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# REFLEXIVE PRACTICES ASSOCIATED WITH TEACHERS' PEDAGOGICAL USE OF ICT: A CHILEAN CASE

## Abstract:

This article discusses the role of reflexion in the process of decision-making of teachers associated with the pedagogical uses of ICT. Drawing on the synergies between Freire's and Dewey's notions of reflexive practice, the presentation reports the theoretical foundations and the preliminary results of a doctoral thesis that explores the phenomenon inside a Chilean school as a model of continuous professional development (CPD). The institution has been conducting a CPD programme based on a social constructivist approach aiming to increase teachers' agency for approximately 10 years. Considering the expectations of institutional policies, as well as different contextual factors that may shape the pedagogical uses of ICT, the study explores the ways in which teachers use the reflexive practice model as a means towards conscious incorporations of technology.

## Keywords:

Reflexive practice, ICT, Continuous professional development, Institutional policy

**JEL Classification:** I29

## 1. Introduction

The use of information and communication technologies (ICT) in teaching and learning has become a recurrent issue for the academic, national and institutional political domains, as well as different technology-related corporations. The training and continuous professional development programmes (CPD) of education professionals are progressively being recognized as key issues at the moment of incorporating ICT in practice (Daly, Pachler and Pelletier, 2009; Michos, Hernández-Leo and Albó, 2018). The latter is grounded on critical skills of the practitioner regarding 'why', 'which' and 'how' integrating technologies for increasing learning achievements among pupils (Benade, 2015; Crook et al., 2010). This is to say that supporting teachers in the thinking process before, during and after the practice can be a path towards authentic pedagogical uses of ICT.

This article discusses the role of reflexion in the choices undertaken by schoolteachers concerning their pedagogical uses of ICT. Drawing on the synergies between the theories of Freire (2005, 2011, 2014) and Dewey (1910, 1922, 1938), the paper reports the preliminary results of a study that explores the phenomenon inside a Chilean school. Such initial findings will be represented by a taxonomy of reflexive practice, which is still under development. Considering the situated nature of teaching and learning (Ertmer and Ottembreit-Leftwich, 2014; Webb, 2010), this qualitative research delves into the ways in which teachers use the reflexive practice model as a means for conscious uses of ICT.

The theory of reflexion treated in this study has seen the practice as cycles of thinking about teaching not only in accordance with specific instances (e.g., the use of ICT inside a particular classroom) but, most importantly, linked to the wider ecosystem of teaching such as the institutional policies, the kinds of pupils and ways of learning, among other elements (Johnston, Cox and Watson, 1994; Osterman and Kottcamp, 1993). Therefore, the treatment of the notion has been revised from Dewey onwards aiming to unify the key elements necessary for developing uses of ICT according to the specificities of each teaching context.

It is important to note that most of the literature regarding teachers' recounts of their practices has employed the term 'reflective practice' (Benade, 2015; Briscoe, 2017; Brookfield, 1998; Copeland, 1993; Day, 1999; Dewey, 1910; Loughran, 2002; Reinhold, 1999; Schön, 1983). This research specifically draws on another related terminology (i.e., 'reflexive practice'). The choice of the concept relies upon the idea that reflexion entails a broader understanding of teaching. Hence, this article will use the terms 'reflexive practice' or 'reflexion', to discuss teachers' recounts and thinking about their practices with ICT.

## 2. Reflexive practice and the pedagogical uses of ICT

Throughout history there have been different approaches to the concept of reflexion. In this sense, Dewey (1910, 1922) has developed a specific theory of reflexion, drawing on cognition as the substance for reasoning about the practice. Reflexion deals with an understanding of the aspects that need improvement through systematic observation of previous experiences. In so

doing, the practitioner develops multiple skills, such as sensibility, curiosity, attention, open-mindedness, flexibility, and inquiry to keep refining further teaching and learning experiences (Dewey, 1910). According to Dewey, inquiry can be associated with a critical view of the practice and enables the teacher to develop deep judgment or reasoning. Hence, reflexion constitutes a means for increasing the teacher's own consciousness by connecting theory and practice (Dewey, 1910, 1922). Furthermore, Dewey (1910) asserts that reflexion is socially construed, adding moral and ethical dimensions, by considering not only the expectations of the teacher but, most importantly, the needs of the students. The latter can lead to a sustained refinement of the profession. Such transformative process empowers the teacher, increasing his or her freedom and agency (Dewey, 1910). Reflexive practice, then, becomes a democratic way of teaching and constitutes a condition for innovation (Dewey, 1922, 1938).

