice. In focus groups we covered issues such as the response to ICT policies, as well as their experience enacting these policies in their teaching practice. Indeed, most of the ICT policies analyzed the academic staff of each university as the main "target".

Some ANT researchers have worked on interviews analyzing the diverse networks that can be inferred in the discourses and narratives expressed by people (Mulcahy, 2007). However, Latour

(2005) forewarns that people are more than "informants", and talking to humans should only be a way to understand what things and people do, not what they mean.

Equally, we analyzed national and institutional ICT policies available for interpretation and translation during policy work. Indeed, for the analysis of these policies, we brought to our study not only official documents but also several formal and informal artifacts created by each institution: flyers, spreadsheets, posters, webpages, etc. We were very clear about not doing content analysis nor assuming these texts were the final and "real" source for policy work (Ozga, 2000; Taylor, 1997). Despite ANT having been depicted neither as a method nor a theory (Latour, 2005), it is clear that there are various different and creative ways of using this sensibility. For instance, combining field observation with analysis of relevant policy documents (Fenwick et al., 2011) the researcher must describe the issue, initiator, participants, practices and resources, then examine the different links that connect these nodes, asking what links within a network address the underlying questions, or which links are most productive to represent graphically and understand posed questions (Fenwick et al. 2011). Equally important were strategic meetings to understand the enactment of ICT policies as a practice. In these meetings, several strategies, tasks and struggles took place arranging human and material efforts when negotiating the relevance of using ICT to increase innovation in teachers. Table 1 synthetizes the methods and information sources we used in the analysis of these three cases:

Table 1. Number and type of methods for approaching the case studies

Source of information	Method	Number	Objective according to theoretical framework
Leader team	Semi-structured interviews (plus subsequent formal and informal meetings)	9	Understand policy work when interpreting and translating
Team (Pedagogical, Organizational and Technological Roles)	Structured interviews	3	Understand policy-making when interpreting and translating ICT policies
Strategic meetings of teams	Non participatory observation	12	Analyze the enactment of ICT policies in strategic meetings
Academic staff	Focus groups	6	Understand response to ICT policies for their own practice
National and Institutional ICT policies	Document analysis	15	Analyze policies as artifacts (available for interpretation and translation in local settings)

Deploying networks: different cases of policy translation

According to Latour (2005) a good sociology of translations is the one that deploys good accounts for tracing social connections and histories of negotiation that build networks. These networks should describe a string of distributed actions where each participant is considered as a mediator. That is, where all the actors (including the non-human ones) do something instead of "just sit there". As we will show in the following cases, instead of simply transporting effects without transformation, the policies described became a bifurcation and the origin of new translations (Latour, 2005).

ICT policies are complex artifacts (Vanderlinde, Van Braak, & Dexter, 2012) that encompass many other aspects beyond technical infrastructure, covering aspects such as teacher development, ICT curriculum and evaluation. Actually these ICT policy plans are a blueprint of what education with ICT should look like (Fishman & Zhang, 2003). In our analysis of these complex artifacts, a common dimension of these policies was the drive towards teacher development. Thus, different stories of negotiations regarding teacher-training programs to develop ICT skills took part in the enactment of these polices.

A superficial analysis of these cases would assume that the concern for developing ICT competences in faculty members started with the implementation of an enforced external or institutional policy. From that viewpoint, a single agent or isolated leader appointed within the institution would be in charge of "implementing that policy". Similarly, the analysis should be addressed to receivers (academic staff) and how they respond in order to understand the policy effect. Actors would become predefined: some of them as policymakers providing a single message to be diffused, others becoming receivers. The position of the latter (teachers) should be described as compliant to policy—those implementing the policy message, appropriating technology—and, on the other hand, those teachers misunderstanding or misleading policy message, playing a passive or reluctant role.

Conversely, in our tracing of policy translation practices regarding teacher training in ICT we found a more flexible policy at play (Koyama & Varenne, 2012). Indeed, it was not always clear where to locate policy making actions or where to locate a single policy

determining the course of action within an institution. However, we also found durable networks and obligatory passage points in the networks we traced, including humans and non-human entities. Those networks could always break down, dissolve or become abandoned. However, we were interested in documenting perdurable cases due to mobilizations through time. Indeed we found intermediations where some actors just transported causalities; however, we focused our description on durable networks where translators were visible as mediators. As Fenwick et al. (2011) state, when a network becomes sufficiently durable its translations are extended to other locations or domains through a process of mobilization that hold together other assemblages.

Among diverse initiatives emerging outside the institutions regarding teacher development in ICT, we found a particularly durable network. The Colombian Minister of Education created in 2008 a *route* for the appropriation of ICT by teachers (Route from now on). In short the Route is a policy envisioned flow of how teachers should develop competence in order to appropriate technology. The Route determines three competences: a technological, a pedagogical and a communicational competence (NME, 2008). This policy was not the "cause" of all the enactments regarding teacher training within our case studies, but when tracing practices of translation we found that much policy work (Ball, et al., 2012) and policy play (Koyama & Varenne, 2012) was mobilized in these universities as a response to this Route policy. What follows illustrates three different cases where materiality was the starting point to understand policy enactment as a matter of policy translation. As it will be shown, routine activities or unobserved artifacts were key in tracing policy translations.

Case 1: Unfolding translations in a regular practice

Among the many places where an ICT policy can be enacted, one was particularly interesting as a point of departure for tracing concrete translations. In this institution, the unit carried out weekly meetings with the specific purpose of following up different strategies to integrate ICT. Furthermore, weekly meetings were the place where different strategies were devised, monitored and redesigned to fulfill set goals. As a common team practice, these meetings were meaningful for understanding how ICT policies were translated. An excerpt from our field log reports:

> The leader starts the meeting on time. She seems very upset. On the table there are laptops displaying sheets with some graphs and reports from Excel files. One of the members displays one of these reports on a big screen where all the members can keep track of the discussion. "I am really sick and tired of this situation! We have to change the strategy…we cannot make this optional. People (faculty members) are receiving money and time for this." The meeting was arranged with several aims but all of them related to improve strategies to enhance the ICT training of academic staff. Early, in the same meeting, different strategies were discussed at different levels. One of those strategies consisted of deploying a set of colored badges to be awarded to the faculty members that successfully completed every level of the training designed by this team. However, the rector and the academic vice-chancellor had to approve this strategy among many others designed by the team. Different questions were posed afterwards: What is the best way to support and guide professors? How to engage them? Why have professors not used the community blog to enhance their practice?

All these issues and many others were displayed at regular meetings we attended, identifying controversies around ICT policies for enhancing teaching practice. Indeed, those meetings were an entanglement of different entities in play such as national and institutional policies, technologies, discourses and people. So, we paid attention to some of the persistent issues in different meetings and started tracing through other meetings, interviews and document analysis the way ICT policies were enacted. What follows depicts such policy play.

Despite many topics being discussed around ICT integration in this institution, teacher training in ICT competences was a matter of concern (Latour, 2005b) demanding expert knowledge and the ability to cope with different struggles, e.g. teacher reluctance towards technology. At this institution teacher training on ICT was not initiated when the Route was deployed in 2008. A superficial analysis could assume that this policy was the starting point or "cause" for many initiatives deployed by the unit. However, tracing different processes of translations we could establish distributed actions and leadership

throughout the institution—initiated a decade before—through different attempts to formulate an overall strategy for faculty members.

When interviewing the leader it was clear that teacher training in ICT was not a linear process of adapting a policy, but an active policy making process that started early on. For instance, this leader had applied previous knowledge from her master thesis to formulate a first strategy on ICT integration. This initial artifact mobilized teamwork with other colleagues before introducing a first institutional strategy. Therefore, long before the Route was launched in 2008 a great amount of policymaking involving the leader, her team and other staff was carried out.

An early reading from the unit interpreted the Route as a proposal for teacher training in ICT from the Ministry. However, this initial interpretation (what is this policy telling us to do?) was followed by concrete actions of policy translation: "[The Route] was a document that we studied very much and we adapted according to what was supposed to be here […] we took that document, we made some adjustments and then we set our teacher training program" (Leader, interview). The Route was not linearly adopted: five other models of teacher training in ICT were also revised. Thus, instead of mere interpretation, there was an active readership (Ball et al., 2012) from this group in order to elaborate a local proposal for teacher training at the institution. Furthermore, other mobilizations were undertaken in order to elaborate a local policy beyond a single document. For instance, five different lines were created to achieve ICT integration and for each line different managers were appointed: ICT diffusion, pedagogical training, pedagogical support, monitoring and assessment, and infrastructure. These appointed managers mobilized different strategies, staff, technologies, budgets, meetings and different efforts to enact the institutional policy.

Among the many heterogeneous entities that were mobilized (and mobilized other entities as well), we found concrete objects enacting this ICT policy. These entities were present at the regular meetings we followed and were part of policy translation. For instance a set of *badges* (rewards for teachers) were designed according to the level achieved on each path of the training process. These colored badges were symbolic artifacts rendering the levels that faculty members should achieve.

Another entity that was present at these meetings for policy translation was technology. Either as institutional platforms or open multimedia resources, technology was present, not just an inert object rendered for instrumental use. Technology in all its manifestations was the object of discourses (pedagogical, organizational, etc.) but also a frame that constrained, steered and conducted all the initiatives regarding teacher training. Concretely, the weekly meetings we attended brought up the institutional *blog* where the staff should interact steering a community of practice or a social network, like *Twitter* supporting this community.

All in all, what we found attending weekly meetings were very complex practices of policy translation encompassing all these mobilizations. Thus, discourses were mobilized mentioning levels of training (basic, intermediate and advanced). Academic and administrative staff was mobilized through policy-making and steering distributed leadership. Institutional policies were mobilized developing new goals, indicators and annual reports. Finally, new associations of policies were also encompassed as networks of artifacts (Halverson, 2003). For instance, funding policies or teacher recruitment had a role in the work of the team and indeed these policies were present in the discussions carried out in the meetings. All these mobilizations and artifacts were entangled with policy work at play in this institution, far from a linear and simple top-down implementation process.

Case 2: Disentangling policy positions

Early one morning we walked through the university to attend a weekly meeting to which the leader had invited us. Crossing the campus we realized there was a piece of paper stuck on every building we crossed. A 30 x 15 cm flyer got our attention with a witty message. A question posed on the flyer says: “Are you also going crazy with computers? This course is for you: Digital tools for beginners.”

Figure 1. Policy artifact in Case 2: flyer for a computer course
(Source in references)

This artifact was an example of a variety of artifacts designed by the unit, mainly by the graphic designer. As an enactment of the institutional ICT policy, this artifact depicts the imaginary and visual, usually unseen in policy analysis work (Ball et al., 2012). Hence, the image depicts both, the problem and the solution. It portrays a policy position: a desperate faculty member attempting to fulfill institutional expectations related to achieving ICT competences. Equally, the flyer contains a set of expertise knowledge arranged by the unit. In order to inquire how professors ended up depicted as desperate but how, at the same time, fields of expertise emerged offering training, we started our tracing of such an arrangement. Put differently, if a regular meeting previously led us to trace policy translation, in this case the allocation of these two elements in a flyer (policy positions and policy responses) became a way to understand the enactment of ICT policies in this institution.

In this university a previous policy translation was central before the Route had some effect for teacher training on ICT. Compared to our first case, the ICT unit was founded later, in 2008. A year before, the National Ministry of Education launched a project to steer the elaboration of online programs in higher education. The “Methodology

to transform classrooms to online programs" (Methodology from now on) appeared with the specific purpose of supporting the elaboration of two online programs in the institution (NME, 2007). However, this project steered another initiative about elaborating a first ICT policy within the institution. As an example of distributed agency and policy-making, this unexpected effect from Methodology mobilized different departments, academic and administrative staff, but also students given the participatory approach (bottom-up) of this process. The appointed leader was part of this whole initiative and was in charge of the ICT unit since its foundation, established to steer the use of ICT for teaching and learning.

What is relevant here is the structure that the unit acquired, that could be understood in itself as a practice of translation. Thus, the Methodology brought expert knowledge in four different domains: pedagogical, administrative, IT and communication. In each domain the Ministry offered training that later became the roles involved within the Unit. Regarding teacher training on ICT, the Methodology was also relevant to start the elaboration of a pedagogical model, a set of principles for online programs and the definition of ICT curricula. Our tracing of how expert fields of knowledge were settled and derived into a set of contents for teacher training were related to this policy-making.

Thus, even before the Route appeared in this institution (as a national policy to develop ICT competences on teachers) a huge amount of policy-making was deployed in order to set up teacher training in ICT. Equally, a new set of arrangements and mobilization was carried out designing different modules for teacher training. Training in ICT skills became so important for this unit that even modules for administrative, security and cleaning staff were involved in this endeavor.

All these entanglements of policies, leaders, expert roles, etc., had an effect on academic staff. Therefore, policy positions described in Ball et al.´s theory (2012) were a product of particular associations established by this staff. For that reason we paid attention to what they said about all these mobilizations, the sort of interactions they had with training modules, the way concrete policies affected their practice in different ways.

In this regard, we started using some of the "labels" that Ball et al. develop as typologies of policy positions (narrators, critics, enthusiasts, receivers, etc.) assuming that policies produce these

particular subject positions. These labels were useful at the very beginning when we tried to understand how they were positioned toward specific strategies. However, these typologies became blurred given that a particular professor could be subscribed to more than one, depending on his/her associations with other policies, actors, and technologies.

Thus, in our conversations with faculty members about a particular policy not only critique but also advocacy came up from them given their engagement in institutional activities. Enthusiastic staff enrolled on different initiatives was equally disposed to critique rather than merely become receivers or "implementers". In this regard, enthusiasts also became narrators through storytelling by deploying accounts of what should be done about innovation with ICT "explaining policy to colleagues, deciding and then announcing what can be done and what cannot" (Ball et al., 2012 p. 50). Therefore, the sort of socio material connections between humans, technologies and policies were key to understanding arrangements rather than only subject positions to a certain policy.

Case 3: Artifacts for translation

Another actor captured our attention in the last case. Invisible at first glance but ubiquitous, this actor was always present at meetings, interviews and even in informal conversations with faculty members. Indeed, a similar display was manifested not only in all our three cases but also in many other higher education institutions around the world. Embedded in the daily practices of academic staff, technology was everywhere, framing teacher–student interactions, staff seminars, head of department meetings, etc. Whenever students were called to access educational content or faculty members were allocated to learn about ICT skills to enhance teaching practices, technology played a key role. Enacted as an institutional platform, as a repository for educational resources, as a virtual office or even as a simple computer, technology was present in our tracings. Thus, we ended up focusing on the role that technology itself played for translating ICT policies among the many initiatives that were driven by the unit.

The unit was founded at a time when WebCT and later on Moodle (Learning Management Systems) were institutional platforms available for administrative and pedagogical purposes. Thus, these

LMS were the technological means to develop teacher training (they allocated resources and access for the courses) but equally the end of such training: it was expected that faculty members develop skills in using these platforms. Virtual Master (2005) was the name of the first course this unit designed for faculty members within the institution.

Years later this unit established a strong connection with the National Ministry of Education because of active policymaking. Inspired by the Route (NME, 2008) the unit built a local teacher training program. This institutional artifact was also called a Route but was mainly a practice of policy translation entangling previous artifacts such as the Virtual Master course. As part of this institutional Route, two specific courses were designed initially for faculty members within the university.

Later on, these courses were offered at a national scale: in 2012 the Ministry of Education made a calling for the project "Pedagogic use of ICT training". The unit was then appointed to train faculty members from all over the country applying the courses they designed. Thus, the unit became allied with elaborating, operating and inspecting different projects regarding teacher training around the country. Consistently different technologies were developed during the development of all these mobilizations by the unit (mainly the IT support role).

In other cases technology was instead the entity that constrained and framed policy translation. Such was the case for the LMS already mentioned (WebCT or Moodle). Also the case for RENATA, a high-speed platform for improving research in higher education through a virtual office. Beyond a technological device RENATA has in recent years become a national ICT policy steering faculty members towards enhancing research activities and collaboration. Therefore, another assemblage of people, modules, technology, budget and so on was mobilized to enact the policy at this institution. Figure 2 depicts the close interaction between technologies, national policies, strategies and human actants (geometrical figures on the left) deployed through time in a non-linear and unexpected way.

