

Impact of ITC in Primary Schools in Castile and Lion



Ada Nafria Prada

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To my husband

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Introduction

All areas of society have had to adapt to fast development of Information and Communication Technology in recent years. Such adaptation is due to the emergence of new needs and new demands also within the education system. It is possible that they are still the most radical transformations.

Some authors (Prensky, 2001) have studied new ways to teach people born from the last decade of the twentieth century and, therefore, have lived with ICT from its early years, the so-called "digital natives." They are characterized by living in a society that is permanently connected through computers, mobile phones, smartphones or game consoles. These devices are used for almost all aspects of a person's life, from personal relationships to work, to leisure or search for information. And their use for educational purposes start earning spots on the list. Despite the generality of this reality, for a study on the actual impact of ICT in education, it is important to have into account that not all people have access to the same media, digital networks or opportunities; this inequality should have no place in education area, which should be universally guaranteed for everyone. This universality may involve the use of ICT in schools and can make a real opportunity match the opportunities and integration of students in today's society.

In addition to this social factor, ICT has led to a new educational model that has a growing number of professionals and that translates in almost constant innovations in the classroom. Also from the point of view of student learning that excludes ICT may find outdated and alien to their ways of accessing information.

Educational policies of different governments (national and regional after) sought and

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seek the integration of ICT in schools, the teaching and learning process to the new generations in order of these students use those technologies in school activities and in the future, in their training as citizens.

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Proposal

2.1 Justification of topic of interest

Hundreds of studies confirm the increasing number of professionals -involved directly or indirectly with education- showing a concern for the ICT use in this area. Analysis made in researches intended to encompass a reality with different kinds of approaches in order to understand the extent that the Information Technology and communication are having on the way of teaching, learning, motivations or results.

These studies show that the interest in teaching evolution derived from the popularization of ICT not only born the field of research, but lives intensely in schools. Teachers work on a constant review to update the school, their methodologies and their own training. And the same scenario can be found widely in educational policies related to the implementation of ICT in school by the different governments in several countries, including at regional level in Spain.

For all these reasons, the application of ICT in the teaching / learning in the corresponding primary (first, second and third cycle) in education of the Castile and Lion stage will be analyzed to determine the degree of implementation and way of ICT use in teaching methodology. The results of this research could be significant in taking forward changes that will improve the integrating ICT in the classroom in Primary Schools in Castile and Lion.

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2.2 State of the art

... aquestes noves tecnologies, a ms de produir uns canvis en l'escola, produeixen un canvi en l'entorn i, com que l'escola el que vol s preparar la gent en aquest entorn, si aquest entorn canvia, l'activitat prpia de l'escola ha de canviar; per tant, sen va ms enll de l'ensenyament de les noves tecnologies i de l'ensenyament per mitj de les noves tecnologies (Joan Maj, 2001).

2.2.1 Introduction

Since the entry of the first computers in schools has researched and written extensively. The analysis about changes produced by Information and Communication Technologies in schools cover a great range of realities ranging from the organization to the teaching-learning process, going through all the steps which are included in formal education in the broadest sense of the word.

Through the articles, books, research papers, conferences and others consulted for this paper, the attempt to control everything that education could be influenced, in one way or another, by ICT is evident. From general studies that analyze the new scenario drawn by the incorporation of ICT in schools (Aguilar, 2012; Llomki, 2008; Majo, 2001; Sigals, Meneses and Badia, 2008) to analysis and preparation of concrete materials of certain matters at different educational levels (Vazquez, 2006; Puntí, 2007; Ledesma, 2008). Between these two levels of specification are other studies that address the issue from different perspectives; these perspectives will serve like thread if this state of the art about ICT and education.

Before proceeding, it is important to highlight the papers dealing about how and why the advent of ICT education field in Spain, while there was speculation about the expectations of what would be achieved thereby (Vidal, 2006); worth these papers to understand each of the steps taken, starting with the ICT literacy, ie their actual use, and ending with its inclusion as a tool to learn and teach.

2.2.2 ICT in education. Historical review and politicises

For an introduction to ICT in education (a very broad and general subject), a literature review of more or less recent history and policies to advance the process has been

carried out. In this review more general studies on ICT in education are discovered-located, yes, in geographically defined areas -because of obvious reasons- and others that focus on specific levels of formal education.

The states of the art having a historical journey through the investigation of Information and Communication Technology (ICT) in education have been especially helpful. Sometimes we speak of research on teaching, specifically information technology, as most immediate ICT antecedent (Vidal, 2006). Since the late nineties researchers have emphasized the need to study the teacher in the context of the social organization of the school. In recent years, the integration of ICT in education has become the centre of attention in education, disappearing little by little the conceptual vagueness of Educational Technology (Area, 2000).