Following a similar perspective, Freire (2005, 2014) places a greater emphasis on criticality, situated learning, and politics. Added to Dewey's cognitive conditions for reflexion, this scholar understands reflexive teaching as a dialectic process between text and context, theory and practice (Freire and Nogueira, 1989), focused on the teacher's skills to adopt critical, as well as collective, choices, and decisions (Freire, 2005). Drawing on the argument that each individual's knowledge of the reality is socially constructed and embedded in ecosystems that move beyond the physical boundaries of the classroom, the teacher needs to be ethically responsible and become a critical agent of the act of knowing (Freire and Shor, 2014). The latter empowers him or her to develop a democratic way of teaching, hence, to encourage social liberation. Reflexion, then, is characterized by cyclical processes of projection and anticipation (e.g., teaching design), implementation (e.g., in-class teaching and learning experiences), dialogic assessment, refinement and adaptation, transformation, projection and anticipation, and so forth (Freire, 2011).

During the decade of 1980s, Donald Schön (1983) has developed an understanding of reflexive practice as a means to think about teaching, by considering different types of reflexion: a) 'reflexion in action', or thinking during the practice about the multiple eventualities that shape the experience and adopting on-time decisions as a response to such contingencies; and, b) 'reflexion on action', or bearing in mind aspects of the practice after the teaching instance and considering ways of transformation. During the decade of 1990, some scholars moved beyond that pragmatic way of conceiving reflexion by returning to elements contained either in Freire's or Dewey's understanding of the term, namely, ethical, ecological and political (Bleakley, 1999; Brookfield, 1998; Copeland et al., 1993; Day, 1999; Fien and Rawling, 1996; Johnston, Cox and Watson 1994; Parke and Coble, 1998; Osterman and Kottcamp, 1993; Smyth 1992). That is to say that the decisions of the teacher depend upon national and institutional policies, collaboration with colleagues, and a clear understanding of the role of the teacher, of the students, and of ICT in the practice, among other factors. From the decade of 2000 onwards, the notion has been developed from multiple angles, including elements of Dewey's and Freire's conceptualisations (Benade, 2015; Briscoe, 2017; Craig 2010; Loughran 2002; Moseley, Maloch and Hoffman, 2016; Michos, Hernández-Leo and Albó, 2018; Philipsen et al., 2019; Rodríguez-Valls 2014; Sellars, 2012).

*Reflexion and the pedagogical uses of ICT in Chile*

With regards to the pedagogical uses of ICT in Chile, current research seems to suggest that the expectations of policymakers have not been met completely (Claro et al., 2018; Sánchez and Salinas, 2008). There are several reasons for this, being the situated nature of teaching the most recurrent (Ibieta et al., 2017; Rodríguez, Nussbaum and Drombovskaia, 2012; Vásquez, Nussbaum and Sciaressi, 2017). This idea coincides with the claims of Sánchez, Salinas and Harris (2011), who argue that a long-term view concerning the pedagogical uses of ICT on the part of the national and institutional policies is still challenging. In the aforementioned study, these academics reported dissimilar degrees of digital literacies among schoolteachers and low ICT integration into the curriculum. Furthermore, they indicate that the focus of recent state-funded interventions, such as offering isolated training opportunities outside the instructional contexts of teachers may be the source of the current slight progress in the matter. In this sense, Claro et al. (2018) explored education professionals' ICT competencies to teach in a digital environment. The academics revealed that most of the sample needed to increase their pedagogical proficiency in terms of transforming information and promoting active student participation. However, consistency regarding this particular issue seems to remain unclear. A comparative study among diverse Latin-American countries revealed that Chile has seen more systematic incorporation of ICT into the classrooms due to long-term policies that have explicitly pursued the integration of technology in the curriculum (Salinas et al., 2016).

