

EDUCATION THROUGH ICT POLICIES IN DEVELOPING COUNTRIES: THE CASE OF MEXICO

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Abstract

During the last decade the Mexican government implemented nationwide ICT policies within elementary education as a tool to tackle underperformance levels. However, the results have been highly contended. While literature suggests a lack of consistency in teacher training and the informal use of the equipment by some teachers; there is no significant research about how ICT is being adopted despite the lack of training. A qualitative study was conducted in Mexico within 6 elementary schools. Using a framework based on Critical Theory, empirical evidence collected will be preliminary analyzed aiming to understand how the policy could influence how teachers are making sense of ICT and elucidate patterns of teacher ICT knowledge acquisition within their contexts.

Context

Almost a decade ago, after 70 consecutive years of rule of the same political party, Partido Revolucionario Institucional (PRI), elections in 2000 presupposed the beginning of a new era as for the first time after the Mexican Revolution a change in parties in power was possible. Shortly after the arrival of the new party to office, Partido Acción Nacional (PAN), the reports about the low performance of Mexican education pinpointed the stagnation of the Mexican education system. Being allocated within the last places in the PISA 2000 assessment (OECD, 2002), it was evident the new government needed to take in hand the matter of education urgently.

Also, following an international trend, national policies were influenced by the UN Millennium Development Goals (MDGs); in the case of ICT for example, the presence of technologies within the field of education in developing nations started to increase (Wagner et al., 2005; UNESCO, 2011a). After significant ICT projects in education were carried out in developed countries during the 1990s (e.g. Cuban, 2001), ICT was also perceived as the next step to follow in developing nations. It was no different for the Mexican Government; the latter is best represented in the National policy documents (Presidencia de la República, 2001; Secretaría de Educación Pública, 2001), which describe the use of ICT as a foundation for several national policies and particularly in education as an intended solution to address quality and underperformance issues.

Enciclomedia

The Ministry of Education (SEP) launched then in 2003 a new nationwide policy called Enciclomedia, through which every 5th and 6th degree classroom of each elementary school in the country would be equipped with a projector, smart board, a PC with Internet connection and digitalized textbooks linked to Encarta. Enciclomedia became the government flagship educational policy during the last 10 years, intending to improve quality by expanding ICT nationwide, aiming also to decrease the digital divide and better preparing students to the future (Enciclomedia, 2004, 2006; Secretaría de Educación Pública, 2007).

Enciclomedia became also a matter of discussion in terms of its policy implementation. Claims about the bidding process and agenda of the policy were constantly made by the press and by the National Congress who tried to impede programs' progression after the increasing cost of the policy over the education budget which by 2007 was around 3% of national education budget (El Universal, 2006; Elizondo, A., Paredes, F & Prieto, A., 2006; Cámara de Diputados, 2007). However, the program ran until late 2012 and was completely discarded by the 2013 Federal Education Budget prepared by the returning PRI government (ADNPolítico, 2012). Despite ICT impact on education performance – its contribution to quality of learning is still widely contended; literature accepts that ICT can have positive effects in education under particular conditions (Trucano 2012, BECTA, 2003, Angrist & Lavy, 2002, UNESCO, 2011a). However, in the case of Enciclomedia, the policy was difficult to assess in terms of its impact on quality in education not just because of the latter debate in the field, but also because of the scope of the program and the deficiencies in policy design which pinpointed a disregard of the diverse environments of the Mexican education system by the policy makers.

The lack of adequate infrastructure of schools and the lack of pedagogical clarity within the policy model together with scarce ICT awareness and further training from the teachers, often lead the expensive equipment to be stored far beyond use. Enciclomedia was often described as a “governmental capriccio,” using ICT a silver bullet that in the end had no impact over quality in education. These deficiencies, initially pinpointed by the press and analysts (Elizondo, A., Paredes, F & Prieto, A., 2006), have been nowadays acknowledged by the past Education Underminister 2000-2012 Miguel Székely as he also qualifies the policy as a “good intention” while he claims the policy cannot be qualified as a success (ADNPolítico, 2012).