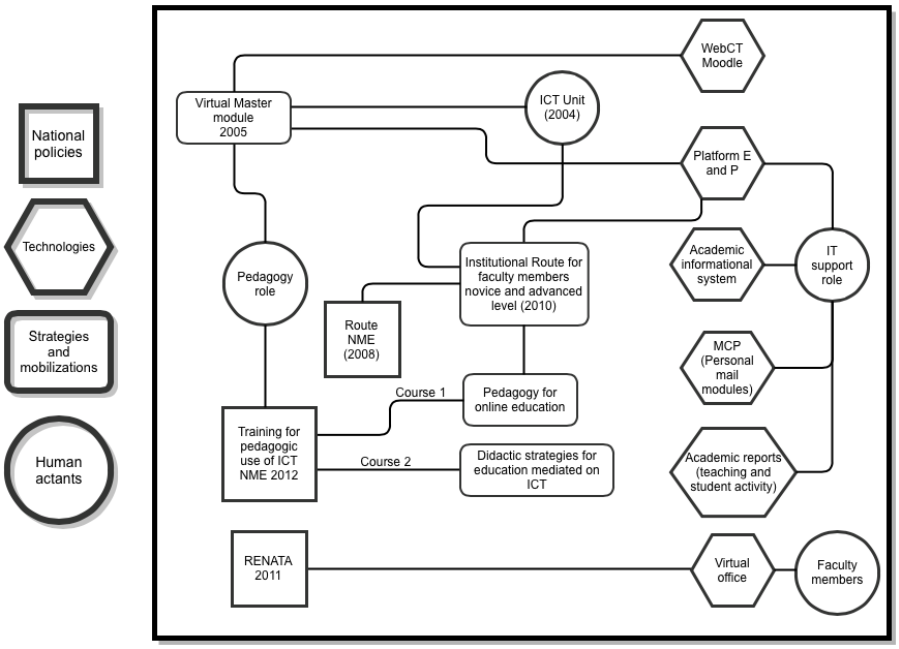

Figure 2. Mapping policy translation in case 3

The lines between elements indicate only a certain course of actions from entities over other entities that were traced in our study. These connections are only rendered for sensemaking. Nevertheless, our purpose is to show relations between entities rather than mapping linear narratives. Through this analysis we found that whenever an initiative was allocated in this institution, technology was in the forefront. In the form of a learning management system (LMS), a platform to allocate educational resources, a tool for information management or accountability for academic staff, technology was part of ICT policy translations.

Put differently, these associations were feasible not only because different people were involved to develop and take part in these projects, but also due to the range of possibilities and constraints posed by the technology available (as non-human entities). Similarly, different policies and guidelines within the institution steered the use and appropriation of different types of technologies that nevertheless were evolving and framing those guidelines as well. For instance, Moodle as a learning management system (LMS) has been running for many years, so training was focused on the extensive use of this

platform. Later on, open resources emerged also exerting effect on the sort of training offered at that time: modules for academic staff were mainly about the use of Web 2.0 tools, but also regarding virtual learning environments that teachers should design combining open and licensed resources. In other words, whenever a policy depicted a target, an aim or certain language, technologies informed and allocated as well. In other words, technology became a necessary entity when new associations appeared for policy translation.

Discussion

We have depicted three different cases where materiality was the starting point to understand policy enactment as a matter of policy translation. In all these cases routine activities or unobserved artifacts were key to trace such translations of policies. In this we step away from a traditional approach that only pays attention to official documents or milestone events as if they were the most relevant focus to understand policy enactment. As Fenwick (et al., 2011) states, "Regardless of the starting point, an ANT approach focuses as soon as possible on the most local, particular details of a thing or actor as they go about the micro-activities of their day." (Fenwick et al., p. 482)

Drawing on our cases we reinforced the original idea from Ball about policies posing problems in local settings. Policies are commonly envisaged as problem solving, but in this work they were more than a "closed package" to use, they were an open source for creativity and struggle. Policies narrow the range of creative response (Ball et al., 2012). In our study this meant not only constraints for our ICT units when enacting policies but also a field of possibilities.

When we claim going beyond the ideas of implementation and interpretation we do not mean that diffusion is not relevant as a common practice or interpretation does not take place. Certainly it does. Institutions need to "spread" relevant ideas within the organization and policy makers need to be clear in hoping that guidelines will be carefully considered. However, the idea of translation from a sociomaterial approach challenges linear conceptions of "locals receiving and adopting the macro."

The flat topography (Latour, 2005) stated on ANT perspective gets rid of "macro affecting micro" assumptions, or contextual variables affecting the local enactment. Actually, considering policies as a macro

level that "affects" the micro—as if the former was an essence made of something different that impacts the local—is another traditional assumption to challenge here: "When multiple points are linked together through actor-networks, the concepts of micro and macro thus do not hold" (Fenwick et al., 2010 p. 86). What matters is finding traceable connections that come from many other places, many distant materials and many faraway actors (Latour, 2005).

For each network deployed in the three cases, different connections were necessary and some others were simply dissolved. In each institution we found that some policies established more connections and policy work than others. It does not mean that these policies were the "cause" of connections and policy work, but rather that all the policy play was also orchestrated because these artifacts mobilized other entities.

To some extent, the typology of policy actors elaborated by Ball et al. was useful in our cases to identify different positions in local settings. However, we consider those positions as always mutable and mobile, depending on the sort of actualizations of entanglements emerging in a situation. Indeed, those positions as a label become problematic from a sociomaterial perspective. After all, what is a policy position? Is it a process of subjectivation? If it is less than that, it is just a matter of perspective or a circumstantial position? If that is the case, labeling a teacher as a critic of technology or receiver of institutional policies have many implications that in our cases implied stereotyping and constraining a deeper analysis.

Furthermore, some of the positions stated by Ball et al. became blurry: what differentiates an enthusiast from an entrepreneur? Or those two from a narrator? In fact, in our cases an actor giving sense to irrational or incoherent policies (a narrator) became at the same time an advocator, a policy model (enthusiast) offering example to others. If as Ball et al. (2012) say translation is a matter of animation, then some of these typologies were puzzling for our account and comprehension.

In our study we found that actors were not only "humans designing policies so others can implement them." Instead of that, there were not only policy actors but also things shaping translations, mainly official documents and technologies. Indeed, technology was not an inert object that was used, implemented or diffused passively. Technology exerted power, framing the sort of formulated policies and the type of training programs that ICT units designed. From a

sociomaterial perspective it is possible to understand how technology participates in policymaking through a far from deterministic stance. In our cases technological development was crucial to enact ICT policies. It implies that depending on the type of technologies at disposal (LMS, Web 2.0, Open Educational Resources) policies were formulated and enacted differently as new technologies appeared. An ANT perspective conceives that non-human entities demand a set of competences from the actors they interact with. In other words, nonhumans act and as result they demand new modes of action from other actors (Sayes, 2014). Their intra-actions become inseparable in entanglements of translations.

For instance, in 2007 many ICT policies were elaborated with a focus on training teachers for appropriating LMS like Moodle. Later on Web 2.0 and the design of virtual learning environments took their place. Also at that time, open educational resources (OER) started to have a role in all these policies and guidelines and even a specific policy was finally formulated in 2011, again not as a cause but as an effect. This is important since the role of things (technologies in this case) were more than tools to implement as part of an ICT policy. This technological development was pivotal and at some extent directed a lot of people, resources, meetings, and policies to reorganize particular efforts. This is not a deterministic statement. We are not saying that technology structures and defines human actions. However, from a sociomaterial perspective things exert a force themselves, and even in educational policy processes they shape human intentions, meaning, routines, etc. (Fenwick et al., 2011).

Conclusion

In this article, we have reframed some traditional assumptions by analyzing education policies from a sociomaterial perspective. According to the practices of translation in our study, the notion of agency was depicted as distributed. As all our cases showed, it was difficult to locate a central source of action when deploying a policy. From this stance agency must be decoupled from intentionality, subjectivity and freewill. Indeed, intentional action is just one type of action that should not exclude other forms of agency (Latour, 2005; Sayes; 2014).

The concept of policy-making was equally confronted. Such activity was never finished when formulating a policy. Instead, it was

always performed, completed, recoded in these local settings (Taylor, 1997; Ball et al., 2012). In short, the linear idea of implementation was not sustained in our cases: when enacting those ICT policies in our institutions, there was instead a messy shifting comprised of ongoing material and political practices.

All in all, we have found a need to go beyond the traditional analysis of interpretation and pay more attention to translations of policies. If the former refers to phenomena of understanding (and misunderstanding), of decision makers delivering clear messages (Deliverology, as Ball et al. 2012 say), the latter focus more on creative and challenging *practices* that are not necessarily predictable. As Latour says about mediators "their input is never a good predictor of their output" (Latour, 2005).

Finally, from a methodological viewpoint we found the tracing of networks challenging given the complexity of policymaking within each institution. It is important to remember that a network is not only a shape in the world that we should look for, but a way to inquiry, an epistemology that drive us to list all the unexpected beings that are necessary for an entity to exist (Latour, 2010). In our cases, we found these assemblages were necessary so ICT policies were enacted.

It is necessary to mention two limitations of this study. On the one hand, our analysis has focused on the role of concrete artifacts, not all the possible artifacts that could participate in a network. Similarly we have paid particular attention to the role of ICT units because they have been underexplored in the literature on higher education (Cifuentes & Vanderlinde, 2015). Therefore, we have sidelined other possible artifacts and actors (professors, students) that could be relevant for the analysis. For instance, different policy positions in our study such as transactors (administrative staff) or outsiders (consultants or experts on ICT framing policy translation) were examples of those we had to 'take out of the picture'. Further studies should include these kinds of entities, as they are relevant to understand policy enactment.

On the other hand, it is worth to mention a common critique to ANT approaches related to the "agency behind" the tracing of the networks deployed. Some of these critiques consider necessary that the researcher becomes aware of the networks of translations he/she has traced "Researchers must be especially reflexive about what categories they have adopted from the beginning, […] they need continually to interrupt their own apparatus and categories of knowledge-making, and

to interrupt the drift to identify the human actor as self-evident (Fenwick & Edwards, 2011, p. 180).

In Latin America there is still a need to deeply understand how education policies are enacted within concrete practices of translation. The creative responses we found show that higher education institutions are more than passive receptors of external policies. If a high level of complexity drives policy enactment, analyzing practices of translation grounded on a sociomaterial perspective can enlighten new comprehensions for future research.

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* Figure 1. Policy artifact in Case 2: flyer for a computer course. Designed by Ana María Arrieta (Graphic Designer). Creative Commons Licensed: https://www.flickr.com/photos/virtualizacionuniquindio/9723385965/

Paper 3: Cifuentes, G. (2015). Educational governance and innovation: Technology as an end and a means of government. *Policy Futures in Education*. (Submitted).

2.1.3 EDUCATIONAL GOVERNANCE AND INNOVATION: TECHNOLOGY AS AN END AND A MEANS OF GOVERNMENT

Abstract

Innovation in education enhanced by new technologies, has become a central issue in the agenda of many countries around the world. This paper analyses this emergence as a dispositive installed in education and points out the need to understand how it is enacted on specific practices. The main focus in such analysis is ICT leadership in higher education drawing on an analytics of government. In this paper I provide an understanding of the enactment of that dispositive for innovation through an analysis of the concrete practices of government (shepherding, accountability and action at a distance). In examining those cases, I propose to gain an understanding of the role of technology as an end and as a means for the practice of government. Among the findings, the main concern is to determine the implications of these practices for teacher subjectivity.

Key words: Technologies of government; policy enactment; education policies; dispositive; ICT leadership.

Innovation in education has become one of the main topics in the political agendas of many countries around the world (Kozma, 2011; OECD, 2004, 2014). Several reasons have been asserted to establish the added value of innovation in the educational sector: educational innovations can improve learning outcomes and the quality of education; innovation helps to enhance equity (access) and equality (in learning outcomes); and innovation stimulates and improves the efficient provision of education as a public service. Moreover, the need to introduce the changes in education that are necessary to adapt to societal needs has been asserted (OECD, 2014).

In this regard, based on the assumption that educational change will emerge through the intensive use of technology, the role of information and communication technologies (ICT) has been a common feature in the agendas of education policies (Kozma, 2008). In fact, ICT is stated to be one of the four "pumps" that should cause innovation as an instrument of production, knowledge distribution and the management of knowledge (OECD, 2004). Certainly, when ICT is mentioned by international organisations some of the common expressions used to describe it certainly are not inconsequential: "truly revolutionary," "unprecedented possibilities," "immense potential for economic change," "revolutionize possibilities for learning," or "profound implications for education" (OECD, 2004, 2006, 2014).

However, when these international organisations refer to the role of ICT in education, there is an equal tendency to underline a lack, a deficiency or a low level of performance that has failed to be adequate to the meet the knowledge society dynamic: "Schools are integrating technology at a glacial pace" (Guthrie, p. 69, cit. OECD 2004), "a majority of teachers are still unable to find feasible ways to use technology to support a much desired pedagogical change", and countries "have yet to meet adequately the challenge of re-inventing schools through the new instructional technologies" (OECD, 2004, p. 69)

To tackle this lingering deficiency, several countries in the Latin America region have been developing national systems of innovation in education –almost at a synchronized pace (OCDE, 2012; Sunkel, 2006). Hence, innovation is assumed to be a matter of systems that integrate the different actors and institutions that are in play. In fact, when the term "national systems of innovation" was coined in the 1990s, it referred to the network of institutions that interacts within a state in order to enable knowledge flow (Nelson, 1993). Regarding educational systems, instead of looking for isolated or single-centred solutions (acquisition of technology, technology support, teacher training), these systems propose a systemic and integrated approach toward pursuing quality in education (OCDE, 1997, 2012).

The settlement of a dispositive

According to my analysis, the proliferation of those national systems for innovation in education expresses an arrangement of heterogeneous elements of different natures. In other words, a dispositive for innovation in education has been installed. From a Foucauldian stance, a dispositive (Foucault, 1978) is a network of relations that is established to join disparate and heterogeneous elements of different natures: in this case, pedagogic discourses, institutional administration, legal dispositions and technological devices. A dispositive responds to specific urgencies (Rose, O'Malley, & Valverde, 2006), such as those stated above, i.e., the supposed inadequacy of the current educational system for the knowledge economy proposed; or a response to the "systematic failure" of educational systems, which need to achieve better results on the PISA

test, and which are aligned with the global influence of such international organisations (Grek, 2009).

From this point of view national systems of innovation (hereinafter NSI) can be located as a particular node, as a set of material and discursive elements that belong to such a dispositive. In other words, given the state-centred and instrumental function, I believe that they only represent a smaller subset of such a dispositive of innovation.

Indeed, a common misunderstanding of the State assumes that it can be studied as an independent unit of analysis, with a single and continuous rationality, apart from the practices that actually constitute it. Drawing from a Foucauldian perspective, in this article I argue that it is necessary to study the practices of government itself. This means that, instead of studying the political practices of the State, it is necessary to study the State through an analysis of different political practices (Castro-Gómez, 2012). From this perspective, the State does not pre-exist the heterogeneity of the political practices that constitute it. Indeed, the State is an unstable result of a multiplicity of historical practices that must be studied in terms of their singularity (Miller & Rose, 2008).

In this regard, I consider an analysis of those NSI as necessary, but not sufficient, to understand the enactment of such a dispositive for innovation in education. As I will establish below, the inclusion of an analysis of the practices that enact such a dispositive offers a deeper understanding of its rationality. First, I will describe the analytical lens that will be applied in this endeavour. Second, I will review a case of a NSI that shows the need to focus on the concrete practices of enactment through an empirical study. Finally, from a Foucauldian stance, I will discuss the ethical implications that are beyond the analysis of policy enactment.

