

## Scandinavian clinical practice guideline on fluid and drug therapy in adults with acute respiratory distress syndrome

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*Published in:*  
Acta Anaesthesiologica Scandinavica

*DOI (link to publication from Publisher):*  
[10.1111/aas.12713](https://doi.org/10.1111/aas.12713)

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*Publication date:*  
2016

*Document Version*  
Publisher's PDF, also known as Version of record

[Link to publication from Aalborg University](#)

### *Citation for published version (APA):*

Claesson, J., Freundlich, M., Gunnarsson, I., Laake, J. H., Møller, M. H., Vandvik, P. O., Varpula, T., & Aasmundstad, T. A. (2016). Scandinavian clinical practice guideline on fluid and drug therapy in adults with acute respiratory distress syndrome. *Acta Anaesthesiologica Scandinavica*, 60(6), 697-709.  
<https://doi.org/10.1111/aas.12713>

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**Stephen J. Ball y la investigación sobre políticas educativas en América Latina**

archivos analíticos de  
políticas educativas

Revista académica evaluada por pares, independiente,  
de acceso abierto y multilingüe



Universidad de San Andrés y Arizona State University

Volumen 24 Número 28

29 de febrero de 2016

ISSN 1068-2341

**Tracing Translations of ICT Policies in Higher Education**

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**Citación:** Cifuentes, G. & Valero, P. (2016). Tracing translations of ICT policies in higher education. *Archivos Analíticos de Políticas Educativas*, 24(28)

<http://dx.doi.org/10.14507/epaa.24.2098.1914> Este artículo forma parte del número especial Stephen J. Ball y la investigación sobre políticas educativas en América Latina de EPAA/AAPE, Editores invitados Jason Beech y Analía I. Meo.

**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.

**Key words:** policy translation; policy enactment; ICT policies; sociomateriality; higher education.

### **Rastreando las traducciones de las políticas de TIC en la educación superior**

**Resumen:** La puesta en práctica de las políticas educativas es un asunto de traducción de la política. Una perspectiva sociomaterial de corte Latouriano se propone en este escrito para desafiar marcos de análisis tradicionales sobre implementación de la política educativa. Ofrecemos herramientas analíticas para trazar procesos de traducción de la política en escenarios de práctica entendidos como ensamblajes de agentes humanos, actantes materiales y actividades. La estrategia analítica se lleva a cabo en el caso de tres instituciones de educación colombianas que trabajan con políticas TIC para el desarrollo docente. Los casos analizados evidencian que la agencia se distribuye entre diferentes entidades que constituyen ensambles, los cuales ponen en práctica dichas políticas de formas inesperadas. De igual forma, en todos estos casos las actividades rutinarias o artefactos inobservados fueron claves para trazar la traducción de la política. Nuestros análisis y hallazgos proveen una lectura crítica de la hermenéutica de la política, una de las dimensiones desarrolladas por Stephen Ball en su teoría sobre la puesta en práctica de la política educativa. Gracias a lo anterior, se logra igualmente un entendimiento más detallado sobre este marco analítico, contribuyendo tanto teórica como metodológicamente en el análisis de las políticas educativas en Latinoamérica.

**Palabras clave:** traducción de la política; puesta en práctica de la política; políticas TIC; sociomaterialidad; educación superior

### **Acompanhando as traduções de políticas de TIC no ensino superior**

**Resumo:** A implementação das políticas educacionais é uma questão de tradução da política. Uma perspectiva sócio-material de registro Latouriano é proposta neste trabalho, para desafiar marcos teóricos de análises tradicionais sobre a implementação da política. Oferecemos ferramentas analíticas para mapear processos de tradução da política em cenários de prática, entendidos como um conjunto de de agentes humanos, atuantes materiais e atividades. A estratégia analítica é posta em ação em três casos de instituições colombianas de educação, que trabalham com políticas de TIC para o desenvolvimento docente. Os casos evidenciam que a agência é distribuída entre diferentes entidades que constituem conjuntos que põem em prática essas políticas de formas inesperadas. Do mesmo modo, em todos os casos, as atividades de rotina ou artefatos não observados foram fundamentais para mapear a tradução da política. Nossas análises e resultados fornecem uma leitura crítica da hermenêutica da política, uma das dimensões da teoria da implementação da política de Stephen Ball. Graças ao anterior, se obtém um entendimento mais detalhado da implementação da política, contribuindo tanto teórica e metodologicamente na análise das políticas educacionais na América Latina.

**Palavras-chave:** tradução da política; a implementação da política; políticas de TIC; sociomaterialidad; educação superior

## **Tracing Translations of ICT Policies in 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 that regard, another focus will be the particular practice of leaders and their teams dealing with information and communications technology (ICT) policies, something that in the context of higher education institutions has been recently called ICT leadership (Cifuentes & Vanderlinde, 2015).

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 policies 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 (Hinostroza & 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 (Hinostroza & 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 during the period of 2013-2014. 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 synthesizes 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 policies.

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. Designed by Ana María Arrieta (Graphic Designer). Creative Commons Licensed: <https://www.flickr.com/photos/virtualizacionuniquindio/9723385965/>

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.





## 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 (Ball et al., 2012; Taylor, 1997). 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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Volumen 24 Número 28

29 de febrero de 2016

ISSN 1068-2341



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