Turning the page

Two important policy assessment documents were conducted during Enciclomedia's life. While the previous claims about deficiencies infrastructure and lack ICT teacher training were sustained by those assessments (Holland, Honan, Garduño & Flores, 2006; FLACSO, 2008), they also demonstrated that some teachers were using the Enciclomedia equipment regardless of the deficiencies of the policy. Some teachers were using the equipment and adapting

it to their teaching, constructing knowledge and acquiring skills by other means rather than through policy stipulations.

Digging deeper into the teacher curricula in the Mexican context, it is possible to say that despite the efforts of organizing and reorganizing the education system after the Mexican Revolution, there was still a very diverse and wide intricate array of teacher training instances. Whereas for pre-service training the requirement of a degree has been implemented, the diversity of the institutions providing such degrees makes it virtually impossible to account for the curricular trends. For in-service training the overlay of Federal, State and Union training on offer, also impedes establishing a clear pattern for training to be followed by teachers (Secretaría de Educación Pública, n.d.). Moreover, regarding the specific issue of ICT in teacher training, apart from the 20 hours training given during the inception of Enciclomedia, it tends to be scarce.

Aims and Research Questions

The aims of this paper therefore, are guided by the previous assumption that allow presuming the informal use of ICT from the teachers. Precisely, given there is no significant evidence of Mexican ICT teacher training curricula (Rizza, 2011), and in addition given there is no current research on how the teachers are acquiring those ICT skills in the context of lack of adequate ICT teacher training, this paper intends to bring some light on the informality of ICT knowledge acquisition by teachers and how it is influenced by current ICT and curricular policies.

Consequently, the inquiry will be looking to answer the following research questions: a) What are the teachers really doing with the ICT in the practice? b) Are they deconstructing the policy to create their own interpretations of ICT? And b) How are they constructing these interpretations? To answer these questions, this paper uses a framework rooted in Critical Thinking within education, to guide the analysis.

Conceptual Framework

Setting up the problem in a development studies context, it is possible to distinguish a dichotomy of paradigms within which the research can be approached. On the one hand, the paradigm of the free market and liberal democracy which echoes development through technology and progress towards the improvement of the means of production. This paradigm ultimately results in a system of interrelation where the developed somehow subdues the developing by conducting the way policies are adopted and followed to achieve development; policies based on the same principles and traditions of the developed nations (Unwin, 2009). On the other hand, a second paradigm of development identifies particular identities and diverse contexts where development policies are implemented. This critical appreciation of development calls for an alternative genesis of development policies; rooted in context and interpretation of development and aiming at emancipation where the improvement of conditions is

not dictated top-down by international development agencies (Harris, 2005; cited in Unwin, 2009, Kothari, 2005).

Research within ICT and education often is interested in how ICT impacts over education performance. Literature is concerned on the outcomes produced by the ICT in the education environment intending to perceive the student as a measurable unit (UNESCO, 2009, 2011a). Although within development policies is possible to note a raising concern about how teachers can be better prepared to use ICT (UNESCO, 2011b), still, within development policy implementation the role of teacher is often perceived as the transmitter, where they are just as another element to be measured. In this sense, teacher is highly underrepresented in the policy process, and is ignored as a stakeholder in education (Hosman & Cvetanoska, 2010).

In the case of Mexico, after more than a decade of assessments, the production of scores has no significant use for policy making as they are not uncovering where the deficiencies are allocated; neither are they describing where the pedagogical emphasis should be made (Díaz, 2009). Therefore, the critical vision of development, rooted in Critical Theory is a useful way to posit a conceptual framework to analyze what is really happening in the case of Mexico and which apparently seems to be dissociated to what the official policies initially intended.

The work of Carr and Kemmis (1986) applies Habermasian ideas to education, based on the critical analysis between theory and practice in teacher curricula. Carr and Kemmis provide an insightful critic of the conflict between theory and practice found within positivism and interpretivism – approaches that have dominated educational theory. Carr and Kemmis (1986) argue there is dissociation between what is being taught and what is really required to teach. This is because the methods applied for constructing the curricula rely on conflicting approaches that either considers research to be a value free element dissociated from the reality, or that the research is just concerned with interpretation of motivations embedded in a particular action.