Technologies of government as an analytical tool

One of the authors who is perhaps the most representative for understanding the link between technology and government is Michel Foucault (Foucault, 1978, 1991, 2007, 2008). In his work, government is defined as "an activity that undertakes to conduct individuals throughout their lives by placing them under the authority of a guide responsible for what they do and for what happens to them" (Foucault, 1997, p. 98), put differently, as the conduct of conduct in order to

structure the possible field of action of others (Foucault, 2002). Thus, although Foucault did not develop a comprehensive philosophy of technology, his reflections on the role of techniques and technologies were clearly present throughout his entire work.

In an interview with Paul Rabinow, Foucault complained about the lack of a broader understanding of technology, which has been confined to the narrow meaning of "hard technology". Therefore, Foucault urged the inclusion of a wider concept of technology as a practical rationality that is governed by a conscious goal. Indeed, in the same interview, he asserted that government is also a function of technology: the government of individuals, of families, and of the self by the self (Foucault, 2000). In this regard, he also described governmentality as a certain mentality that is common in many forms of modern political thought, i.e., an "ensemble formed by institutions, procedures, analysis and reflections, the calculations and tactics, that allow the exercise of this very specific albeit complex form of power" (Foucault, 1979, p. 20).

After Foucault's death, his work was disseminated in an attempt to advance further in a deep reflection on how these technologies of government are present and how they currently work. Specifically, what have been framed as governmentality studies focus on the analysis of neoliberal technologies of government. As Dean (2010) states, the various enactments of government, i.e., the "how" of these technologies of government is the main concern of this field. Indeed, these studies offer a broadened understanding of government, beyond the State-Nation relation, which is often linked to a traditional trend that identifies the State and the Government. To an equal extent, the analytics of government pays particular attention to the government of the conduct in its different facets and dispositives (institutions, agencies, forms of knowledge, techniques, etc.) (Dean, 2010).

In this regard, it is relevant to highlight that a Foucauldian approach to technology is not anthropological in the sense that it is not conceived as an instrument that is possessed by a free subject who uses it to control his own environment. Aligned with a sociomaterial perspective (Fenwick, Edwards, & Sawchuk, 2011), the work of Foucault struggles with the separation between the natural and the artificial (Barad, 2009; Altamirano, 2014) or human and technological spheres (Dorrestijn, 2012). Although this division has been lasting even in critical theory -assuming that technology affects a human nature that

should be defended (Habermas, 1970; Marcuse, 1964)- Foucault steps away from such moral stance (Dorrestijn, 2012).

For him, technology refers to multiple sets of strategies through which we become subjects. Thus, the study of political technologies will refer to the production of forms of existence: These technologies produce subjects, some of them by coercion or through discipline, but others operate through self-regulation of the subjects; the latter is the case for neoliberal technologies. Compared to an earlier typology of technologies analysed by Foucault (1988),-i.e., technologies of production, technologies of meaning, technologies of domination, technologies of the self- there is a fifth family of technologies, which he calls the technologies of government, which represents a link between the last two types. These technologies do not aim to simply determine the conduct of others, but to guide them effectively (Foucault, 1999).

From this point of view, it is not possible to study technologies in isolation. In his previous analysis, Foucault (1977, 1978, 1988) had already considered three intertwined elements: practices (manifested, positive and articulated to dispositives); rationalities (every set of practices has a rationality) and technologies (the strategic dimension of practices, the way those practices operate). Instead of locating an action within particular subjects, the study of practices locates action in networks or dispositives that support a certain rationality. Rationalities are not merely ideologies. Instead, they refer to the sort of technologies and programmes through which power is enacted. Therefore, in order to understand the *modus operandi* of contemporary government, it is necessary to move beyond a metaphysic of the State, ideologies and parties, and instead, to analyse the specific technologies that enact those rationalities.

Drawing on Foucault's work, and similarly in the analytics of government, it is possible to understand how any dispositive is materialised through the technologies of government that enact it. Today, such an analysis is considered attractive, because it offers a detailed account of the practices of government, which is based on empirical studies, both historical and contemporary (Rose et al., 2006). Therefore, in order to understand the dispositive for innovation in education to which I referred above, it is necessary to focus on the enactment of its technologies of government. Thus, what follows is an analysis of the particular practices of government, as well as the

rationality and the specific technologies that support them.

Situating practices of government

One of the contributions of Foucault's work is the enhanced development of historical and empirical studies regarding how concrete technologies play a role in governing subjects (Dorrestijn, 2012). In the following discussion, I will briefly analyse the way that a NSI is linked with a dispositive for innovation in education; as I have already said, this represents a first step that is necessary, but not sufficient, to understand such a dispositive and its enactment.

Considered as entanglements of legal regulations, institutions and discourses, a national system produces innovation –at the classroom level and beyond– in response to the "systematic failures" mentioned above. As Li states (2007), today, governing is becoming a matter of improvement. This will to improve (Li, 2007) implies the arrangement of different elements (discourses, institutions, laws, scientific knowledge, technologies) in an effort to govern the conduct of a population. Two operations must be displayed (Li, 2007): first, a problematisation to determine what deserves to pay attention to; second, rendering technical, i.e., organising problems by technical means in order to outline a solution. Put differently, an anticipated solution is usually packed within the identified problem.

Specifically, Colombia is one of the countries where the improvement of quality has become a central issue, given its substandard results on international tests. Different strategies have emerged during recent governments, and the integration of ICT is in the forefront. Thus, since 2010, the "National systems for innovative education using ICT" has been launched within a national education policy. This initiative is within a broader National System of Innovation that covers other domains in science and productivity. However, compared to previous initiatives in education, this particular NSI underlines the role of ICT in "transforming educational practice through innovation using ICT" (Ministerio de Educación Nacional, 2013, p.8) – hereinafter NME or National Minister of Education. As stated in one official document describing this NSI: "The national system of innovation aims to settle innovation as a condition and aspect that frames educational practice, enhances conditions and capacities regarding ICT integration in the Colombian educational sector, and

attends to the necessities of educational communities" (NME, 2013, p. 16).

As a neoliberal technique of government, this NSI refers to "talent, creativity and mental capacities" as the aim of teacher training (NME, 2013, p.16). Underpinned by human capital theories, the purpose of the NSI is to develop talent and creativity through education, research and innovation, in which the latter becomes "a strategic path followed by educational communities to respond to changing dynamics" (NME, 2013). Similarly, the claim "do not homogenize or standardize" (NME, 2013) belongs within this neoliberal rationality of government, in which each subject becomes responsible for his own capitalisation (Dean, 2010). These conditions for acceptability are highlighted in the NSI in its explanation of the approach adopted, i.e., to enhance innovation in decentralised environments. Instead of requiring the changes to be adopted, the rationality consists of explaining reasons for them to participants and "giving them the opportunity to accept, modify or reject those changes" (NME, 2013, p. 17).

Similarly, to the same extent, questions posed to educators are addressed as a problem of government: How students are learning? Is this learning useful to them? Does it have any relevance for their lives? (NME, 2013) This milieu is described as the assemblage of different agents (educators, directors, administrative staff) that interconnect "academic and sociocultural environments" (NME, 2013, p. 19). According to this system, becoming "an innovative educator" implies overcoming past traditions and proposing new ideas in different pedagogic situations.

All in all, the NSI depicts a certain rationality that must be analysed beyond these statements to achieve an understanding of how a dispositive for innovation in education is enacted. I do not claim that there is a separation, i.e., that the NSI represents a different realm from local practices; indeed, they are intertwined, as I will establish immediately below.

Technology as a means and an end of government: an empirical study

Drawing on a multiple case study in Colombia, an empirical study was carried out to understand the enactment of ICT policies, given their close connection with the NSI described above, but also, beyond this State-centred effort. For that purpose, various methods – interviews, focus groups, participant observations and document analysis– were applied in a set of higher education institutions to understand how they have deployed different strategies to enact ICT policies for the enhancement of teaching and learning.

The research had two stages, which enhanced the comprehensive strategy. The first was an exploratory stage trying to understand how these institutions have deployed strategies to integrate technology for innovation in teaching and learning. A strategy that was common to all of the institutions consisted of the appointment of a team to lead those strategies. For that reason, in the second stage, particular attention was paid to the practice of the leaders in these educational institutions, in which technologies became not only the aim, but also the means, to govern the practice of teachers. Using the lens of the analytics of government, I discovered a need to analyse ICT leadership more deeply as a practice government.

Certainly, there were several issues related to the problem of how to govern a population that had direct responsibility for the enactment of innovation discourses and ICT. In all of the cases, it was clear that the role of the State was an effect, and not the main cause, of rationalities, practices and technologies. Indeed, the government of teachers' conduct was an issue that had emerged several years before the State initiated its first guideline or project regarding this matter. For instance, several programmes to train teachers regarding innovation with ICT were traced in the history of each institution. In the following, I describe how these enactments are illustrated in the empirical study.

At the exploratory stage, there were two key findings regarding how ICT could enhance teaching and learning to fulfill the goal of improving quality in education:

ICT policies were enacted through fields of expertise

At each institution, the founding of an ICT unit was one of the primary strategies to enact ICT policies. In almost all of these units, different roles were established. These roles included areas of knowledge or fields of expertise to endorse the integration of ICT: Pedagogy, IT support, communication and design, and administrative and financial support were fields of expertise allocated on these teams. Each role represented a field of knowledge. As in any discursive formation, this is an objectification, i.e., a regime of production. In this case, it was the establishment of the conditions needed to determine what would be considered innovation, how to assess such innovation and how to distinguish an innovative practice from other practices that are not considered innovative.

Integration of ICT allocated different populations

Once ICT was installed as a prevalent discourse in these institutions, all of the efforts regarding teacher development were updated to include ICT skills for teaching purposes. This implied that the ICT unit –which was in charge of enacting ICT policies– readily identified faculty members who were engaged with technology and those who were reluctant to use it. Therefore, as an unintended effect on the settlement of those fields of expertise, professors in these institutions were positioned differently, according to the "level", "competence" or "skill" they had developed in the process of appropriation.

In this regard, the problematisation of both types of populations, i.e., staff who were engaged and those who were reluctant with respect to technology, consumed a substantial amount of time and effort in these units. How can enthusiasts be recruited? What sorts of variables drive reluctance? What strategies should be deployed to work with both populations?

According to these initial findings, in the second stage, it was necessary to pay more attention to the concrete practice of ICT leadership. Indeed, in the literature addressing the integration of ICT into education, there has been an increased interest in this concept (Dexter, 2011; McLeod & Richardson 2011; Vanderlinde, Van Braak, & Dexter, 2012). Drawing on research that evidences a gap in the

understanding of how technology leaders should enact ICT integration, ICT leadership also has become also a concern in the promotion of innovation.

Conversely, according to critical approaches, leadership in the current educational field has become mainstream, or even wholly dispositive, having enough influence to be a means of achieving ideals and values in educational institutions (Gillies, 2013) "Leadership is deemed to be a more effective way of securing desired ends" (p. 22). Two key elements define educational leadership: first, setting a vision or providing direction, and second, the capacity to influence others, so that outcomes can be achieved. From the analytics of government, this definition primarily denotes ICT leadership as a practice of government.

In the particular context that I analysed, the focus was on the government of a concrete population (faculty members) to conduct a conduct for innovation. Therefore, I was interested not only in the way such conduct became a matter of controversy (Latour, 2005a), but also in how this problematisation should be driven or governed by expert knowledge (Grek, 2009; Li, 2007). In attending strategic meetings and interviewing leaders and their teams, I discovered some of the important issues in the work of these units. These issues were actually related to the problem of government, for instance:

- How can teachers become skillful with ICT?
- How such ICT competences can be measured?
- How should reluctance to use ICT be managed?

All of these questions must be posed from the analytics of government: Who is going to be governed? How should they be governed? What type of techniques should be applied to govern them? In the analysis of this practice of government, I will depict different examples showing how technology became an end and a means for government. Furthermore, in the following sections, I will describe how the dispositive for innovation mentioned above was enacted in concrete practices.

Shepherding

As an end for the appropriation of ICT but also as a mean for teaching purposes, the academic staff were directed to use different technologies to enhance teaching and learning; in doing so, governing their own conduct (and students' conduct as well) was frequently included when describing their own practice. In this regard, one of the professors mentioned: "In the platform, you have to design everything step by step, encouraging the student in a very specific way, so that he is not mislead regarding the task assignments, dates, assessments, the syllabus, the goals, etc."

Primarily because I focused my analysis on ICT leadership, I preferred to highlight the practices of ICT units instead of teacher-student relations, which has been a matter of devoted discussion in the literature in recent decades. Thus, within institutions, a major field of problematisation dealt with the time that was allocated for teaching purposes. Therefore, a common technique for the government of teachers' conduct was to manage their time through specific artefacts. For instance, in one of the institutions an index called Real Dedication Unit (RDU), was created by the unit for teaching and learning, This index assigned time and responsibilities to academic staff. In relation to this artefact one of the leaders commented about her interactions with the leader whose role was to manage the RDU:

> She manages all of that stuff (RDU), I speak to her frequently, asking "how is it going X?" She says "well, I think he should leave that project and let's put her on it," "How many RDU?" We call RDU for the assignment of responsibilities, and then we (the leaders of the teaching and learning unit and the ICT unit) share a spreadsheet. Then, I tell her "X number of RDU are needed, this is the assignment of responsibilities," and she is in charge, along with the academic director, of managing and distributing such time for each project.

Despite the refinement of this technique, the workload and the reluctance to regulate time frequently created problems. A complaint from the team dealt with the lack of participation by the academic staff in all of the activities they had proposed in the blog, the online classroom and other virtual spaces. Criticism from members of the team

even arose regarding RDU as an artefact: "It was a device to justify time for heads of departments, but not for academic staff." Indeed, for the latter, the problem remained unsolved because the time allocated was never proportional to their real workload.

Perhaps one of the most common shepherding practices of ICT leadership was their frequent visits to each department to provide guidance or encouragement with respect to the use of ICT. With no exceptions, all of the leaders reported this practice and the subsequent struggles with which they coped with: "We have been to each program, closing gaps, insisting on a new methodology". Reluctance emerged not only in the academic staff, but even in the heads and deans. In one of the strategic meetings of the teams, when identifying failures, one of the team members confessed "Perhaps we have not been good sellers when in persuading them that technology is a time saver. They definitely do not see it as an investment, but as a waste of time."

As a teacher development strategy, ICT training was a common practice for the enactment of ICT policies for innovation in all of the institutions. All of the efforts of the units, including their meetings, budgets, administrative procedures and decision-making, were aimed at training academic staff and certifying such knowledge. "We need our staff to be trained as online master teachers," said one of the leaders; this remained a widespread assertion of all of the leaders and teams as they shepherded their populations.

Accountability as a practice of government

As I mentioned above, the RDU was an example of an administrative artefact used to manage the time allocated for academic staff. This was part of a whole set of devices that were applied extensively to follow up with this population, not only by ICT units, but by entire institutions. Therefore, practices of accountability were a common element, in which various techniques were applied to produce knowledge about staff.

Overall, in every case, the main practice of accountability was enacted through strategic meetings. A committee composed of the heads of each area met on a weekly basis to follow up on tasks, the achievement of goals and project management. Most of these practices were not only aimed at reporting outcomes within the unit, but also at measuring them for the vice rectories or heads of other boards to which

they belonged. These meetings were the venue where knowledge and techniques were allocated to problematise and govern.

Thus, various tools were located to follow the performance of teachers and students in the development of courses. For instance, Smartsheet (a licensed software for strategic planning and collaborative project assessment), online surveys and files shared through Google Docs were common tools that were used by these units for follow-up purposes. Moreover, some of these units designed specific tools to follow teacher training processes.

