

Two decades of ICT Policy in Education. Changing discourses. Changing practices?

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After more than two decades of plans and programs directed at integrating information and communication technologies (ICT) into educational systems, a number of studies from different contexts relate that, although the presence of this media in schools is already a reality, the teaching staff has still not innovated its methodology and its educational practice since the adoption of ICT as a habitual means of teaching.

This communication presents some of the results that emerge from the RDT project "Policy and Practice regarding ICT in Education: Implication for Educational Innovation and Improvement" (Ministerio de Educación y Ciencia SEJ2007-67562. 2007-2010)[†], whose final objective is to describe, analyze, interpret and evaluate the vision of technology and education that underlies the policies and practices related to the incorporation and the use of ICT in the scholastic system of Catalonia over the last twenty years. The work present some evidence that indicates how the discourses justifying the necessity of policies for incorporating ICT into the educational system change over the years, in relation to demands generated by a new technologically adept and changing society, while practices in schools remain almost unaltered.

Keywords: Educational policies, ICT in Education, teachers' practice, educational innovation.

1. Introduction

In last the twenty years, diverse plans and programs for integrating information and communication technologies (ICT) into education systems have been implemented on both a national and international level. As Area [1] indicates, the reasons used to justify the development of ICT educational policy include, among others, the adjustment of the scholastic system to the characteristics of an information society; the preparation of students in the face of new digital cultural forms; an increase and improvement in the quality of teaching processes or the innovation of didactic methods and materials.

However, numerous studies carried out in different provinces in Spain reveal that, in spite of the diverse institutional policies for the funding and use of ICT in education centres, an acceptable level of general pedagogic use of ICT by teachers of different school years [2-5] still has not been achieved.

Many teachers use ICT as a work tool for lesson planning (information searches, activity preparation, presentation of information, etc.). However, they have not innovated their methodology or teaching practice since having adopted ICT as a routine teaching resource. At any rate, the situation in Spain does not seem to differ much from other contexts, as demonstrated by studies such as Becker [6], Cuban et al. [7], Ringstaff and Kelley [8] and Kozman [9].

Based on these premises, the project "Policy and Practice regarding ICT in Education: Implication for Educational Innovation and Improvement" (Ministerio de Educación y Ciencia SEJ2007-67562. 2007-2010) sets out to respond to two main questions:

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- Why, regardless of the existence of specific programs for introducing digital technologies in the classroom of most of the western countries, does its presence remain insufficient, anecdotic, or doesn't account for a significant improvement of the learning processes and results?
- What should change in educational policy, school practices and the professional development of teachers in order to allow schools and students to have a critical, reflexive and educational relationship with these technologies; and to allow school systems to be ready to meet the educational challenges of today's society?

The main aim of the project is to describe, analyze, interpret and assess the technological and educational vision of policies related to the use of ICT in schools, their rate of integration and the synergy achieved with the other policy initiatives, and their capacity to foster the transformation and improvement of compulsory education.

Through an analysis of the discourse [10] found in the institutional documents that throughout the years have defined ICT educational policies in Catalonia[‡], and of interviews made to the main people responsible for the development and implementation of these policies[§], as well as through a case study of four educational centres (two primary and two secondary schools) recognized as innovative in the educational use of ICT, we attempt to understand the potential of these policies to impel the transformation, innovation and improvement of the required educational curriculum.

In this work we will present some evidence that emerges from the investigation that indicates how the discourses justifying the necessity of policies for incorporating ICT into the educational system change over the years, in relation to demands generated by a new technologically adept and changing society, while practices in schools remain almost unaltered.

We end by presenting some conclusions regarding the conditions that affect the success or failure of these policies developed on a large scale and by suggesting some challenges facing the planning of the integration and use of ICT in schools, as well as for the formation of the teaching staff in this environment.

2. About the discourse that mediates the education policies and practices related to ICT in Catalonia.

The analysis of the discourse found in the institutional documents that have structured ICT education policy in the last 25 years and of some interviews with those responsible for designing and implementing these policies, we have been able to reveal certain elements that aid in the comprehension of the role of these public policies in the betterment (or not) of teaching practices. The parameters that were used to guide the analysis of the discourse in relation to these policies include, among others, the following dimensions: the view of education, the role of the teachers, the protagonism of the students in the learning process and the educational function of ICT underlying these policies.

In this respect, over the years, the Department of Education's education policy goals for ICT have had different visions; if initially they were oriented towards the introduction of information technologies into the curriculum, today the focus is on their profound integration. The shift has been from learning "of" or "about" the technologies to learning "with" them, emphasizing digital competency. All of this has been in accordance with the new education curricula that are impregnated with references to ICT.