For Carr and Kemmis (1986), the positivistic approach leads research to pursue objectification of science in order to diagnose-cure and then make predictions that could reinforce and reproduce theory. Relying on objectivity as the maxim, this approach leads the practice to be implemented as the theory states, therefore the praxis becomes a sort of theory driven instrumentation where teachers are just mere transmitters of the policies. On the other hand, Carr and Kemmis (1986), state interpretive theorizing recognizes science is attached to the subject; therefore, research relies on the interpretations of individual actions and motivations to construct and further enlighten practice. This enlightenment of practical interpretations then leads praxis towards particular understandings. However, a variety of interpretations is possible, as this can differ in terms of time and culture; thus reducing enquiry to the interpretation of the researcher.

Consequently, Carr and Kemmis (1986) argue that educational research must be led by an “enquiry originated in the real practice of education” and not in theory. This gives light to a crucial element in scientific enquiry for educational research: the teacher as practitioner and as researcher. Since the teacher is regarded as an actor that possesses the theoretical background and is in fact the bond that links that to the practice, the teacher is therefore, the indicated agent of change in the enquiry problem that encompasses a critical and dialectical approach to the issue of enquiry within the contexts and its surroundings.

Therefore, relying on a critical appreciation on development policies and education research, ICT policies within education would benefit by constructing and informing policies in a context basis (see Figure 1.). As Reimers and McGinn (1997) denote, the translocation of the policy focus from a decision making trend of constructing policies, to a research guided policy focus, that incorporates not only teachers and its research settings but also the variety of stakeholders involved in the educational process, also diminishes the gap between policy construction and policy implementation by allowing all the voices to participate, inform, research and negotiate evenly at the outset of the policy design.

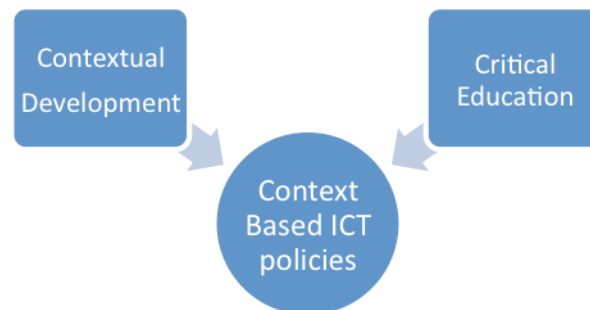


Figure 1 . Conceptual framework

Methodology

A qualitative study was conducted within 6 elementary schools in three different states in Mexico. Taking into account three different settings: rural, semi-rural and urban elementary schools; the sample was constructed within Mexico City in two private schools and within 4 public schools in Hidalgo and Oaxaca.

Correspondingly with the theoretical assumptions, the research intended to conduct the investigation, within the setting, and not from outside. This allowed the sufficient space for including the context and situational happenings within the field. Therefore, within these three settings interviews with elementary school teachers were conducted and observations were carried out while teachers attended training or met together to discuss issues involving curricular planning or ICT. Also, document policies were collected within these three settings.

Aiming to further construct a bigger study, groundwork analyses on Policies, Interviews and Observations allow us to highlight preliminary commonalities found in the data and which will be presented through the following sections. The next sections will be divided as follows: the first section will be devoted to contrast two policy documents found in the field; the second section presents a collage of teacher interviews. Finally the third section will be dedicated to present three sets of observations carried out within teacher training sessions.

Policy Documents Overview

Evidence collected in the field, uses the federal policy document Plan de Estudios 2011 (Secretaría de Educación Pública, 2011), about the last elementary curricular reform; and the “El colectivo y los Proyectos Educativos como esencia transformadora de la vida escolar y comunitaria” (Sindicato Nacional de los Trabajadores de la Educación, Coordinadora Nacional de los Trabajadores de la Educación Sección XXII, n.d.) document for the purpose of this preliminary analysis.

In the Federal policy document it is possible to find a section devoted to describe the policy curricular reform formulation processes that enumerates 23 measures taken to elaborate such reform. While just three of them vaguely describe involvement with the teachers they do not specify how they were specifically involved in the design or construction of the policy other than taking their impression or else following up the implementation of the reform. As for the rest of the enumerated measures in the document, 11 of them describe the involvement of specialists in education, think tanks, federal government agencies, teacher unions, national and international universities and international development agencies among them UNESCO, United Nations, and OAS; moreover these measures constantly refer to the issue of quality and performance.