As a disciplinary power, the production of knowledge about students and teachers occurred through the use of spreadsheet reports to display statistics and scatter plots. Thus, the conduct of pupils or educators became a matter of averages and deviations according to judgments made using the expertise knowledge on each team. As one of the leaders explained, in describing the rationale of the unit, there was a need to problematise, before rendering technical (Li, 2007; Rose et al., 2006), in order to govern this population:

> One is the following-up on the teacher, and there is another for the student. When a *deviation* emerges in the indicators that we follow on a weekly basis, we implement a set of strategies. For that reason, the committee is integrated with all of the areas. Then, we identify or infer a set of possible problems in *understanding the deviation* of the indicators. If it is pedagogical, then this area gets involved; if it is technical, then that area undertakes it. So, if the teacher is not committed to the guidelines, we take the *deviation* over to formulate a strategy (Italics added).

Governing at a distance

Another practice of government through technology deals with Latour's notion of action at a distance (Latour, 2005b), which, in the analytics of government, has also been called governing at a distance (Rose et al., 2006). A specific example in one of the institutions can illustrate this expression, i.e., technology as a mean to conduct the conduct of a population. A national strike concerning university reform resulted in various protests led by students between 2011 and 2012. At some point, in one of the study cases, students blocked access to the university,

which impeded its regular academic duties. Thus, classroom activities were suspended, and there were several implications for financial, administrative and academic issues.

Despite this situation, the rector decided not to suspend blended-learning courses (courses that involved a certain amount of online interaction) in an attempt to remediate these circumstances. After that first strike, it took several months before academic activities were normalized; the board's first consideration was that technology could provide an opportunity to address such situations. Indeed, they realised that blended and online modalities had not been affected as much as face-to-face interactions (issues involving facilities, attendance and academic staff would not be impacted if ICT were a permanent support).

After this first event, a second strike occurring during the following year. The students sought the rector's resignation (after 15 years in that position), but they also complained about a compulsory policy regarding English sufficiency for all students. This time, the rector did not engage in conciliation, and indeed, a contingency plan was established: Among different strategies, the university offered teacher training so that academic staff could integrate ICT in their methodologies to support the courses in the institutional platform. An ICT Unit was evidently appointed by the rector to lead this strategy.

The rector's complete reliance on this Unit to design training courses and support for academic staff was manifested. Many risks were taken in the adoption of this strategy, for instance, retaliation from students on the ICT Unit. Certainly, students blocked the team members' access to the university, but security protocols and other strategies were applied using technology; e.g., all team members worked remotely from their homes, even holding strategic meetings online: "All we needed was access to the hard drive of the office (…) the leader recommended that we upload all necessary data to the cloud, so everything was set up to work (…) the commitment was to the university, and training teachers was the main goal".

Throughout the duration of the strike, the institutional platform was the main channel from the rector to deploy official decisions. In one of those statements, the rector advised students who wanted to complete their courses to keep attending them, using any kind of modality, "including ICT". An official resolution sent by the rector

represents a clear statement regarding how technology can become and end, but also a means of government.

Briefly, this document declared some legal actions to "normalise academic activities" within the University. Thus, the resolution contained seven clauses considering that a) the free will of the students to participate in classes had been disturbed, raising "serious problems in attendance"; b) that the student's union had blocked classrooms; c) but also, considering that other students had asserted their own right to complete their classes, and that the University was compelled to fulfill that wish by offering "all means and tools that are conducive to that end."

Among the legal dispositions to "normalise academic activities," two of them were related to the use of ICT. One of them supported academic staff in continuing to carry out their work plans by offering tools and methodologies, regardless of the number of students. An explicit paragraph states: "ICT are an effective tool to guarantee such a goal". The second paragraph was a call to the academic staff to benefit from the training related to educational processes using technological mediation that was offered within the University and headed by the ICT Unit. After several months, the strike was finally dissolved. However, the event was a milestone for the entire community in terms of the role that technology had played, as it never had before.

In the strategic meetings that I attended, it was clear that, through this unit, the rector was addressing many actions to cope with the demands of both students and professors. Nevertheless, forms of counter conducts were always present when power was exerted in this institution. Thus, there were many reported cases of reluctance, from both academic staff and students, during the process of integrating ICT for teaching purposes, e.g., dropouts in online courses, protesting through social media, etc. All of these practices of resistance indicated that there are always alternative ways of exerting power and resistance in fluid relations –which are never stable– instead of merely states of domination.

As I have shown in these three cases, ICT leadership has become a very complex practice that intertwines technologies and a neoliberal rationality that has shaped the enactment of the dispositive for innovation described above. However, there is a risk of becoming merely descriptive at this point, unless a further discussion is undertaken about the implications of such practices of government.

From my point of view, the connection between technology and ethics is the most relevant issue to discuss when analysing the implications of governing populations. In the following, I focus mainly on academic staff, as they are the main target of the dispositive for innovation.

Technology encounters ethics: the production of subjects or the "innovative teacher"

As was analysed above, every discursive formation implies practices of government that produces a subject. In the cases that were analysed, teaching practice was produced as "innovative", according to certain scientific discourses that legitimise and assess such practices. In this analysis, it is relevant to inquire about how innovative practices were conducted. Furthermore, how they are conditioned and materialised through technologies of government.

One of the more explicit effects relates to teacher flexibility or elasticity (Watson, 2006) in the enactment of teacher development discourses. One member of the academic staff mentioned his concern about the pressure for teacher performance when he introduced technology in his classes: "They do not consider that you have to become everything: a designer, a good editor, a pedagogue…they simply do not understand that you have to play a whole range of roles … if I am going to integrate technology, I have to cope with all of these roles." Another staff member admitted the implications of enacting educational change in his practice after having his own identity as educator: "In order to change 40 years of mere 'chalk and board' teaching, and become an online teacher, there is a lot that must be done to get involved in the virtualization process".

However, technical mediation does not always deal with "inescapable coercion"; in my case studies, the appropriation of ICT was more closely related to structured routines that produce a skill (Dorrestijn, 2012). Therefore, ICT is not simply used but integrated into the user's mode of existence. In this regard, ICT leadership became a way to govern the conduct for innovation. Every practice was scrutinised from the expert knowledge, i.e., pedagogy. As already described above, there were examples of follow-up assessments of teaching practices, searching for deviations that needed intervention. This expert knowledge was constantly pushing the boundaries of teaching practice. Discourses regarding "educational change,"

"innovation," and "ICT for learning" underpinned the confrontation with traditional identities and the practices of teachers.

Alongside those discourses, ICT units utilized another technology for government that was initially launched by the Ministry of Education in 2008. At that time, a concrete artefact was designed to be a set of competences for ICT: technological, pedagogical and communicative. Each of these three competences was deployed as a matter of levels or grades that teachers should attain progressively. Certainly, this artefact was extensively enacted (not passively implemented) in several institutions, and it mobilised different actors, administrative regulations and technologies within the institutions.

Five years later, this artefact was updated to include two new competences, which this time formed a pentagon of ICT competences (Figure 1). This new discursive formation included research competences and management competences. The former highlighted the need for an attitude of inquiry in teaching practices, and the latter assumed the government of teaching practices by leadership discourses that emphasise the self-government. Thus, moving beyond skillfulness in technology, pedagogy and communication, research and management were added to enhance and promote a self-regulated educator. In this artefact innovation is the last of three stages (explorer, integrative, innovator), which implies a desirable final state in a mature domain in which the use of ICT can reconfigures educational practice (NME, 2013).

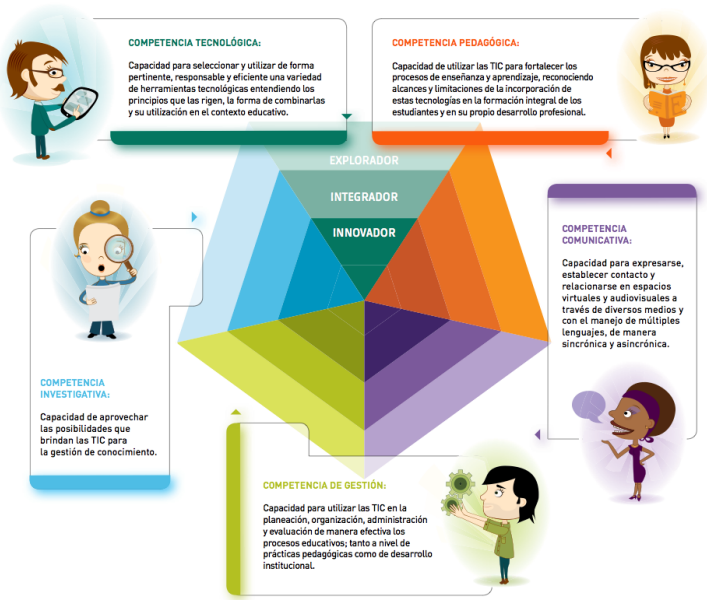

Figure 1. ICT competences for teacher development (NME, 2013)

This artefact was based on the idea of self-regulation, and it promoted an attitude of inquiry in the teacher: "¿How am I positioned in the pentagon of ICT competences?" Asserting that technological change is occurring at a high rate of speed, teachers are encouraged to engage in ongoing (endless) lifelong learning. Either through formal methods of learning, or informal learning, e.g., through online tutorials or other methods of learning by themselves, "it is fundamental to be up-to-date." Another set of questions stated within this rationality of self-regulation promoted self-regulation: "How should I choose a professional development program? How can I follow up on my own progress regarding my development of these competences?" (NME, 2013, p. 50)

It is clear that this pentagon becomes an enactment of what we described above as a dispositive for innovation. Beyond the symbolic power contained in this artefact and the role of the state that deploys this device, it is necessary to highlight it as a technology of government. Thus, a rationality of government is embedded in this artefact, which depicts "an innovative teacher" who is self-regulated and reflective about her own behaviour. Hence, there is modularity of subjectivity, rather than a fixed identity to achieve. Instead of ideology

(a hegemonic image of the ideal professor), each educator must be positioned within the singularities, grades or levels within each competence. Put differently, this is a matter of performance, a practice that must include certain techniques to transform the self, not as a constraint, but as an open exploration. In short, rendering technical through competences that must be achieved at one's own pace, subjects are conducted to attain the goal of being "innovative teachers."

Conclusion

In this work I analysed ICT leadership in higher education, as a concrete practice that enacts a dispositive for innovation. From the analytics of government, this practice was depicted as being intertwined with a neoliberal rationality and a set of technologies. Several cases demonstrated that such technologies represent both an end and a means for governing populations.

To delve into the analysis of the practice of ICT units that guide faculty members to use ICT to enhance teaching practice, various cases of governing subjects (i.e., to conduct the conduct) were depicted. In those accounts, technologies had a productive effect, i.e., they produced subjects, as those technologies regulated their practices.

In the theoretical framework that I adopted, concepts like freedom or populations are technically produced. This means that they are historical objectifications produced by specific technologies of government, instead of essences that are treated differently over time. Taking this into account, a particular population, i.e., faculty members, has been analysed with the aim of understanding how and to what purpose (urgency) the conduct of their conduct has been problematised. Similarly, how has their freedom been managed. The role of technology has become key in understanding and answering these questions.

Methodologically speaking, this article claims that, in order to understand the enactment of a dispositive, it is necessary to expand the sources in which where this enactment is analysed, not because we should be "searching for the truth," rather than understanding "the how" of those technologies of government. Indeed, there have been multiple analyses about dispositives of power and the way they work from a Foucauldian viewpoint. However, few of them have been analysed from

the concrete practices that enact such dispositives.

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PART III

3.1 FURTHER CONTRIBUTIONS

Paper 4: Cifuentes, G. (2015). The will to innovate in Colombia: Conceptualizing the practice of ICT units. *Journal of Higher Education Policy and Management* (Submitted).

3.1.1 THE WILL TO INNOVATE IN HIGHER EDUCATION: CONCEPTUALIZING THE PRACTICE OF ICT UNITS

Abstract

Innovation in education has become an obsession in the contemporary educational arena, and information and communication technologies are at the forefront of such concern. In the Latin America region, higher education institutions have been producing policies, programmes and practices to steer innovation through the integration of information and communication technologies (ICT). This trend is named here as a will to innovate through different national ICT policies. Particularly, in Colombia the leadership of innovative education enhanced through new technologies has become a situated practice that deserves to be problematized. Drawing on an empirical study on ICT leadership, this paper focuses on the teams in charge of that leadership, namely ICT units. Within the practice of these units it is possible to analyse the enactment of ICT policies. In that regard, four features describe the nature and scope of these units, which are still underexplored in higher education studies: distributed knowledge, policy translation, incremental functionality, and politically laden.

Key words: ICT leadership; ICT policies; higher education; policy enactment; innovation.

Leading innovation through the integration of information and communication technologies (ICT) is becoming increasingly a key factor for educational institutions to achieve educational change (UNESCO, 2011; Dexter, 2011). This work reports on an analysis of ICT leadership supporting educational innovative processes, a practice in higher education that has been claimed as needing further research (van Ameijde, Nelson, Billsberry & van Meurs, 2009). Here, the focus is on teams that support innovation with ICT for teaching and learning purposes. In the practice of these teams –called ICT units for pedagogical support– there is an explicit connection with the enactment of national ICT policies.

For arguing that connection, in this paper the analytical strategy describes first the set of national initiatives that characterises ICT policies in terms of a will to innovate in Colombia. Once those initiatives are depicted, the research context is described, and how the comprehension of ICT leadership practices is key to understand the enactment of those policies. The question driving the analysis is at what extent these leadership practices are relevant to understand the enactment of ICT policies for innovation in higher education. Finally,

conclusions are related to the implications of studying the enactment of such will to innovate, and the close relation with university reform.

ICT policies for education: a will to innovate in Colombia

ICT integration as a pump for change (OECD, 2004) has been formalized in Latin America both in national education policies, and in higher education policies (Sunkel, 2009). In Colombia, one of the countries where technology has been increasingly integrated and formalized through higher education policies (Hinostroza, & Labbé, 2011; Osorio et al., 2011), different initiatives has been deployed in this regard (OECD, 2014).

From an historical account is possible to illustrate how these initiatives were configured as a network both at governmental and institutional levels. This set of initiatives are aligned with one of the four trends identified for ICT policies in Colombia: a) Providing informatics and communicational infrastructure, b) Fostering development of human talent, c) Enhancing teaching practices through ICT innovation, d) Providing management and production of digital educational resources (UNICEF, 2014).

Those initiatives are characterised in this work as part of a *will to innovate* that was not only the interest of and support by a specific government in power. On the contrary, its articulation and sustainability also came from the same educational institutions mobilized to the same extent. The term 'will' draws on the work of Tania Li (2007) when she describes the will to improve that characterises the contemporary rationality for the government of populations. Hence, it is necessary to analyse the rationality of those programmes for improvement, i.e., what they want to change, and the calculations they apply (Li, 2007). Will not only refers to the gap between the attempted and the achieved, but also to the persistence of that will (Li, 2007). When programming an intervention over a particular population, there is a need to frame problems to be solved technically, i.e., circumscribe them to areas of intervention disposed to calculation, measurement and control.

In this endeavour there is no domination exerted over the intervened population (Li, 2007). Indeed, improvement programmes bring changes that people want for themselves. This has been stated from Foucauldian stances (1991) that later became analytics of governing populations (Miller & Rose, 2008; Dean, 2010). Compared

to a coercive power that looks for constraining actions, the aim of government is to improve wealthy conditions by selecting the best means at hand (Li, 2007). Thus, governmentality is exerted over a population educating desires, configuring habits, aspirations and beliefs (Dean, 2010). Therefore, a critical endeavour consists in analysing that rationality of government, its practices and technologies (Foucault, 1988).

According to Li (2007) two practices are required to enact a will to improve. The first one is problematisation, i.e., identify a problem, an object of concern that mobilizes an interest and a need for intervention. Once the problem has been identified, the second practice is rendered technical (Rose, 1999), i.e., diagnosing, measuring, comparing and, generally speaking, allocating a set of strategies to intervene in the problem 'assembling information about that which is included and devising techniques to mobilize the forces and entities thus revealed' (Rose, 1999, p. 33).

In relation to the network of initiatives to steer innovation in Colombia, it is relevant paying attention to this will to improve higher education. Given that the purpose here is not focused on these programmes but on their enactment, the following briefly describe them in terms of the problems they configured, and the technical amendments implied before going deep into the problem of policy enactment.