On the other hand, Rodríguez, Nussbaum and Drombovskaia (2012) reported lower incorporation of ICT in teaching when policymakers place a greater emphasis on the technical rather than the pedagogical dimension of the use. It seems that a primary condition for conscious ICT teaching practices would be the provision of professional support on 'how' incorporating technology in accordance with the specificities of each classroom context. Reflexion, then, appears to be a path toward a sustained thinking of 'how' using ICT in teaching (Michos, Hernandez-Leo & Albó, 2018).

*Pedagogical uses of ICT, reflexion and CPD*

According to Dewey (1910), reflexion is not spontaneous. To develop conscious teaching practices, professionals need to undertake cyclical processes of intellectual thinking that include rigorous inquiry, critical analysis, synthesis, among other skills. This would suggest that the provision of support to keep refining the practice through reflexion is key to increase possibilities of decision-making as these skills develop over time (Briscoe, 2017; Michos, Hernández-Leo and Albó, 2018; Philipsen et al., 2019; Taylor, Bodman and Morris, 2015).

Seminal literature concerning reflexive practice has offered multiple viewpoints associated with the ways in which the concept should be defined and applied. This lack of unified views has led to the emergence of multiple kinds of CPD, which vary from portfolios to the use of videos (Cox, 2014; Davis, 1997; Fisher, Higgins & Loveless, 2006; Pearson & Naylor, 2006). This situation can be problematic. The vast array of possibilities regarding the provision of CPD on this matter may confuse policymakers in assessing the best ways of accompanying teachers on their pedagogical practices with ICT.

## 3. Research design and analytical protocol

The field of research was a Chilean school that has developed a unique policy of reflexive practice drawing on a specific contemporary socio-constructivist approach that is the Teaching for Understanding framework (Nickerson, 2012; Newton, 2012; Salomon, Perkins and Globerson, 1991; Stone Wiske, Rennebohm and Breit, 2005). The sample consisted of 6 teachers working in three different subject areas and three heads of department. Although sampling associated with qualitative designs is often linked to lack of representativeness and reliability (Koerber and McMichael, 2008), the richness of qualitative methods is associated with allowing the researcher to delve deeper in the thinking, discourses, and actions of the participants regarding the phenomenon under study (Guest, McQueen and Namey, 2012).

Purposive sampling was employed to select the school participating in the research (Mullet, 2018). The characteristics of the institution were explicitly linked to the focus of the study. In particular, a convenience sampling for selecting each case was used, considering that the researcher needs a sample that actually incorporates ICT in teaching and is voluntarily available to participate in the project (Koerber and McMichael, 2008). Ethics approval from the University and from each participant was obtained. Each participant received an information letter with the details of the study and the nature of their participation and signed a consent form. Class and reflexive practice meetings were video recorded; interviews were supported with audio records. Although the focus of the research was the teachers and not the students, consent from the Academic Vice-Principal of the school was also gained to proceed with the recordings. The participants were informed that records would not be publicly disclosed, and that anonymised data could potentially be shared in different academic activities.

Before moving forward, it is important to factor that analysis is still undergoing, therefore, this paper reports preliminary findings associated with the development of a taxonomy of reflexive practice. On-going data is being analysed thematically. Each case is composed of three sorts of data: a) class observation; b) reflexive practice meetings observation; and c) semistructured interviews with the heads of the departments participating in the study.

This research is grounded on a deductive methodology (Braun and Clarke, 2012), considering seven steps:

*Steps conducted so far:*

1. Review and interpretation of the theory of reflexive practice (Dewey, 1910, 1922; Freire, 2011, 2014).
2. Revision of the development of reflexive practice in the empirical domain from the 1980s onwards.
3. Exploration of the elements of Dewey's and Freire's theory in the data. Cross-case analysis (patterns and differences among the participants).