From the descriptive and evaluative documents to the first lines from the act for the Educational Technologies Program (PIE), created in 1986 in order to create funding for the use of ICT in Catalan schools, one can see

[‡] The main documents analysed are the Legislation that has regulated ICT policy over the last 25 years; the institutional publications relative to this policy; documents that contain the general directions for the application of the current norm in both the organisation and function of public education centres for primary and secondary education in Catalonia; in addition to institutional websites.

[§] The directed interviews were carried out with two groups of key agents in the system, those that are responsible for the elaboration and implementation of policies (politicians, administrative personnel) and those who see their work as affected by them (teachers, management teams).

that the justification for the introduction of these technologies into education during this period was based on the need to make the non-university school systems adequate for the new socio-productive demands generated by the so-called technological revolution and by telecommunications, thereby preparing students for the demands of the new, changing technological society.

In this period the discourse surrounding ICT comes from a technological perspective about and for educational innovation. From this perspective, coherent with a hegemonic discourse surrounding the social presence of ICT, the technological artefacts are the nuclear axis of educational reforms and transformations, the ownership of which would impel a pedagogical renovation from within the educational system. This vision assumes that when ICT are introduced into educational contexts, and the students are instructed in how to use them, more or less automatically professors will innovate their pedagogical practices and will develop better quality educational processes with their students and it does not take into consideration the existence of a multitude of factors that condition the curriculum integration of ICT from a perspective of educational change and innovation [11].

In the current decade, the Department of Education of Catalonia has gone through a series of restructurings that have directly affected the base of its ICT education policy. In 2000, the relevant role of ICT was recognized through the creation of a General Subdivision of Information Technologies (SGTI), which came to encompass both the Programs for Educational Technologies and Audiovisual Media that, until then, had functioned separately. In 2005, a new restructuring created the ICT Area which brought together all the information systems, including the use of ICT in student learning processes as well as internal management.

The last of the restructurings of the Department of Education, which took place in 2007, marks a point of inflection for the protagonism of ICT in the processes for teaching and learning, placing an emphasis on the educational possibilities offered by these technologies contextualized in different ways of understanding the curriculum and in different pedagogical models.

2.1 The transition from Information and Communication Technologies to Learning and Knowledge Technologies

The new structure of the Department of Education presents notable differences in respect to the anterior panorama. Having gone from Education Technology to Information Technologies (IT), we now find ourselves in front of an ambitious term: Learning and Knowledge Technologies (LKT, or TAC in Spanish), with the subsequent creation of a LKT Service associated with the General Subdivision for Innovation, in a logical continuation of the current technological media convergence.

The creation of the LKT Service has a clear intention: to put both technical and pedagogical aspects related to ICT at the same level, in contrast to the last 21 years of educational policy based exclusively on hardware, software and infrastructures and in which the pedagogical aspects had only a minor presence. This intention has been articulated by allocating technical aspects to the ICT Area, transversal within the Departments of the Government of Catalonia, and pedagogical aspects to the LKT Service, linked to the Department of Education. In spite of the good intentions, the new structure can have perverse effects if there is not a close relationship between the LKT Service and the ICT Area, which does not have any educational personnel, but which is responsible for the acquisition and distribution of the equipment that must be used by students.

The LKT Service is structured into four subdividing areas, two of which are directed towards digital inclusion and collaborative projects on the internet, respectively, which indicates what the educational priorities are for the LKT Service. The minor role allocated to the inclusion of educational innovation with ICT surprises us, when we consider that it is one of the key elements in the design of existing successful educational policies.

The creation of LKT advisors in different educational zones is, although timid and limited, a good first step in the aforementioned concretion, but this action needs to be accompanied by many more measures in order to change the pedagogical vision of ICT in students, a key element for making the new and hopeful discourse from the LKT Service more than a simple declaration of good intentions.

In education portals of the Department of Education the new ICT policies are beginning to be reflected, albeit timidly. Before a mostly unidirectional view of these technologies in which the activities and resources are selected by those responsible for them, activities corresponding to cooperation and the construction of knowledge on behalf of students and teachers have begun to appear. One example of this is the Blocs section,

with important participation by members of the Catalan educational community and the start of Wikipedia, the Catalan version of Wikipedia. Overall, a first glance at the portals XTEC, edu365 and even the more recent edu3.cat still reveals an educational vision of the use of ICT that is distant from the new official discourse on the role of ICT in education.

In the section “Formation” one may find similarities with what is shown in the portals. It seems as if a path is opening, leading away from a long tradition of permanent ICT formation for teachers based almost exclusively on courses about technical aspects, towards new, diversified formation opportunities, which offer different formation models, such as ICT advising in the centres, and that contemplates the pedagogic use of ICT in different areas and stages of the educational system. In spite of looking hopefully at this process of change within the formation model, initiated in recent years, it appears to us that it is not advancing at desirable rate.