The will to innovate by virtualizing. In 2007, the National Minister of Education appointed an association of university leaders called 'E-Learning 2.0' in order to develop a proposal to transform classrooms into online programmes for higher education. This initiative was a response to a wider need in Colombia regarding national guidelines on E-learning. The document 'Methodology to transform classrooms to online programs' (NME, 2007) became a useful tool for the appointed set of higher education institutions participating in the early stage of the project. However, this methodology also became widespread through the country, applied by many other institutions as a guideline for designing online programs. As a conceptual and methodological framework, this programme later became a platform for a broader strategy named the National Strategy for E-Learning (NME, 2014). This 'Methodology' was allocated, not only for expanding coverage of online academic programmes, but also to become an E-Learning Policy, a perceived need for more than a decade in Colombia and in other Latin American countries (Rama, 2013). In terms of a will

for educational institutions the motto could be translated as *'You shall learn to virtualize academic programmes'.*

The will to innovate by training. In 2008, the National Minister of Education formulated a 'Route for ICT appropriation to professional teacher development' (NME, 2008) outlined as a staggered process. Embedded in a framework of competences, this route was designed as a progressive development, starting from an initial level –or personal appropriation stage– and moving into a professional appropriation stage. These levels were structured as a set of competences (pedagogical, communicative, and technical) that every teacher should develop in order to innovate and transform her educational practice. Just like Methodology (NME, 2007), this programme was equally significant at a national level, to the extent that in 2013 an updated version was released as 'ICT competences for teacher development' (NME, 2013). This document expanded and defined in more detail the set of competences to develop, including two additional competences: management and research. As an attempt to render technical (Li, 2007) the problem of ICT for innovation, a pentagon of five competences was deployed, including for each competence three different levels of appropriation. In terms of a will for educational institutions the motto could be translated as *'You shall learn to train teachers and students in ICT competences'.*

The will to innovate by planning. In 2007, the National Minister of Education started a program to enhance and support the formulation of ICT policy plans in higher education institutions. This initiative was motivated by a national diagnosis showing that less than 50 per cent of higher education institutions had a plan to integrate technology for educational purposes (Osorio et al., 2011). The project called PlanEsTIC (NME, 2008) was designed to support more than 100 higher education institutions for the formulation, implementation and assessment of those plans in seven regions of the country where the project was allocated. This project settled installed capacity within institutions, appointing leaders and teams for leading ICT policy plans. Although the Methodology (NME, 2007) made explicit leadership and organizational dimensions, PlanEsTIC set conditions to appoint or strengthen units that led ICT integration in higher education institutions. In terms of a will for educational institutions, the motto could be translated as *'You shall learn to plan strategically ICT integration according to your own vision'.*

The will to innovate by producing open resources. Since 2005, the National Minister of Education started a conceptualization stage related to the production and management of digital education resources. The aim was to steer the country toward a massive production of digital education resources. In 2006, the National Minister of Education achieved a more accurate definition for a digital resource in education, which was ambiguous at that time. This effort to conceptualize steered a mobilization from institutions to design, catalogue, and manage their own digital resources. Similarly to the programmes described above, this initiative later became more defined and structured, turning into a National Strategy for Digital Educative Open Resources (REDA, 2012). In terms of a will for educational institutions the motto could be translated as *'You shall learn to design open digital resources for education within your institution'.*

The will to innovate by researching. A more recent initiative was called RENATA. It was originated at the Ministry of ICT but was also later linked to the Ministry of Education and the national research funding for research (COLCIENCIAS). RENATA is a national network for research. Compared to the previous programmes, which are articulated to the National Systems for Innovation in Education, RENATA is integrated with the National System of Science, Technology and Innovation. From a more technical viewpoint, RENATA is a platform that aims to support collaborative projects between researchers and other academic staff from different higher education institutions. Moreover, the institutions subscribed to RENATA can hold academic activities and share information for developing research projects. Professors and researchers are expected to master this platform in order to promote its use for developing academic projects. In terms of a will for educational institutions the motto could be translated as *'You shall learn to use technology for research and knowledge production in your institution'.*

The following figure illustrates the set of initiatives that historically configured this will to innovate in Colombia. On each initiative ICT for education has been problematized and rendered technical in different ways. In other words, this will to improve (Li, 2007) is an end with various means:

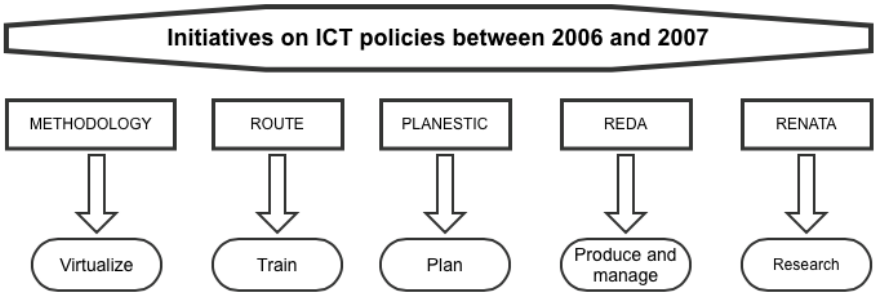

Figure no. 1 Colombian initiatives on ICT policies 2006-2007

All in all, these five programmes belong to a governmental effort to innovate with ICT under the motto of improving access and quality in education throughout the country (UNICEF, 2014). Nevertheless, what the current government has called as the National System for Innovation was an effect of sustained interest and participation from institutions. Although the different governments in power allocated experts, funding and regulations during the period described above, it is very important to highlight the role of bottom-up mobilizations as expression of the will to innovate with ICT. Therefore, a remaining question is how this will is enacted within higher education institutions. If the global and national debate in contemporary education policies is underpinned on change and leadership (Fullan & Scott, 2009) there is a need to understand how such discourses operate. As Shore & Davidson (2007) state, an ethnographic approach should lead us to answer how discussions on university reform are enacted in concrete practices.

Research context

In order to understand what relevance and features have the enactment of ICT policies for innovation in Colombian higher education institutions, this section draws on findings from a broad research that explored the enactment of ICT policies in a set of higher education institutions. For that purpose, the approach implied the use of interviews, focus groups, participant observations and document analysis in seven institutions. The research had two stages, which enhanced the comprehensive strategy. The first was an exploratory stage trying to understand how these institutions have problematized the integration of technology for innovation in education. A strategy

that was common to all of the institutions consisted of the appointment of a team to lead those strategies (ICT units as I call it in this paper).

In a second stage, more attention was paid to practices of ICT units. Indeed, these special units in charge of ICT leadership were found as relevant, and further research was needed to understand their practice and nature. Thus, a more deeply approach to these ICT units was achieved by attending strategic meetings and elaborating case study reports. The following analysis and discussion belong to the findings from that later stage, and aim to understand how leadership practices within higher education institutions elicit a deep understanding of the enactment of ICT policies.

Special units leading ICT policies within institutions

As Ball et al. (2012) claim, context matters and should be taken seriously in any policy enactment analysis. Within the study, one of the first findings was the allocation of special units in charge of leading ICT integration. These units became the focus of analysis given the relevance for understanding policy enactment practices. It is worth saying that these teams have not been studied deeply in their practices, i.e., their nature, function and possibilities for action. In the literature of ICT integration for education these organizational settings have remained underexplored. Certainly, most studies refer to IT support teams, and recently to the field of ICT governance in higher education (Balocco, Ciappini & Rangone, 2013). Recent approaches have argued the relevance of studying ICT leadership practices through the analysis of these units (Cifuentes & Vanderlinde, 2015) but is evident the need for further research on this regard. In the present study, three aspects were relevant to highlight:

As a first characteristic, these units go beyond technological support, a typical service provided in many educational institutions (i.e. IT support). Instead, these units are in charge of the pedagogical integration of ICT, so improving teaching and learning through technologies is the main concern. Indeed, at least three different roles are present in these teams, i.e., a technological role, a pedagogical role, and a planning or financial role (Cifuentes & Vanderlinde, 2015).

A second feature is the diversity of designations for these units. Attending to the position they have in organizational charts, some of them are designated as centres for support in technological innovation,

others simply as units for supporting teaching and learning with ICT. This work names them 'ICT units for pedagogical support' (ICT units hereinafter). However, this is a provisional designation for analytical purposes.

A third feature is their position and identity within the organization. The fact that they exist is indicative of institutional interest to promote a pedagogical approach in teaching and learning processes, beyond technical support. More precisely, these units are recognized as leading innovative education with ICT, which implies a singular nature and scope for intervening within the institution.

Analysis

Four features of enacting ICT policies within institutions

Along the research analysis, a further question was posed on the role of these units to enact ICT policies. In other words I asked why are these ICT units relevant for understanding enactment of ICT policies in higher education institutions. Four features can be considered in this regard, highlighting the connection with the five initiatives described above.

Feature 1. In these units knowledge is centralized and at the same time distributed

Although many educational institutions allocate technical support services, the units in charge of leading ICT for educational processes have a different configuration and function. The task of these units is not circumscribed entirely for technological maintenance within the institution as it is expected from an IT support service. On the other hand, the fact that they exist suggests the will from head directives to work on this field. Certainly, these ICT units are appointed with a specific purpose, i.e., promote ICT integration for innovative education.

As already said, projects like Methodology (NME, 2007) or PlanEsTIC (NME, 2008) provided guidelines for higher education institutions defining key members on these units. Thus, roles such as pedagogical, technological, organizational, communication, or design were all appointed as basic members that should be part of the team that led ICT integration on each institution. An inevitable side effect from those guidelines was the replication of roles (functions and scope) within each institution. Thus, technological support will find his double

in an IT support unit; the pedagogic role in a Faculty (or Department) of education; the organizational role in Vicerectories or in planning and administration offices (including topics such as quality assurance); the graphic or visual designer can also have a counterpart in departments of communication and design. Consequently, conflict between units sharing the same level of functions is a common issue, given that knowledge is to some extent replicated.

On the other hand, the unit is granted a particular knowledge regarding educational innovation. Therefore, neither an IT support unit, nor a department of pedagogy, nor a planning unit can compete with the expertise and the aggregate knowledge located in these units. As a result, these units have accumulated a 'know-how' regarding pedagogic tutoring, instructional design, learning assessment, educational informatics development, financial modeling and staff recruitment for online programmes, etc. This know-how is not easily performed outside their own situated practice. Certainly, one of the key findings from the above-mentioned study is the need for documenting practices, procedures and strategies for making the unit visible inside and outside the institution, but also as a tool for critical self-assessment.

Feature 2. These units are spaces for articulation and translation

Recent studies have criticized the idea of a linear implementation of education policies (Ball, 2000; Honig, 2006; Koyama & Varenne, 2012), embedded in an instrumental and technical rationale, i.e., the transmission of a message (policy) to a receptor (user) that is expected to interpret the message appropriately. For that reason, policy translation has emerged recently as a field of study, in particular analysing how certain discourses (e.g., pedagogies, policies) are enacted in educational practices (Fenwick, Edwards & Sawchuk, 2011).

ICT units analysed in this work are singular spaces for translation of education policies, in this case, related to ICT integration in education. When considering all the initiatives mentioned above regarding the will to innovate, these units are in charge of translating each one of them: what does it mean to innovate with ICT? How should a competence in ICT be understood? How could it be developed in academic staff? How to produce and manage a digital resource for a particular discipline? All these are examples of non-linear translations. In fact, in such practices they show that formulating only an official

policy document will not solve all the sorts of problems posed in educational contexts (Ball, 2000).

Policy translation considers historical and material conditions as determinant instead of simply transporting a message from one place to another (Fenwick et al., 2011; Ball, Maguire & Braun, 2012). Certainly, that is one of the differences between interpretation and translation. The former is related to the effort of understanding the meaning from a received policy (What does this policy want us to do?); the latter relates to an activity that steers new ways of creatively enacting that policy, even distorting or recoding a received policy (Ball et al., 2012). From the empirical study, different practices of translation were allocated in these ICT units. Regular meetings defining concepts, designing strategies, creating different meanings to improve innovation in teaching practices, all these were policy translation practices beyond 'implementation'.

Feature 3. These units operate on an incremental functionality

The teams in charge of leading ICT integration in higher education institutions are the place where increasingly the will to innovate is allocated for its enactment. Put differently, these units enact such will by rendering technical (Li, 2007) the sort of problems posed by policies (Ball, 2000). As the multiple case study revealed, these units are the venue for allocating all the initiatives deployed since 2007 in Colombia, i.e., to transform online programmes, to train teachers in ICT competences, to plan a strategic ICT integration, to produce or manage digital educational resources, or to foster academic staff for researching with ICT. In this regard, the complexity of functions in these teams does not remain constant. Units do not maintain the same level of demands. In fact, those initiatives can overload these units, pushing them to specialize, update, but also to solve problems on demand.

A major example is teacher training in ICT competences. As it was already mentioned, in 2008 higher education institutions were provided with a set of ICT competences that should be a framework for teacher training (technological, pedagogical and communicative). Considering policy translation (Feature 2), many of these institutions designed their own route for teacher training creatively, tailoring the framework within a particular context. In this endeavour, ICT units were key mediators (Ball, 2000). In 2013 two additional competences (management and research) updated the new pentagon of five

competences that institutions were steered to apply on teacher training programs. One year later, the national Minister of Education launched another teacher training programme that actually included a sixth competence: design of learning environments (NME, 2014).

In short, between 2008 and 2014 there was an increasing demand on teacher training underpinned by a set of three competences that later on were expanded to six competences. One of the implications was related to structuring and developing teacher-training programmes on each institution. In this example, it is clear that the sort of demands on these ICT units is not necessarily stable; they become complex or transform over time. All in all, those demands require a particular leadership able to address strategies in a creative way.

Feature 4. These units are politically laden

A common belief about the nature and scope of these units considers that only pedagogical and technological matters belong to their practice. This common belief is found both in the literature on ICT integration in education, but also when exploring the organizational foundations of these units. Thus, ICT integration enhances teaching and learning underpinned by an educational change rationale (Tearle, 2004; Watson, 2006). ICT units are appointed to undertake this 'pedagogical mission' within institutions that rely on them to enact such educational change. Nevertheless, a deeper understanding of their practice also reveals a close relation to political issues. Indeed, policies are intertwined in academic, organizational and administrative issues, affecting ICT integration as well. A broad definition of policy is necessary here to understand the politically laden nature of these ICT units.

Policies can be conceived as artefacts that represent technical and symbolic structures, supporting the daily work of a leader to influence the practice of the community of professionals under a particular command. In short, a system of practice describes the dynamic interplay of artefacts and tasks that informs, constrains and constitutes local practices (Halverson, 2003). Artefacts address directionality of policies, circulating and reinforcing what is to be done. In other words, artefacts are microtechnologies of policies (Ball et al., 2012), and thus policies become technologies for governing populations (Foucault, 1991; 2007).

Considering this extended definition, one can consider all the set of institutional policies that constrain and enhance the practice

of different units within the institution. In the research project, two types of institutional policies were determinant for ICT units: funding policies and the statute for academic staff. Usually, educational innovation with ICT focuses on technological aspects (access, bandwidth, etc.) or pedagogical aspects (instructional design, learning assessment, etc.). However, it is important to highlight the organizational dimension supporting those innovations in relation to institutional policies mentioned above. Hence, less chances for innovation and even reluctant staff will arise if they do not have allocated time for developing innovative projects; similar issues will arise if the salary system is not adapted for online programmes, i.e., low payment despite a great amount of time invested in teaching online courses.

Agonistic relations from different groups are common within the institutions. For instance, young generations (both students and teachers) highly skilled in new technologies, versus older staff with low ICT skills. Such 'digital divide' belongs to discursive formation (Foucault, 2002) that shapes social interactions, producing 'digital natives' versus 'reluctant to use technologies'. Indeed, such discursive formation produces new struggles and agonistic relations that were absent before ICT integration.