*Undergoing steps:*

4. Development of a taxonomy of reflexive practice.
5. Comparison of the taxonomy against the data.

6. Revision of patterns and differences among the datasets.
7. Refinement of the taxonomy based on the findings reported by the data.

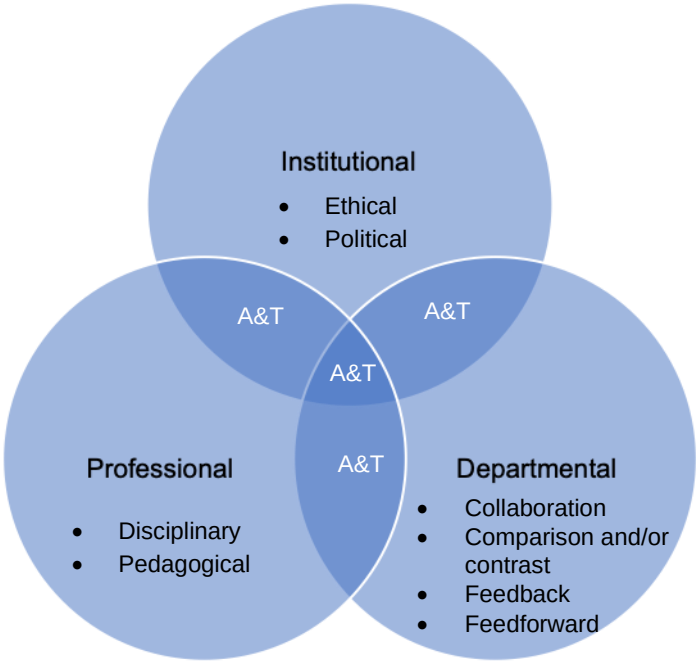
A deductive approach was employed for the analysis. The rationale for conducting a deductive approach is drawn on three main reasons:

a) Reflexion has been developed in such different ways that there seems to be a need to unify the notion. The taxonomy can constitute a single graphical mode of representation (Benade, 2015; Briscoe, 2017; Brookfield, 1998; Cole, 1997; Craig, 2010; Johnston, Cox and Watson,1994; Loughran, 2002; Moseley, Maloch and Hoffman, 2016; Rodríguez-Valls, 2014; Schön, 1983; Sellars, 2012).
b) Empirical research dealing with reflexion of ICT teaching practices seem to be less frequent (Michos, Hernández-Leo and Albó, 2018).
c) The instrument can be viewed as a means for teachers and policymakers to think about the practice with ICT.

***Preliminary findings: The taxonomy of reflexive practice***

Drawing on the theory and the data, a taxonomy of reflexive practice is under development. It is important to mention that the taxonomy should be viewed as a complex interplay between dimensions (e.g., professional) and drivers (e.g., pedagogical) that make visible the ways in which the teacher thinks about the practice with ICT. ‘Agency’ and ‘transformation’ appeared as both the purpose of school leaders and an outcome of the observations and interviews (see figure and table 1). The visual representation of the taxonomy can be associated with other related scholarship, such as the TPACK model (Koehler and Mishra, 2009; Koehler, Mishra and Cain, 2017). Nevertheless, the current instrument moves beyond the articulation of technology, content, and pedagogy, by introducing the interplay between agency and transformation as key elements of reflexion that contribute to the refinement of practice over time.

**Figure 1. Taxonomy of Reflexive Practice**




*Note: A&T= Agency and transformation.