Regarding the second document, “El colectivo y los Proyectos Educativos como esencia transformadora de la vida escolar y comunitaria”, the document begins questioning the homogeneity of the educational policies as it mentions “in our country there is no space for social and individual diversity. Moreover, the world model that is being imposed constitutes a threat to the cultural identity of our people. Therefore, it is possible to observe that education is not thought for and to the people” (Sindicato Nacional de los Trabajadores de la Educación, Coordinadora Nacional de los Trabajadores de la Educación Sección XXII, n.d., p.3). This document specifically encourages the teacher to critically engage with education and generate pedagogies that lead to a real transformation in education. The document describes itself as guidelines to engage with critical education and defines the origins of it as part of the alternative education plan that has been elaborated by the Section XXII of the SNTE, which constitutes a dissenting faction of the national teacher union SNTE.

ICT Teacher Training Policy Overview in Interviews

Training provided by Teacher Centers was often diffuse and defined by one teacher as “adapted to what the teachers need, as they feel students in kindergarten have the same level of ICT knowledge as their teachers”.

Within schools almost all of the respondents declared to know the name of the ICT policy Enciclomedia, however they referred to no training or very scarce ranging from 10 to 20 hours for teachers that have been teaching so far without any previous need of using ICT. Teachers often responded that they looked for training outside, as can be represented by quoting some teachers statements: “I have not received the training however I have looked for training on my own as I have to comply with the programs” or, “the training we received was very short, just 10 hours so I had to take other training on my own, at a particular school to keep up to date with the students.”

As Enciclomedia was just implemented in public schools, private schools also implemented their own ICT programs. Nevertheless, the lack of a defined ICT initiative or policy intended to provide knowledge of how to take advantage of ICT or at least how to become proficient on the usage of them was partially found. In one of the private schools they have been recurrently upgrading their ICT initiatives by adopting varied e-learning or educational software. Within this private school, teachers reported to receive training at the beginning of the implementation phase but also stated that it was not enough as can be best represented by another teacher who mentioned: “ We did receive the training but it was not sufficient to fully learn the capabilities of the program, but we are using our collegiate planning space to keep on learning and sharing knowledge among us.” In this school also, there were found consistently collaborative initiatives commenced by some teachers to help each other to adopt ICT and use them for their teaching in several ways. As one teacher pointed out “ we often get together to share what was useful for me with the students and how did I used and then help my colleges which are not very computer savvy.”

In one public and in the other private school some teachers interviewed reported to be individually developing their ICT knowledge on what the textbooks required, using their own sources and regardless of their colleagues’ reluctance or interest on using the equipment. It is interesting to note it was within these schools where there were interviewees that revealed also no usage at all of the computers and no interest on further using or learning. These schools also were only following the Federal policies.

Within two other public schools teacher interviewees revealed the organization of meetings where teachers discussed issues about training and curriculum. Within those meetings in one school a rural one; teachers had recently come up with the project of a school radio where they involved all the community. “This is a project of the school, for the community, built also with the involvement of the

community, but we are all learning here, nobody knows how to operate the equipment we learn together.” As one teacher stated, they developed the project also as a way to produce alternative content to the students and community. Within this same school teachers also revealed how they were developing curricula for sciences by using a robotics workshop that was ran on a weekly basis for students.

A commonality found among the 6 schools was the sustained response to never have participated in any type of consultation toward the policies to be implemented by the local or federal government, whereas they were reforms in programs or ICT policies or teacher training policies.

ICT Teacher Training Overview in Observations

ICT teacher training sessions were observed in three locations. A first set within a Teacher Center servicing two of the schools researched, and two other sets each within two Elementary schools.

Regarding the first set of observations within the Teacher Center, the observation was conducted over a training workshop originally devoted to implement the 2011 Elementary School Curricular Reform (previously mentioned in the policy analysis section). At the outset of the observation, the facilitator commented to the researcher she had to actually change the session to helping teachers to learn to use the computers. As the sessions advanced the content of the reforms was discharged over the teachers into a set of guidelines to be followed to fulfill the goals set by such curricular reform but using the computers as aides for creating Microsoft Office® documents.