In this regard, a persistent issue for ICT units consists in coping with teacher reluctance to use technology. Among the findings on ICT unit practices, the need for understanding reluctant attitudes to technology through diagnosis and monitoring was evident. Equally relevant was the concern on how to intervene through different strategies in order to overcome such attitudes. Certainly, this is a problem of governmentality, i.e., a relationship between free subjects and techniques for governing them (Dean, 2010) in which counter-conducts from reluctant staff to use technology is a lingering concern. In this regard, ICT units problematize (Li, 2007) such attitudes in a more refined way. Thus, against the common belief within institutions about the 'lack of motivation' in academic staff for integrating technology, the practice of these units highlights other critical aspects such as regulations (teacher statute), funding (salary wages) and cultural issues (different communities of disciplines) as determinants for understanding and intervening with reluctant teachers. All in all, innovation with ICT involves political issues that in the research process were evident when paying attention to the practice of ICT units.

Discussion and conclusions

In Colombia ICT integration has been recently linked to university reform. For instance, a recent proposal for a public policy in higher education –'Agreement 2034' led by the Council of Higher Education– highlights ICT as key for educational transformation, even as a pump for higher education reform (CESU, 2014). This document reveals the acceptance of e-learning as an alternative modality in higher education:

> *A report about the active programs in the National System of Information in Higher Education reveals that the increase on the number of new programs in the traditional modality is arithmetic, whilst the increase on the number of new online programs is geometric, with a high probability that in the next semesters there will be more online than traditional programs. According to calculations from the National Minister of Education, around 85 per cent of higher education institutions in the country already have online platforms, LMS, or IT support for online programs; this becomes a significant factor to increase the number of these programs. (CESU, 2014, p. 115)*

It can be asserted that whenever an educational reform is proposed nowadays, ICT plays a key role. Perhaps this reform proposal is not the first in Colombian history (Orozco, 2013) nor represents the best of the possible reforms; however, this proposal indicates both a governmental and an institutional mobilization in Colombia that is consisted with the will to innovate described above. In this context, the analysis of ICT units should be highlighted because they are key to understand not simply 'implementation' of ICT policies. As shown previously, they enact the will to innovate struggling with different issues as those described above. Drawing on the research on these ICT units and their practices, a close relation to the debate on university reform arises. In other words, the practice of ICT units is linked to the discourse on change in the institutions they belong to.

Regarding educational change in higher education, Fullan and Scott (2009) mention that 'universities, with all their brainpower, are much more resistant to change than many other institutions. Universities are great at studying and recommending change for others, but when it comes to themselves, that is another matter' (Fullan & Scott, 2009 p. 9). ICT as a pump for innovation has become a way to exert pressure for educational change, and ICT units are the location to steer that change. Nevertheless, following to Fullan and Scott critical stand,

one should ask if ICT units are coherent in transforming educational practices beyond any rhetoric of change.

Certainly, in the analysis of these units some of their practices were related to a managerial and technical rationality. Under a managerial rationality, quality assurance systems and accountability become the aim to achieve for ICT units. For instance, ensuring quality standards in courses, following up assessment of academic staff to verify goal achievements, fill in formats for institutional quality processes, etc. All in all, these daily practices of monitoring and inspecting become the nature and scope for some of these teams, embedded on institutional cultures that steer such practices. An additional feature under this rationale is profitability, i.e., given that some of these teams are business units, they depend on external sources for sustainability. Therefore, designing and offering training programs are activities committed to cost-effectiveness not necessarily linked to local needs for education.

Cowen (2009) has referred to this managerial rationality in the internal governance of contemporary universities, enacted through the allocation of quality insurance systems, and accountability practices for administrative and academic staff. This 'new public management' and institutional performance rationale (Ball, 1998) also includes discourses of efficiency that have to be enacted through practices of managerialism in educational institutions (Teelken, 2011; Short et al. 2013). Under a technical rationale, these units lead instructional approaches to support technological literacy in faculty members and students. Thus, discourses on 21st century skills or the 'innovative teacher' are the end to achieve by technical means.

Although these managerial and technical practices are embedded in the nature and scope of ICT units, it is necessary to study more deeply these underexplored teams beyond their technical and managerial practices. In this work the capacity of ICT units to enact discourses of change has been shown, which is embedded in contemporary ICT policies for higher education. The added value when studying the practice of these units is that it can shed light in the way higher education institutions drive or even resist to change. In this regard, these units are potential spaces for critical debate fostering transformation in education; at the same time, they also take the risk to support technocratic rationales in a time of new managerialism (Ball, 1998). Further research should start considering these enactment zones

as key for the analysis of contemporary education policies in the context of Latin America.

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3.1.2 CRÍTICA E INNOVACIÓN CON TIC EN EDUCACIÓN SUPERIOR

Abstract

Partiendo de una investigación sobre la apropiación de políticas educativas en TIC, este trabajo muestra que si bien la postura crítica del docente ha sido poco explorada en educación superior, resulta significativa para entender su práctica en relación con las condiciones que institucionalmente se ofrecen para la innovación con TIC. La pregunta que se plantea este artículo es de qué manera el posicionamiento crítico de docentes universitarios permite repensar las barreras para innovar con TIC. Los hallazgos acá presentados utilizan el enfoque sobre barreras de primer y segundo orden para analizar las posturas críticas de los docentes; de igual forma, este trabajo cuestiona la división entre docentes entusiastas y resistentes al darle voz a la postura crítica de docentes universitarios. El trabajo concluye preguntándose por el alcance y las limitaciones que tienen las políticas TIC para atender las barreras de primer y segundo orden. Este artículo contribuye al debate sobre un área aún poco desarrollada en la literatura sobre innovación con TIC en educación superior: la postura crítica y su relación con la política educativa.

Palabras claves: innovación educativa; barreras para innovar; educación superior; postura crítica, políticas TIC

Introducción

El estudio sobre las barreras que limitan la innovación docente con tecnologías ha tenido un desarrollo considerable en la literatura desde hace más de dos décadas (Brickner, 1995; Cuban, 1993; Ertmer, 1999). Refiriéndose a la necesidad de investigar dichas barreras para el cambio, Ertmer plantea que (1999) "aunque no podemos predecir el número, tipo o el orden en el que los profesores se van a enfrentar a estas barreras, el hecho de que ellos vayan a experimentar un gran conjunto de ellas está casi garantizado" (Ertmer, 1999 p. 50).

El estudio sobre las barreras ha sido escaso a nivel de educación superior, quizás con algunas excepciones que establecen comparaciones con la educación básica y media, donde se ha concentrado el análisis (Rogers, 2000). Para comprender por qué y cómo un docente de educación superior se resiste o se apropia de la tecnología para apoyar su quehacer, aún hace falta desarrollar análisis situados en este contexto. Este trabajo responde a dicha necesidad pero evita ser simplemente descriptivo, enfocándose en mostrar las opiniones de los docentes sobre la incorporación de tecnologías y las

barreras que enfrentan. En concreto, la pregunta sobre la que gira este escrito es de qué manera la postura crítica de docentes universitarios permite repensar las barreras para innovar con tecnologías de información y comunicación (TIC).

Este trabajo se estructura en dos partes. La primera se concentra en el análisis de las posturas críticas de docentes universitarios hacia el uso educativo de la tecnología y las condiciones institucionales para la innovación. Para estructurar dicho análisis, se utilizó lo que en la literatura se denominan barreras de primer y segundo orden para la innovación con tecnología.

En la segunda parte se discuten las implicaciones que tiene el análisis de esta postura crítica de los docentes para comprender la compleja interacción que se da entre las barreras de primer y segundo orden. Producto de ese análisis y en términos de contribución, este escrito determina el alcance y posibles limitaciones que tiene el desarrollo actual de políticas de incorporación de TIC para atender las barreras de primer y segundo orden.

Primera parte: Entendiendo la postura crítica

La incorporación de las TIC en educación superior resulta ser un aspecto cada vez más desarrollado desde la dimension estratégica y de planeación en las instituciones (UNESCO, 2013). Lo anterior implica que muchas de ellas han desarrollado políticas de incorporación de TIC que se concretan en planes y programas que las integran a diferentes niveles en las instituciones educativas (Hinostrosa y Labbé, 2011), trascendiendo la tendencia común, relacionada con dotar de infraestructura a una institución educativa. En este sentido, las políticas TIC orientan cada vez más los planes estratégicos hacia las inclusión de elementos curriculares y de desarrollo profesional docente (Kozma, 2008). Este giro hace necesario entender cómo dichas políticas son apropiadas en este nuevo orden, así como los efectos que ellas generan localmente en las instituciones educativas.

En Colombia se han venido desarrollando diferentes iniciativas sobre políticas de incorporación de TIC para promover la innovación educativa. Cabe nombrar entre ellas las tendientes a virtualizar programas, a formar docentes en competencias con TIC, a desarrollar recursos educativos digitales, entre otros. Uno de esos programas nacionales, denominado PlanEsTIC, promovió la formulación e

implementación de planes estratégicos para incorporar TIC en procesos educativos a nivel de educación superior. Dicho programa trabajó con más de 100 instituciones en las que además de formular e implementar dicho plan, se consolidaron equipos de trabajo para el liderazgo de la incorporación de TIC (UNICEF, 2014).

Este trabajo recoge resultados de una investigación más extensa que se desarrolló en Colombia para entender el modo en que las instituciones de educación superior se apropian de las políticas TIC. Dicha investigación no pretendía evaluar el impacto de algunos de los programas desarrollados en el país, sino entender el modo como el conjunto de iniciativas -nacionales e institucionales- eran apropiados y tenían efectos para el cambio educativo con el uso de las TIC. Una fase exploratoria inicial llevó a estudiar el modo como algunas de las instituciones incorporaban las TIC para el desarrollo de sus procesos educativos.

Teorías como la difusión de la innovación tecnológica (Rogers, 1995) categorizan la forma en como las personas innovan, refiriéndose a innovadores, seguidores e incluso rezagados (Rogers, 1995). En este sentido, uno de los aspectos relevantes en esta primera fase de acercamiento a las instituciones fue el modo en que los docentes se posicionaban frente a la tecnología, sus usos educativos y las condiciones para innovar con ella. En esta etapa exploratoria dichas posturas se identificaron en términos de *entusiasmo* y *resistencia*. Así, docentes entusiastas eran aquellos que eran proclives a usar tecnología en sus ambientes de aprendizaje, y estaban dispuestos a participar de los programas que la institución desarrollara para innovar con el uso de tecnología. Por otra parte, los docentes resistentes eran aquellos que tenían algún tipo de aversión por el uso de la tecnología. Si bien estos docentes podían ser usuarios de los diferentes programas de formación y acompañamiento en el uso de tecnología, les era difícil trasladar dichos aprendizajes, adquirir las competencias en TIC que se demandaban, o de manera más general percibir un valor agregado en este tipo de formación.

Esta división entre docentes ‘entusiastas y resistentes’ resultó útil en la fase exploratoria para describir dos formas diferentes de relacionarse con la tecnología; de igual forma, para entender cómo los docentes percibían las estrategias de incoporación de tecnología en una institución. Sin embargo, el rumbo de la investigación llevó a complejizar e incluso cuestionar lo adecuado o inadecuado de esta

clasificación. Dicha división fue valiosa como punto de partida, pero resultaba muy simple para describir fenómenos tan complejos como la apropiación de la tecnología en procesos educativos. Una vez reconocida esta complejidad, la investigación desarrolló una fase posterior basada en estudios de caso. Lo que a continuación se describe hace parte de una de las líneas de reflexión que se desprendió de esa segunda etapa.

Barreras para la innovación con TIC en educación superior como lente de análisis

En diferentes teorías sobre el cambio educativo, las resistencias que impiden o limitan dicho cambio son entendidas como barreras, esto es, factores que afectan los esfuerzos de innovación de los docentes (Brickner, 1995). Desde la década de los 90 y hasta la actualidad se han desarrollado un gran número de investigaciones orientadas a la identificación y clasificación de dichas barreras desde diferentes visiones y marcos teóricos de análisis. Pajo & Wallace (2001) establecen tres categorías de barreras: personales, actitudinales y organizacionales. Entre las personales se mencionan tiempo, esfuerzo y habilidades. Groff y Mouza (2008) agrupan las barreras en factores legislativos, del nivel de la escuela o distrito, asociados al profesor, asociados a la tecnología para mejorar el proyecto, asociados a los estudiantes y factores propios de la tecnología. Por su parte, Brinkerhoff (2006) clasifica las barreras en cuatro categorías: recursos, apoyo administrativo e institucional, experiencia y capacitación y factores actitudinales o de personalidad.

Barreras de primer y segundo orden. La expresión barreras de primer y segundo orden proviene de la clasificación de los procesos de cambio según Cuban (citado en Brickner, 1995). La poca apertura de un docente al cambio y a la innovación tecnológica en educación es un ejemplo de lo que Brickner (1995) define cómo barreras intrínsecas. Por otra parte las limitaciones externas al docente son denominadas de primer orden. En resumen, las barreras de primer orden o extrínsecas están relacionadas a situaciones externas al docente, y las barreras de segundo orden o intrínsecas son las relacionadas con cambios de tipo personal.

Ertmer (1999) clarifica aún más la diferencia indicando que las barreras de segundo orden están arraigadas en las creencias de los

docentes acerca de la enseñanza y el aprendizaje, mientras que las de primer orden las describe en términos de recursos, externas al dominio del docente y sobre las que este no tiene control. Debido a que las barreras de segundo orden son internas al docente, podría considerarse la posibilidad tácita de tener el control sobre ellas. Sin embargo, esto no siempre sucede de manera consciente y sencilla; incluso se considera que las barreras intrínsecas ocasionan más dificultades que las barreras de orden extrínseco (Ertmer, 1999).

Para efectos de este trabajo, la clasificación referida a las barreras de primer y segundo orden resultan ser el marco de análisis más apropiado, pues más que plantear dualismos (mundo interno/externo, agente/estructura, entre otros) subraya la importancia del interjuego entre factores materiales, humanos y no humanos que condicionan la práctica docente. En otras palabras, plantea la necesidad de analizar –desde un enfoque materialista– las tensiones que se dan entre el docente innovador y las condiciones propias del contexto, como lo puede ser la política institucional para la innovación con TIC.

Postura crítica y barreras para innovar

El estudio sobre las barreras para la innovación con tecnologías en contextos educativos se ha orientado –y limitado– más hacia su identificación y categorización. Sin embargo, reconocida como una necesidad desde la literatura, la apuesta en este trabajo consiste en entender el interjuego entre barreras de primer y segundo orden (Ertmer, 1999). Una forma de traducir este problema es la compleja interacción que se da entre las políticas de incorporación de TIC y el modo como los docentes se posicionan frente a las mismas, un ámbito muy poco explorado al menos en educación superior. Usando como lente de análisis las barreras de primer y segundo orden, es posible entender las posturas críticas que surgen cuando se establecen diálogos con docentes que son presionados al cambio educativo.

La literatura referida a la integración con TIC centrada en el rol de los docentes ha hecho referencia permanentemente al tipo de creencias (Levin & Wadmany, 2006; Chen, 2008; Ertmer & Otternbreit, 2010), actitudes (Liu & Szabo, 2009) y percepciones (Hutchison & Reinking, 2011) que dan lugar a la aceptación o no de la tecnología en su propia práctica. Sin embargo, el análisis de las posturas críticas de los docentes enfocadas hacia el uso de la tecnología y las condiciones

para hacer posible la innovación no han sido estudiadas a profundidad. Como se dijo anteriormente, los estudios se concentran en ver grados de aceptación y adopción tecnológica, pero no en entender las posturas críticas de los docentes detrás de esa adopción o negación, comprender las causas y plantear alternativas.

La literatura sobre pensamiento crítico ha desarrollado diversas definiciones, principalmente desde la filosofía, la psicología y la educación (Natale & Richi, 2006). Como objeto de análisis la crítica ha sido estudiada como la habilidad o capacidad a adquirir por medio del uso de la tecnología. Diversos estudios se han concentrado en analizar cómo desarrollar pensamiento crítico a través del uso de tecnología en los estudiantes (Newman, Webb & Cochrane, 1995; Jonassen, 1996; McMahon, 2009). Pese a esa diversidad de orientaciones, a nivel de educación superior su definición es aún incierta e intuitiva (Fox, 1994), por lo que aún hace falta lograr mayor claridad sobre lo que es el pensamiento crítico en este contexto educativo (Barnett, 1997) y los usos que le dan los académicos a dicho concepto (Moore, 2013).