**Table nº1: The taxonomy of reflexive practice**

| Dimension | Definition | Drivers |
|---|---|---|
| Professional | Specific actions undertaken by the teacher associated with a given ICT teaching practice as a result of an inner cognitive process. | • *Disciplinary reflexion.* Ways in which the teacher considers his/her content knowledge while using ICT in teaching.<br>• *Pedagogical reflexion***.** Ways in which the teacher considers his/her pedagogical knowledge while using ICT in practice. |
| Departmental | Collective thinking of the teacher, colleagues and other staff members concerning their ICT teaching practices. | • *Collaboration***.** Ways in which the teacher develops a common understanding and adopts collective decisions regarding a given ICT teaching practice.<br>• *Comparison and/or contrast***.** Ways in which the teacher considers similarities or differences among diverse teaching practices with ICT, which may involve other personal |

| | | |
|---|---|---|
| | | practices as well as the practice of colleagues.<br>• *Feedback*. Ways in which the teacher receives comments, arguments or ideas from the head of the department and/or colleagues regarding a given ICT teaching practice.<br>• *Feedforward***.** Ways in which the teacher suggests new approaches or proposes amendments to a given use of ICT, in order to keep refining the practice for further opportunities. |
| Institutional | Acknowledgement of facets that move beyond specific teaching instances with ICT, such as regulations established by the institutional policy, norms of good conduct and wellbeing, responsibilities regarding the achievement of learning gains through the use of a given ICT in the practice. | • *Ethical implications*. Ways in which the teacher seeks to preserve the common good of his/her students while using ICT.<br>• *Political implications***.** Ways in which the teacher extends aspects of the teaching experience beyond specific instances by harnessing the practice with institutional policies. |
| **Transformation**. Ways in which the teacher amends his or her ICT teaching practice.<br>**Agency.** Degrees of empowerment on the part of the teacher needed to adopt conscious and autonomous decisions regarding his/her pedagogical uses of ICT. | | |

## 4. Discussion

Agency and transformation are key to understand the taxonomy since either Freire (2005, 2011, 2014) or Dewey (1910, 1922, 1938) conceive the notion as a means for educational change. In addition, both scholars suggest that reflexion can be conceived as a path towards a democratic way of teaching, hence, to more freedom of action on the part of the teacher. This means that the situated nature of teaching and learning (driven by the complexities of each context) requires the liberation of the teacher, hence his or her agency, from the political expectations dealing with the practice (Lowyck, 2013). This was consistent with the information found in the data. For example, the heads of the departments participating in the study declared their intention to empower teachers when making choices regarding their ICT pedagogical practices.

Understating reflexive practice as an institutional model of CPD or life-long learning was also an important issue to factor. The observations and the interviews revealed ways in which the participants considered the learners, the viewpoints of colleagues and school authorities, and policy in their decisions regarding which ICT to use and how employing the resource with students. In this sense, three dimensions of reflexion were observed: professional, departmental, and institutional. This idea coincides with Bleakly (1999), who claims that considering the broader macrosystem of teaching seems to be key for improving the profession. In this sense, this research deals with ICT but the centrality of the study has been placed on the consideration on the part of the teacher of multiple aspects that can shape the practice with technology (Loughran, 2002; Michos, Hernández Leo and Albó, 2018; Moseley, Maloch and Hoffman, 2016; McFeetors, 2008; Samaras and Fox, 2013).

The taxonomy provided here constitutes one of the several illustrations that can be found on the data. Qualitative analysis of more evidence is needed to understand the ways in which the participants think about their practices with ICT. Data analysis is still undergoing, and it is aimed that further research will enrich these interpretations in the future.

## 5. Conclusions

The purpose of this article was to discuss synergies between Dewey's and Freire's theory of reflexive practice. The paper also reported the first outcome of the research, which consists of a taxonomy of reflexive practice. The instrument aimed to categorise domains and drivers that can portray the ways in which the teacher thinks about his or her practices with ICT. The instrument has been developed from the theory and then compared against the data to depict the unique characteristics of the institution under study. Although the research deals with ICT, the exploration of the concept 'reflexive practice' can be applied to other pedagogical domains. Following Crook et al. (2010) claims that pedagogy comes first than technology, reflexion has become a means towards the refinement of the profession over time. More qualitative analysis is needed in terms of exploring how the data represents the taxonomy and how the experience of this school can constitute an example for other institutions and education professionals concerning their reflexive practices of the pedagogical use of technology.

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