A second set of observations was carried out at a private elementary school where an iPad implementation was to be conducted. The training sessions delivered by Apple Education Office consisted in two sessions on how to use the Ipad, and the applications. While some teachers were already aware of the tool, the majority of them were just following and practicing what the facilitator was presenting. Most of the teachers were unaware of the Ipad initiative and also of the training.

A third and final set of observations allowed the researcher to register teacher students while carrying out practices in a semi-rural elementary school. Within these observations student teachers presented themes to the pupils with the aid of some leaning software intending to develop awareness of the nature within the region and used the resources to engage students to discuss the particularities of their environment and help them to develop reasons for preserving the nature that surrounds the region. Student teachers also were observed while developing content with their tutors engaging in reflective practices and contrasting federal policies with the ones they were developing in the practice for the purpose of a robotics workshop and for the new school radio project.

Discussion and Conclusion

Therefore, what are the teachers really doing with the ICT in the practice? It is somehow, the diffuse array on teacher training giving space to teachers to adopt ICT policies into their own understandings. It is possible to observe that teachers are in fact developing ICT knowledge on the basis of their personal and professional daily experiences; at different levels of understanding, teachers are adopting, adapting and ultimately developing their ICT within the practice despite the approach of the policy.

As the evidence on Federal policy document reveals at the outset, a sort of influence from international development agencies and specialists pretends to be a set of guidelines to be applied for curricular standardization. Consequently teachers deconstruct and re-interpret the policy while they decide to comply with the Federal policy or not. It is possible to distinguish that within schools following the federal curricula, some teachers are precisely guided by an interpretive trend on approaching to practice, developing a sort of enlightenment to their practice that is subdued to the national policies while they adopt what is needed. More interestingly, it is also possible to recognize that some other teachers are developing a critical approach to ICT within education as some of the public schools immediately revealed and slightly by one private school. A model that is based on their own dialectical understanding of its and that critically engages in reflection of the practices constitutes the trends for regular information of knowledge as teachers.

But ultimately, how are teachers constructing these interpretations? A broader analysis of the presented data, allows the possibility to distinguish that within the settings, the more independent the school was from the federal policy, the more the teachers intended to construct or develop/adapt their ICT interpretations, training and curricula. Within the schools normally following the federal curricula, collaborative networks of teachers were not even found and the ICT knowledge and use was reported to be individually constructed. Within one private school though they were complying with the official program, they were following an International Baccalaureate Certification schema that precisely intended the curricula and development to be based on collaborative action. Finally, the schools within an alternative model of education, developed by the dissenting faction of the teacher union, the teachers were precisely intending to develop a critical approach to education. Teachers were re-interpreting and transforming the policy researching over their own contexts as they produced new understandings towards which they base a more context informed practice. It seems like the more critically engaged these schools are and the bigger the involvement of the stakeholders is, the more they construct a policy that is grounded in the context and consensually approved by those stakeholders, while they rely on the practice.

It is also possible to distinguish that within the schools engaged in the process of creating new understandings and critically approaching to ICT were in fact the ones that were taking advantage of these new tools and infrastructure. Consistently with Carr & Kemmis (1986) it seemed to be the involvement of the stakeholders and their practices that was helping to inform the context requirements to develop projects or initiatives that were consistent with what they required. Also, the more they relied in their colleagues and they were involved in collegiate discussions the more they were making sense of ICT as opposed to the schools where it was found individual or no involvement at all in ICT

The critical approach to development policies and to education serves to situate the discursive rationale of such policies like Enciclomedia, which seems to be dictated unilaterally and blur all contexts coexisting within a diverse country such as Mexico. Hence, the evidence presented, demonstrates there is a requirement to understand and develop new frameworks for ICT policies within education in developing nations that are grounded on the context and that reassess the position of the teacher within policy framing.

Further development of the research will therefore systematize and formalize patterns over which the dissenting models of critical engagement of education can best serve to situate ICT policies in a correct manner within the schools, in such a way that it is possible in the future to improve implementation of technology according to what the practice requires as well as what the policy prescribes.

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