As can be derived from this analysis, diverse strengths of the newly initiated ICT policies are addressed. We know that the complexity is not only found in the structural guidelines but also in the practical development of these policies. Thus, through a case study of four centres considered innovative in regards to ICT we have tried to learn about the similarities and differences between educational policies and practices, relating what is said (in the documents that define ICT policies and in the voices of those who are implicated) to what is done (in the daily practices of the centres).

3. New policies. New practices?

The case studies carried out in the educational centres aim to: on one hand, identify, analyse and interpret the set of factors that make up the experiences recognized as innovative in the educational use of ICT, and on the other hand, examine the vision of education and ICT use that underlies the practice in these centres, as well as its potential to promote significant changes in student learning processes and results.

Diverse studies on a national and international level have explored which factors stimulate the facilitation or the impediment of the integration of ICT in educational centres from a perspective of educational change and innovation. These works manifest that the successful process of incorporating technologies into schools is a consequence of a cross of variables related to educational policy, infrastructure and economic, cultural and organizational-curricula factors [1].

In this respect, in spite of two decades of institutional policies designed to incorporate ICT into the Catalan educational system, even though the presence of media in schools in a reality, ICT are still very far away from becoming a totally integrated tool in the curriculum of the centres and in student practices. In spite of the existence of concrete experiences and initiatives for innovative uses of these media in classroom practices that promote meaningful learning experiences for the student, propelled by teachers individually or by concrete clusters of teachers in the centres, the students as a whole continue to maintain their traditional practices based on printed material or have adopted ICT as a tool that supports established learning models.

Even though the observations of the centres are still being carried out, the findings emerging at this point in the investigation permit us to indicate some common elements that condition the integration of ICT in scholastic contexts from a perspective of educational innovation. Some of these elements include:

- The adequate funding of infrastructure and necessary technological resources in the centres and the existence of external support teams designated to facilitate solutions and solve technical problems related to the use of ICT.
- The existence of an organizational environment that supports and propels innovation based on a pedagogical use of ICT.
- Teacher formation carried out from a practical-critical perspective and based on development and improvement models and on research linked to educational projects in the centre.
- The favourable predisposition on behalf of the teachers towards the integration of ICT into their student practice.
- The organization of school time and space and the distribution of the ICT in classrooms.

- A holistic vision of scholastic curricula that facilitates the development of transdisciplinary proposals for learning, learning based on problem solving and teaching and learning founded on collaborative models.

References

- [1] M. Area. "Veinte años de políticas institucionales para incorporar las tecnologías de la información y comunicación al sistema escolar". In: J.M^a Sancho (Coord.): *Tecnologías para transformar la educación* (AKAL/U.I.A., Madrid, 2006), pp. 199-232.
- [2] F. Rodríguez Mondéjar. "Las actitudes del profesorado hacia la informática". In: *Pixel Bit. Revista de medios y educación*, 15, 2000, pp. 91-103.
- [3] C. Fernández Morante, and B. Cebreiro. "La integración de los medios y nuevas tecnologías en los centros y prácticas docentes". In: *Pixel-Bit. Revista de Medios y Educación*, 20, 2003, pp .33-42.
- [4] C. Castaño *et al.* "La utilización de las TIC en la enseñanza primaria y secundaria obligatoria: necesidades de formación del profesorado" (Actas de Edutec 2004, Barcelona, 2004). Available from <http://edutec2004.lmi.ub.es/pdf/69.pdf> » [Last accessed: 10/11/08].
- [5] N. Law, W. J. Pelgrum and T. Plomp. "Pedagogy and ICT use in schools around the world: Findings from the IEA SITES 2006 study" (Hong Kong: CERC/Springer, 2008).
- [6] H. J. Becker. "How are teachers using computers in instruction?" (Paper presented at the 2001 Meetings of the American Educational Research Association).
- [7] L. Cuban, H. Kirkpatrick and C. Peck. "High access and low use of technologies in high school classrooms: Explaining an apparent paradox" (*American Educational Research Journal* 38(4), 2001), pp. 813-834.
- [8] C. Ringstaff, and L. Kelley. *The learning return on our educational technology investment. A review of findings from research. Wested improving education through research, development and learning*, 2002.
- [9] R. Kozman. "Technology, Innovation and Educational Change - A Global Perspective" (Washington, DC: ISTE, 2003).
- [10] P. Gee. "An Introduction to Discourse Analysis. Theory and method (1999). Routledge. New York and London. Second edition.
- [11] J. M. Sancho et al. *School+ More than a Platform to build the School of Tomorrow* (2004). Final Report. Comisión Europea.