Teniendo presente que la investigación de la cual partió este escrito tenía interés en las políticas de incorporación de TIC, resulta relevante mencionar un estudio enfocado en la política educativa. Ball et al. (2012) analizan el modo en que los docentes se posicionan hacia las políticas institucionales. Según los autores, los docentes en una institución: "están posicionados de manera diferencial en relación con la política en una variedad de sentidos. Ellos está en diferentes momentos de su carrera, con experiencia acumulada diferente. Ellos tienen diferente cantidades y tipos de responsabilidad, diferentes aspiraciones y competencias" (p. 69).

Dentro del conjunto de posturas hacia la política que pueden emerger, Ball et al. (2012) plantean una tipología de actores dentro de los cuales se encuentra la postura crítica. Dicha postura se plantea en términos de inconformidad hacia la política, pero según los autores resulta igualmente útil por su contribución a la búsqueda de sentido y cuestionamiento de las nuevas políticas que se proponen en una institución (Ball et al., 2012). Otros estudios en educación superior se refieren a la postura crítica no en términos de inconformidad sino de escepticismo (o sospecha), una capacidad de autoreflexividad, o la adopción de una postura activa y ética hacia temas sociales, políticos o que pueden cuestionar el 'establecimiento académico' (Moore, 2013). Esta perspectiva de análisis enfocada en la postura crítica del docente

permitió establecer una relación entre las barreras para innovar y las políticas de incorporación de TIC. A continuación, se hace un análisis del tipo de posturas críticas que la fase de análisis permitió identificar; con dicha postura se pretende avanzar frente a la pregunta central de este escrito, esto es, de qué manera la postura crítica de docentes universitarios permite repensar las barreras para innovar con TIC.

Hacia una tipología de posturas críticas

A continuación se presenta un análisis sobre la postura crítica de docentes universitarios en relación a la innovación educativa con el uso de TIC. Como se mencionó al inicio, una primera etapa categorizó a estos docentes como entusiastas y resistentes, pero luego se hizo necesario cuestionar aún más esta clasificación, la cual dejaba de lado la compleja interacción entre barreras de primer y segundo orden. Es importante tener presente que los docentes que participaron de esta investigación hacen parte de instituciones que han desarrollado políticas de incorporación de TIC, tanto institucionales como del ámbito nacional por el Ministerio de Educación Nacional. Ello supone que el ambiente institucional que prefigura su práctica docente estaba permeado en mayor o menor medida, por diversas iniciativas de integración de TIC.

En lugar de partir de una definición teórica u operacional inicial sobre la postura crítica de los docentes –como se ha visto la literatura no es clara en arrojar una definición a este respecto– se construyó una tipología sobre las posturas críticas de los docentes entusiastas y resistentes. Esto quiere decir que a partir de aquellos juicios que ellos hacían sobre el *uso de las TIC en su práctica docente* y sobre las *condiciones institucionales* para su uso, se identificaron diferentes tipos de posturas críticas. Teniendo presente la separación entre docentes 'entusiastas y resistentes', el análisis inicial permitió determinar que las posturas críticas asociadas a las dos categorías mencionadas anteriormente, convergían de la siguiente manera:

En docentes *entusiastas* hacia el uso de la tecnología las críticas se dirigen hacia las herramientas tecnológicas, la actitud de los docentes que no las usaban, y la modalidad virtual de enseñanza. En docentes *resistentes* hacia el uso de la tecnología las críticas se dirigían hacia la infraestructura tecnológica, la modalidad virtual de enseñanza y hacia la brecha generacional entre profesores y estudiantes al enseñar.

Sin embargo, se encontraron divergencias en las posturas críticas que vale la pena señalar, pues ellas permitieron determinar que la división entre 'entusiastas y resistentes' no resultaba pertinente. Como se discutirá posteriormente, incluso la división entre los usos de las TIC para innovar (asociadas a las barreras de segundo orden) y las condiciones institucionales para innovar (asociadas a las barreras de primer orden) también fue cuestionada en este estudio.

Igualmente relevante resultó señalar las distintas posturas críticas existentes en ambas categorías y su compleja relación, con independencia del tipo de actitud que se tratara. En otras palabras, en lugar de forzar relaciones de similitud entre entusiastas y resistentes para cada una de las categorías, nuestro análisis le dio voz a la postura crítica de los docentes para entender la relación que hay entre el uso de las TIC y las condiciones que encuentran para innovar. A continuación se ofrece la tipología de posturas críticas identificada y en la sección siguiente se discute esa compleja relación que en la literatura se ha denominado como barreras de primer y segundo orden. Cabe mencionar que el estudio del cual partió este análisis implicó la realización de grupos focales con docentes de siete instituciones de educación superior colombianas. Los docentes fueron seleccionados según su relación de cercanía o distanciamiento hacia la tecnología para enseñar. El análisis cualitativo de los datos se estructuró desde la codificación axial de categorías (Corbin & Strauss, 2008). Parte de las categorías emergentes de estos grupos focales fueron precisamente las posturas críticas que a continuación se describen.

Tabla no. 1 Críticas referidas al uso de las TIC en su práctica docente

Hacia las concepciones del docente sobre el uso de las TIC	Al menos tres tipos de concepciones son criticadas por los docentes. Por un lado, a que la modalidad virtual no requiere esfuerzo; a que se vea afectado su status quo como docente, y a la brecha que habría entre docentes y estudiantes en relación al conocimiento, uso y apropiación de tecnología, lo cual genera una

	creencia de rezago hacia la tecnología.
Hacia la actitud de los docentes: en este aspecto se encuentran seis matices expresados por los docentes entusiastas	La falta de aprovechamiento de parte de los docentes hacia la oferta de formación en TIC tanto institucional como estatal; el temor del docente frente al uso de la tecnología; la concepción que se tiene sobre la virtualidad. De igual forma, los docentes critican a los colegas que cuestionan sin fundamentos la modalidad virtual; relacionado con ello a quienes por los prejuicios desde su disciplina prejuzgan el uso de la tecnología, y por ultimo, critican la falta de capacidad para innovar de parte de los docentes.
Crítica a la mediación tecnológica	En esta postura se resalta el modo en que la mediación tecnológica dificulta el acto comunicativo. De igual forma, al 'riesgo' que supone para el docente resistente una relación basada en la horizontalidad propuesta desde la tecnología.
Crítica al uso de las TIC desde la perspectiva disciplinar	Bajo un argumento de imposibilidad de virtualizar un curso o programa específico dada la naturaleza de la disciplina, el docente resistente justifica la no integración de las TIC en su campo de formación. Desde esa misma postura se menciona que las TIC son 'periféricas' y no un componente 'esencial' que deba ser incorporado en la propia disciplina.

Hacia las implicaciones para la identidad profesional del docente	Incorporar las TIC supone para los docentes un conjunto de presiones que afectan su práctica pero igualmente su identidad. Las exigencias se dan a nivel profesional. Los diferentes roles que se le exigen y los saberes previos o en los que debe actualizarse; de igual forma, la exigencia se plantea a nivel didáctico al tratar de integrar diseños pedagógicos en el aula y que no representa una tarea sencilla.
A la racionalidad o ideología que sustenta las TIC en educación	Esta crítica se presenta a un nivel más general hacia el campo educativo, y cuestiona por un lado la ideología que hay detrás del modelo de competencias (medibles, estadarizables, comparables) que ha heredado el modelo de educación actual. Bajo esa misma crítica se cuestiona la postura subordinada que ha tenido la Universidad ante las necesidades del mercado, y a nivel cultural el uso de la tecnología como una moda.

Tabla no. 2 Críticas referidas a las condiciones institucionales para innovar

Hacia las deficiencias gestión académica	Referida a las deficiencias que se presentan en el aparato de gestión académica que afectan la dinámica de innovación, así como la falta de apoyo de las autoridades o la falta de

	uniformidad en la estrategia de apoyo; esto es que algunos niveles de autoridad impulsan pero otras no. El apoyo proviene generalmente de niveles superiores pero la línea se rompe en las autoridades de nivel medio.
Hacia a la falta de soporte técnico	De manera concreta se orienta a la falta de este soporte como una condición institucional para facilitar la innovación y a la afectación que esto causa sobre la dinámica académica al innovar con TIC cuando no se da una respuesta eficiente de los equipos técnicos y a la prioridad que se asigna a la atención de las necesidades docentes.
Hacia la falta de reconocimiento institucional	Incorporar las TIC supone para los docentes esfuerzos en diferentes sentidos. Estos esfuerzos no se sienten recompensados (economicamente por ejemplo) o se mencionan desigualdades en la forma de reconocimiento según antigüedad o rango del docente. Uno de los elementos puntuales es la falta de asignaciones de tiempos para fomentar la innovación.
Hacia a la política TIC	El docente entusiasta reconoce la existencia de la política, pero se refiere a ella en términos de su orientación, considerando que están diseñadas para responder más a procesos de implementación tecnológica que

	de apropiación educativa. Por otra parte encuentran una fuerte influencia de políticas externas al país sobre las políticas nacionales o institucionales. Esto significa que no ven con buenos ojos el tomar políticas diseñadas por entes internacionales sin los debidos ajustes a los contextos nacional e institucional.
Hacia la cultura institucional	Esta posición sugiere que por aspectos propios de la cultura institucional la actitud de respuesta positiva del docente a la innovación con TIC se da ante la existencia de una normativa, esto es una percepción de la política como un elemento de coerción para la innovación. Por otra parte siempre en relación a la cultura se apunta a otros roles participantes del proceso de innovación los cuales no cumplen a cabalidad las funciones que deberían lo cual termina afectando la dinámica académica.

Segunda parte: Problematizando las barreras de primer y segundo orden

Los resultados del análisis realizado en este estudio indican que tanto en docentes considerados entusiastas como resistentes convergen críticas relacionadas a barreras de primer y de segundo orden. En la categoría de uso de las tecnologías en la práctica docente para ambos perfiles surgen críticas orientadas a las herramientas tecnológicas, a la actitud de los docentes y a la modalidad de enseñanza con TIC. Es posible denotar aquí una mezcla de barreras de primer y segundo orden en ambos perfiles de profesores. Por otra parte convergen también

críticas a factores bajo el posible control docente tales como las implicaciones para la identidad profesional del docente.

Es importante resaltar que la crítica del docente entusiasta con relación al uso de las TIC está más orientado a factores extrínsecos, lo que podría denotar pocas limitaciones internas, es decir, que las barreras de segundo orden para este tipo de profesor no son evidentes. Incluso cuando se refieren a factores intrínsecos lo hacen en relación a las limitaciones de sus colegas y no a las suyas propias. La convergencia en la crítica obliga a reflexionar sobre la permanente insistencia de la literatura en categorizar a los docentes (Rogers, 1995) lo cual puede llevar a aumentar aún más la brecha entre las categorías y a limitar la interacción entre ambos perfiles. Por otra parte el docente resistente enfoca más su crítica a factores que deben ser superados a lo interno, por ejemplo, las brechas generacionales, la mediación tecnológica, el uso de la tecnología en la disciplina específica o las ideologías del pensamiento que limitan la innovación con TIC. Por tanto en la categoría de uso de las TIC en la práctica docente convergen tanto elementos de primer como de segundo orden, lo cual es un indicador de que las estrategias para abordar y superar las barreras mencionadas no deben ser atendidas de manera individual o con estrategias separadas sino integradas. Lo anterior debería tener incidencia en la nueva generación de políticas para la innovación con TIC que atiendan o se alineen con dicha convergencia.

La segunda categoría de análisis utilizada se orienta a factores y condiciones institucionales que limitan la innovación con TIC. Entre los resultados se denotan elementos de segundo orden relacionados con críticas hacia la actitud docente y hacia una cultura institucional de innovación. Esta mezcla de factores intrínsecos y extrínsecos en ambas categorías y en ambos perfiles de profesores, da cuenta de la compleja estructura de relaciones e interacciones presentes en la integración de tecnologías en educación.

Es precisamente eso lo que en la literatura se ha denominado como un interjuego entre las barreras (Ertmer, 1999), en las que dicha interdependencia hace difícil una separación entre aspectos ‘internos’ y ‘externos’ al docente. Esta perspectiva integral debe también mantenerse cuando se analizan las estrategias institucionales para superar las barreras de la integración de TIC. El estudio de formas para superar barreras de primer o de segundo orden sin considerar las otras

podría llevar al desarrollo de propuestas sesgadas, por ejemplo hacia la dotación de infraestructura pero que quedan incompletas en su concepción estratégica.

En este punto es necesario resaltar que las políticas o planes de incorporación de TIC han considerado muy superficialmente estrategias para superar barreras de segundo orden. Estas han estado orientadas principalmente a procesos de formación docente pero muchas veces de manera implícita o superficial. Habría que preguntarse entonces por la relación que existe entre las barreras para innovar y las políticas de incorporación de TIC.

En este estudio definimos la política de incorporación de TIC como el conjunto de estrategias que se diseñan para superar las barreras que dificultan la innovación. Traducida en planes estratégicos para incorporar tecnología en instituciones educativas (Vanderlide, 2011; Osorio et al. 2011), dichas políticas orientan sus esfuerzos no solo al desarrollo de infraestructura y el apoyo técnico, sino que incluyen aspectos curriculares, desarrollo profesional docente, desarrollo de contenidos. Dichos planes estratégicos plantean una visión de largo plazo sobre la integración de las TIC en la institución (Vanderlinde, 2011).

Anteriormente se indicó que las barreras de primer orden para el cambio son las relacionadas con factores extrínsecos al docente. Ermert (1999) reafirma que las barreras de primer orden son extrínsecas o externas a los docentes y están relacionadas generalmente a los recursos que se disponen en las instituciones[i].

Tomar como referencia las políticas institucionales para la innovación con TIC permite ejemplificar el interjuego entre barreras de primer y segundo orden. Si bien es cierto desde el enfoque de Ermert (1999) las políticas son un componente externo al docente o de primer orden, a nuestro criterio esto ha sido en parte causante de que las políticas atiendan solamente factores del mismo nivel, es decir, factores externos al docente. Podría decirse entonces que las políticas para la innovación con TIC no suelen incluir estrategias o acciones concretas para atender limitaciones clasificadas en el orden intrínseco[ii]. Las barreras de segundo orden o intrínsecas son mencionadas recurrentemente en múltiples investigaciones pero es relativamente poca la investigación que se ha orientado a encontrar alternativas para atenderlas o superarlas. Por otra parte es necesario considerar las particularidades del contexto y del docente, esto es, la posibilidad de

que existan casos en los cuales el docente no experimente barreras de segundo orden, o por lo menos no sean estas las que causen una restricción a la innovación.

En síntesis, las estrategias para superar las barreras se han desarrollado principalmente en el campo de la inversión tecnológica, el desarrollo profesional y el apoyo técnico siendo congruente con las tendencias en las políticas para la innovación con TIC en el mundo (Kozma, 2010). Sin embargo, esto plantea un interrogante en relación a cómo dichas políticas se ponen en práctica localmente, para vencer las barreras que dificultan la innovación. Resulta necesario entonces volver sobre la pregunta inicial –de qué manera el posicionamiento crítico de docentes universitarios permite repensar las barreras para innovar con TIC– y desde ahí cuestionar los alcances y límitaciones de las políticas TIC para atender dichas barreras.

Las políticas TIC: alcances, limitaciones y perspectivas futuras

A partir del anterior análisis se ha evidenciado que existen diferencias en la profundidad y alcance de las posturas críticas. Uno de los hallazgos en relación a la postura crítica es que hay diferencias en criticar una falla tecnológica o un modelo teórico, pedagógico o comunicativo. En efecto, el segundo caso supone un nivel mayor de experiencia, interacción y reflexión con la tecnología para enseñar; el primer caso en cambio se suele referir a un acercamiento menos reflexivo hacia ella.