Researches on ICT in education have been prolific in several countries, finding greater volume of literature in Latin America and Europe. Within Europe include the final report of the European Commission on new learning environments (European Commission, 2004) which concludes that these environments do not depend on the use of ICT in itself but in the new organizations in schools and the involvement of teachers in the use of ICT as a means to transform traditional teaching-learning methodologies. Thus, it suggests that the changes come from the hand of management, the attitude and teachers training and the pedagogy used. And it is not the only research whose findings point in this direction.

In the Spanish geographical area, there are also a large number of studies intended to gather what have been research in this regard, with authors who have already signed. And not only bibliography, but also interesting and useful compilation of the steps taken by the central and / or regional government to assimilate the Information and Communication Technology to schools, all with clear inclusive philosophy. The work of Del Pozo (Del Pozo, 2008) has seemed especially useful for this project because a tour of the various laws and regulations from the Junta de Castile and Lion in the stage of primary education is made. In this paper, the author shows a synthetic review of presence of ICT skills and ICT aspects related to the legislation which regulates, organizes and structures this stage, stopping at each of the materials to highlight the objectives of each regional government regulations.

That legislation has obtained verified results through field researches (Gilarranz, 2012), although later the results will be explained.

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Reading of other regional governments policies has also been relevant. In this sense, it is demonstrated that the position of the government is essential to promote adequate infrastructure and the availability of ICT-based educational materials. Figueira Martnez (Martnez, 2006) responded with a comparative analysis of how the various departments of regional education report their educational policies in ICT. According to their study, these are mainly oriented towards the provision of facilities, teacher training and supply of resources.

2.2.3 Uses of ICT in education

The current challenge of the system in Spain is not the provision of telecommunications infrastructure and computer equipment to schools, but the innovation of teaching model developed by teachers with ICT in the classroom (Moreira, 2008). He proposes that the innovative process must have as a reference axis the development of informational and digital skills designed to prepare students as autonomous, intelligent and critical citizen of the culture of the XXI century; he also suggests a series of educational activities using ICT classified according to the skills, expression and social interaction and communication.

How ICT in education have been integrated? What specific use is made with them in schools and at different stages? The educational community concern about how narrow the use of ICT is evident in the hundreds of works that seek to create educational materials for language, mathematics, knowledge of the environment, music ... (Vzquez, 2006 and 2007). We also found that the use of these technologies not only is used in every subject, but there are interesting papers on its benefits for inclusive education. This effective use of ICT is confirmed how pupils with special educational needs get to prepare and present a topic in the classroom (Martnez, 2013).

Subjects, pupils with special educational needs and even papers focused on specific levels (De Pablos, 2012) serve to put on the table the real implication on rigorous observation of the use of ICT, so that present was controlled and future was observed. With this control we even can achieve contrast the intended use and actual use, presented differences between them being actually less transformers these actual uses in teaching than those provided by teachers (Coll, Mauri and Onrubia, 2007). Indeed, it seems that the process of integration of ICT in Spanish schools and colleges has not promoted a regular use of these technologies by most students and teachers; it is also

possible to deny a significant change as a result of their use or educational objectives and the way students learn. ICT is used primarily as tools to support the work of the teacher, mainly in the transmission of content, resulting in less frequent use of ICT to guide students' learning or to help in the process of knowledge construction (Ion, Meneses, Sigals, Momim and Fbregues, 2010).

In the case of Castile and Lion researches seem to indicate that the ICT innovation processes require a number of conditions of infrastructure, personnel, organization or motivation without which the processes are slow or do not develop (Garca-Valcrceolo and Weaver, 2009). As noted above, the range in the degree of specificity in this type of research is remarkably high, which allowed finding analysis on the integration of educational technology in schools in the autonomous community of our study in a school with interesting features (Del Pozo, 2012), where you can see the change in the organization of a school with a certification level of 5, according to the Director Plan of ICT (Educacyl).

To rate into perspective how far reaching technological methodology in education is necessary to be aware that everything need a teacher training and which are therefore their needs in this regard. It is a goal that many researchers have also covered, but we want to reflect here the results at regional level that concerns us. Increasing interest of teachers in this type of training is emphasized, implying a willingness to invest time and effort in mastering ICT and an awareness of the need for this training for the integration of ICT in the curriculum (Hernndez and Qintero, 2009).

2.2.4 Influence of ICT on the results

With the open road by the above literature review, it is possible to start looking towards the main objective pursued with this document, namely the results. In this subset is also prolific research tasks and the subsequent publications.

A little less than a decade researchers ended in interesting studies that students and teachers find in the introduction of ICT in the classroom a positive, motivating development and represented a radical change in the learning experiences of both (Condie and Munro, 2007). This date contrasts with what happened, and discussed above, in Spain and Castile and Lion, where a more traditional approach is observed; still Llomki (2008) in their study separates the pilot ICT schools with pedagogical innovations, of the normal schools, in no particular interest in ICT to improve; according to

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their inquiries, schools with special ICT projects show changes in teaching practices, although this depends heavily on the pedagogical competence of teachers related to these technologies.