La intención inicial en este estudio fue la de diferenciar la postura crítica de entusiastas y resistentes, siendo los primeros quienes aparentemente ejercerían una crítica más cualificada. Por el contrario, los resultados indican que el docente inicialmente identificado como resistente no necesariamente resulta crítico e incluso su postura puede llegar a estar basada en aspectos superficiales; esto es, en críticas basadas solamente en fallas tecnológicas pero que no se refieren a componentes más sustanciales como el currículo. La crítica puede ser vista entonces como una manifestación de las diferentes condiciones materiales que pueden limitar el cambio (regulaciones institucionales, acceso tecnológico, oferta formativa, etc.) así como también ser una expresión de las creencias y temores del docente al innovar.

El diálogo con los docentes fue la base para entender su postura crítica. En este escrito interesó entender la postura que los docentes

tenían frente al *uso de las TIC en su práctica docente*, y las *condiciones institucionales* para su uso. En ese ejercicio no nos enfocamos en la validez o consistencia de los juicios que ellos hacían –visión racionalista sobre el pensamiento crítico– sino en identificar las posturas y el tipo de reflexiones que se desprendieron en esos diálogos. En otras palabras, se buscó entender *cómo la tecnología y la política logran ubicar o posicionar a los sujetos de diferentes maneras*. Esta tipología de posturas críticas nos permitió cuestionar la división inicial entre docentes entusiastas y resistentes, y así también lo hicimos en la segunda parte con relación a las barreras de primer y segundo orden.

Finalmente surge otro cuestionamiento sobre la relación que existe entre las barreras para innovar y las políticas de incorporación de TIC, discutiendo al final cuál es el alcance y las limitaciones que tienen las políticas TIC para atender las barreras de primer y segundo orden. Fruto de las anteriores reflexiones en este escrito logramos conceptualizar las políticas de integración de TIC como el conjunto de estrategias institucionales utilizadas para vencer las barreras que obstaculizan la innovación. En este texto hemos entendido las políticas TIC como parte de las condiciones materiales que hacen posible la innovación. Sin embargo, nuestra crítica hacia dichas políticas TIC apunta a que si bien han dejado de estar centradas en la adquisición tecnológica y han pasado a considerar otros componentes curriculares y basados en el cambio educativo (Kozma, 2010), puede decirse que aún dichas políticas continuan priorizando la atención de barreras de primer orden.

En este escrito hemos querido ir más allá del lenguaje dualista o que da por sentado los sentidos que tienen practicas concretas como el de la docencia con TIC en educación superior. Así, categorías tales como entusiasta o resistente, crítico de la tecnología, o barreras para innovar han sido objeto de discusión en este escrito desde el punto de vista de la crítica. En tal sentido hemos propuesto que la postura crítica representa un valor agregado para ir más allá del análisis contemporaneo sobre las barreras en la innovación con TIC. Analizar la postura crítica del docente universitario más allá de generar clasificaciones y listados de las barreras encontradas debe permitir comprender el fenómeno con más profundidad, considerando factores históricos y culturales de las instituciones para contextualizar la forma que toman las diferentes barreras, las complejas relaciones entre ellas y proponer soluciones contextualizadas. El estudio de los factores que

limitan la integración de tecnologías en educación superior desde el análisis de la postura crítica rompe con las clasificaciones de barreras, inicialmente porque en un profesor –sea resistente o entusiasta al uso de la tecnología– es posible encontrar ambos tipos de barreras coexistiendo en mayor o menor grado, en incluso casos en los que un tipo de barrera puede generar la otra. Por ejemplo la resistencia al cambio puede surgir por creencias previas del docente, lo que se consideraría una barrera de segundo orden o ser generada por una ausencia de soporte técnico lo que se considera una barrera de primer orden. Con este ejemplo se evidencia la necesidad de profundizar en el análisis de la interacción entre ambos tipos de barreras considerando sus interacciones y efectos. Un enfoque más integral de las barreras permitirá a la vez estudiar otras que emergen en contexto de integración tecnológica cada vez más intensiva en educacion superior.

A partir de este estudio se considera fundamental incluir a otros actores desde la misma perspectiva de análisis. Particularmente el rol del estudiante en los procesos de integración de tecnologías puede ser el mejor ejemplo. Como actor en el proceso el estudiante podría a la vez tener sus propias barreras y una interacción o interjuego particular de estas lo cual significa nuevos retos en el estudio de la integración de TIC en educación superior. Otra barrera que se ha analizado poco en la literatura existente es la falta de una cultura institucional para la innovación con TIC. Esta barrera supone en sí misma un estudio profundo e integral para superarla más allá de una clasificación de barreras.

Finalmente es necesario considerar la importancia de renovar los enfoques o modelos de formación profesional para la promoción de la innovación con TIC en docentes universitarios, considerando la compleja interacción entre las barreras que se deben superar, así como la diversidad de actores y factores históricos, culturales, y por ende sociomateriales que estan presentes en cada institución.

Notas

[i]Las más recurrentes en la literatura son: falta de equipo tecnológico, falta de acceso a internet, falta de tiempo para participar de las capacitaciones capacitación y para diseñar innovaciones; falta de capacitación o baja calidad de la oferta de capacitación; falta de apoyo técnico; así como la falta de planes institucionales o políticas (Ertmer, 1999; Bingimlas, 2009; Goktas et al., 2009).

[ii]Entre las principales barreras de segundo orden identificadas en la literatura se pueden mencionar la falta de confianza; resistencia al cambio; falta de motivación; y el hecho de que los docentes no sean conscientes de la utilidad de la tecnología en su disciplina de enseñanza. (Ertmer, 1999; Bingimlas, 2009; Goktas et al., 2009).

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PART IV

4.1 PROBLEMATIZING THE POLITICAL DIMENSION OF ICT INTEGRATION: CONCLUSIONS AND CONTRIBUTIONS

The relation between technologies and policies within the field of education has to be considered carefully. In that regard, the starting point of my research problem was the current divorce between two different fields of knowledge that are often disconnected, i.e., ICT integration for education and education policy analysis. Thus, when trying to understand the nature of an ICT policy, I had to cope with the problem of interrelating these fields. Such separation is evident when asking how ICT policies are related to local practices of ICT integration, commonly reduced to a technical problem of implementation. Hence, this work has developed a more comprehensive and broad understanding of the political dimension of ICT integration in higher education.

A shift from an implementation rationale to a policy enactment analysis was proposed as a way to problematize the political dimension instead of taking it for granted. Thus, the question I have posed is how are ICT policies enacted in higher education institutions. The three cases I approached revealed a range of practices that I tried to understand from a grounded perspective. It meant paying attention to the materiality but also to the hermeneutics and discursivity of ICT policies (artefacts, techniques, struggles, policy positions). Each one of the five research papers aimed to problematize those practices of policy enactment showing the complex relation between policies and technologies. At the end, a wider perspective on the political was gained, allowing me to conclude on three specific contributions that result from this endeavour.

4.1.1 CONTRIBUTION 1: CONCEPTUALIZING ICT POLICIES

Compared to the traditional point of view within the literature of ICT integration in educational settings, this work fosters an alternative conceptualization of ICT policies as artefacts, entanglements of human and non-human entities, and technologies of government. When asking how ICT policies are enacted in higher education institutions, three specific practices were analysed: ICT leadership, policy translation, and the government of faculty members. Each practice led me to an alternative conceptualization of ICT policies and further implications for a policy enactment theory in higher education.

ICT policies as artefacts: tracing materiality in education

Instead of considering what a policy document means (as if uncovering a message) my analysis highlighted what people do with those policies. In this regard policymaking represented a relevant category of analysis related to the practice of crafting policies through a social practice that goes beyond implementing a closed package of external solutions. Leadership practices are not separated from the produced artefacts; indeed they are an objectivation of practices (Veyne, 1992). Put differently, I traced how human and non-human entities assembled and were held together within institutions.

ICT policies as entanglements: distributed agency

Instead of taking for granted education policies, my work has traced how 'master discourses', such as innovation, teacher development, competences, etc., were enacted through local practices. For that purpose, I have 'followed the actors' (Latour, 2005), understood as human and non-human entities that participate in those practices. When moving to this broader perspective 'implementation of ICT policies' was not simply a technical endeavour of rational humans decoding a central policy message. Instead, agency was distributed in sociocultural situations (Spillane, 2006), decentralizing the individual human action as the strict focal point for education. As humans are not the single source of agency, sociomaterial orientations 'refuse to attribute agency and intention solely to individual human beings, and to ascribe the energy and power that unfolds in a system to human agency and will alone' (Fenwick et al., 2011 p. 171).

ICT policies as technologies of government: enacting power relations

This thesis has addressed an analysis of technologies as policies, and policies as technologies. The latter has been analysed from a Foucauldian stand. The practice of governing people through technologies implies considering both education policies and ICT as assemblages that enact power relations. In the contemporary field of education it is not possible to maintain the traditional division between the natural and the artificial, between human and natural sciences. As Dean (1998) claims, the sole expression of technologies of government challenges this separation and steer a further analysis. I have tried to follow this analytical perspective by showing the production of subjects

within my case studies. Such production would not be possible unless their practices were problematized and then rendered on technical solutions of different kinds (organizational, pedagogical, etc.).

On the other hand, I have considered technologies as policies, i.e., within the frame of national and institutional policies for education. From the point of view of matters of fact (Latour, 2005) contemporary education policies are rendered within the scope of impact assessment and cause–effect relations. Conversely, I have deployed ICT policies as a matter of concern, making visible a myriad of controversies emerging from the practices of higher education institutions: how to manage reluctant teachers to use ICT, how to produce an innovative teacher, how should self-regulation of teaching practices be aligned with ICT competences, etc. Hence, technologies as public and institutional policies pose problems instead of simply render solutions.

4.1.2 CONTRIBUTION 2: REVISITING AND EXPANDING A POLICY ENACTMENT MODEL FOR HIGHER EDUCATION

Policy enactment theory was originally developed within school–level settings. Based on empirical research, different discourses were analysed as prevalent in the British context such as standards, student behaviours, etc. (Ball et al. 2012). In this work, I have expanded that theoretical model at a higher education level. In this endeavour different elements, nuances, and new insights have emerged. In my study I disentangled some 'master discourses' (Ball, 2010) driving policy enactment in higher education, more related to contemporary university reform. For instance, innovation was one of those discourses enacted through different sets of artefacts and practices. Similarly, the new managerialism (Teelken, 2012) prevailing within the institutions I approached was enacted through practices of institutional performance or accountability of teaching practices (see paper 3 and 4). The increasing pressure for change that is common nowadays in higher education, combined with the local struggles emerging within institutions when enacting those discourses of change, represent a good reason for developing a policy enactment model on these settings.

Nevertheless, this theoretical framework should be nuanced from a Latin-American perspective. If the materiality of policies underlines context as a relevant aspect, it is important to consider that the source of a policy enactment theory was produced 'in the high-status universities of the metropolises of the Global North (Appadurai 2001;

Connell 2007) often [sidelining] other voices, treating the nations of the Global South simply as sites of empirical research and the application of theories developed elsewhere' (Rizvi & Lingard, 2010, p. 173). Being aware of this knowledge–power relation, I have tried to challenge this policy enactment model by not simply applying it to my fieldwork. Perhaps establishing a dialogue with other 'north' or 'dominant' authors such as Spillane, Latour, or Foucault could be misleading. However, based on my experience as a researcher and in order to be coherent, this was not a linear process of 'implementing' a model. Instead, from an early stage of my research I reflected, connected and distorted the ideas I encountered.

In that regard, I argue that any policy enactment analysis should consider context as a critical category to trace materiality of policies in particular settings like Latin American universities, in which other struggles have to be considered. For instance, if the idea of university has been in crisis since its early beginnings, Latin America has not been absent from this discussion. A critical and postcolonial perspective produced from the south (Sousa, 1994; 2004) highlights the role of transnational markets or the disinvestment of public universities, a neoliberal project that actually includes the integration of ICT in higher education. Hence, further research should trace how this neoliberal project is enacted beyond an ideological stand. This study has set out to that direction situating the analysis on case studies that enabled a deep understanding of policy enactment.

4.1.3 CONTRIBUTION 3: MAKING VISIBLE OTHER ENACTMENT ZONES

When 'master discourses' on ICT for innovation and educational change are highlighted, researchers are used to focusing on common situations like teaching practices, assessment, etc. However, such optimistic discourses have to be enacted in material (and sometimes) unobserved practices, artefacts and actors. This thesis has aimed to unfold the practices and entities that participate in the enactment of ICT policies beyond two trends in the literature: assessing the impact of education policies or criticizing ideologies 'behind' policy documents.

In one case, I traced how ICT units enacted what I called a 'will to innovate'. As a discursive formation, such a will could be traced in many different ways, but I focused on the practices of these

particular teams within institutions, which are currently absent both in critical analysis on education policies and ICT integration research. Another enactment zone that I privileged was the voice of critics. If ICT policies can be understood as belonging to the material conditions for innovation in a particular institution (supporting, regulating, visualizing and even excluding actors) a policy enactment model has to trace the policy positions that are settled. Beyond dualistic categories, such as engaged or reluctant staff for using ICT, critique as a policy position deserves attention as it represents an active stand both resisting, distorting, imagining and challenging the 'authoritative allocation of values' that usually represents education policies.

4.1.4 RESEARCHING ON MATTERS OF CONCERN: IMPLICATIONS AND LIMITATIONS

For the educational research field, moving from matters of fact to matters of concern embraces ontological, epistemological, and methodological implications. If critical approaches have asked what is a policy (Ball, 2006), I have tried to ask and challenge the *nature* of ICT policies instead of taking them for granted. Similarly, the way we used to know and *produce knowledge* on ICT policies deserves to be confronted since they are more than 'objective' instruments to be implemented. Policies pose problems that I have addressed through the different papers as controversies within local realities of educational institutions. In terms of methodology, I have provided an account on the way that a situated analysis of institutional practices needs to go beyond 'levels of perception and satisfaction' on a particular policy. That is precisely one of the lessons I learned from the shift I experienced as a researcher. If the first stage was limited in understanding the struggles, the contested nature of ICT integration, and the entanglements of different entities and practices, the second stage implied a more *grounded approach* beyond 'impact facts'. Hence, I have pointed out different controversies that emerge when the political dimension is considered in the enactment of ICT policies, e.g., how to cope with teachers reluctant to use technology, how to translate globalized competences in ICT for local teaching practices, etc.

In this regard there are also limitations that this study has to acknowledge. One of those limitations is the focus on some entities instead of other possible locations of analysis. In my approach to

institutions I witnessed some 'silent voices' that were not analysed in depth but were equally material. For instance, what Ball et al. (2012) call 'transactors' are administrative staff also enacting ICT policies, coping with implementation, and entangled in the durable networks. These transactors and other policy positions were sidelined in my analysis because I had to choose some practices over others.

Related to this limitation, an epistemological issue has to be considered given my theoretical commitment. A common critique to ANT approaches has to do with the accounts that the researcher deploys when tracing the materiality of the studied networks: "Who is speaking for the materializing forces that cannot provide a direct account on their own? (…) Researchers must be especially reflexive about what categories they have adopted from the beginning" (Fenwick & Edwards, 2011, p. 180). Once again, in this critique returns the problem of agency that I have tried to show as distributed and non-human centred. Necessarily the accounts on ICT policy enactment have been built from my own perspective as a researcher, which does not imply that they are less material, or less decentred as has been shown in each paper.

To conclude, it is worth mentioning that the policy enactment framework developed here should be an analytical model for analysing other types of education policies that underpin 'master discourses' around the world. This work provides some insights for an in-depth understanding of how education policies are enacted in Latin America. In this regard, I have outlined some of the aspects that should be considered in such analysis (distributed leadership, the role of artefacts, policy translation, technologies of government, policy positions). If an implementation rationale has to be challenged, then my research aimed to provide tools for that purpose. All in all, what any educational researcher should not forget is the complex interrelation between policies and technologies, but also the problems they pose in the contemporary educational arena.

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