It has provided a range of activities related to the ideas, beliefs and actions on ICT teachers. Teachers' beliefs about how students learn, ICT resources used by teachers or the ability to integrate ICT in their curriculum (Webb and Cox, 2004) are determinate. These authors show that when teachers use their knowledge of both the subject and the way students understand, their use of ICT had a more direct effect on student achievement.

Institutional projects for integration of information technology in education have higher real possibilities of educational integration in the classroom when they arise on the initiative of a group of teachers professionally convinced the initiative (Gmez and Morueta, 2008). In this study in the autonomous community of Andalusia there is another conclusion: the previous experience in the school becomes a key factor in utilization of projects; and in ICT projects, with high success rates, a transition from the one-person coordination to a collegial coordination develop as agent development is producing. If you only look at the level of primary education, some authors conclude that the integration of ICT at this stage improves significantly content editing applications handling and tools that allow access to information. This practice encourages active and autonomous role of the student learns to work with initiative, to select information and to communicate their results and work to improve their oral expression (Saez, 2012). However, this study did not show if technologies improve academic results, but you can interpret to be due to traditional approaches that persist in the evaluation.

2.2.5 Conclusions

Literature analysis on the relationship and the influence of Information and Communication Technology in education leads to a path with bifurcations leading finally to a maze with multiple solutions. The research findings fluctuate depending on the stage of education or the geographical area where each study is located and it is only possible to agree on one issue: the interest of the educational community about divergent use of ICT in school and the need to determine the most appropriate way forward. Moreover, you can find common agreements and others topics that are far even creating situations or contradictory conclusions between each others.

2.3 Hypotheses, research questions and objectives

One of those contradictions that attracted the most attention is the one that talks about the influence ICT have had in education across the board, from organization to results. While for some authors such influence has been a radical change in the methods and the way students learn, for other ICT influence has been a subject in the curriculum not getting their introduction to entail significant changes in the process of teaching / learning. This two-headed conclusion has an origin in the type of schools studied in each paper. The actual experience in each school leads to a different result, establishing a confrontation between schools or colleges where ICT live and are used traditionally and the schools where these technologies are a tool to develop the curriculum and not an aim in themselves.

Accessing to ICTs by students of a particular area also differentiate the results of each research, and at this point it seems essential considering educational policies taken in each case, as otherwise, research would be incomplete.

Therefore, a line of work that builds bases for a rigorous investigation for a future will be established; bases that will be settled on a field investigation of the area and the level will be studied: Castile and Lion and Primary Education.

2.3 Hypotheses, research questions and objectives

2.3.1 Hypothesis

Use of Information and Communication Technology influences academic outcomes and students motivations in primary education schools in the community of Castile and Lion positively.

2.3.2 Research questions

In order to confirm the above hypothesis, answering to several questions by previous research is necessary. With these questions we get, by their answers, the main aim, which is simply to obtain objective data on the impact of ICT on student learning and motivation.

- What has been the historical overview of the implementation of ICT in education?
- What has been the historical overview of the implementation of ICT in education in Spain?
- What has been the historical overview of the implementation of ICT in education in

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Castile and Lion?

- What is the current reality of the implementation of ICT-based educational methodologies in Castile and Lion (allocation and availability zones and schools) in Elementary Education?
- What are the tools provided by the Information and Communication Technology - TIC-types- that are applied to the curriculum development for elementary education (platforms, WebQuest, portfolio ...)?
- What is the relationship between uses of ICT to the achievement of the objectives of the curriculum?

To answer these questions, the research will be conducted in five aspects that may possibly contribute data to conclude whether the initial hypothesis is confirmed or denies:

- Equipment: reception, registration, inventory, assignment to classrooms and students, maintenance and custody.
- Students: educational and didactic aspects of ICT involving familiarization and appropriate use criteria and security and integration in learning.
- Families: Information that is made for families and the possible parents training.
- Organization: the use of ICT in the school that can affect educational, methodological, organizational aspects and involvement in the organic functioning of the school.
- Teachers: teaching-learning process, educational program and training.

At this point in the research process, we will be ready to start with a comparative study of academic achievement to provide results on this comparison.

2.3.3 Objective

If hypothesis is confirmed, this work intends to sit a solid basis for a possible re-orientation of ICT uses in a consistent way with their influence on learning.

2.4 Research Methodology

To select the methodology used in this research process it is important to be aware at all times the research problem and the objectives pursued; it is also important keeping in mind that applying more than one methodology is often necessary.

For the first part of this paper, a comprehensive literature research will be made, as it has been detailed above. With this study not only an extension of the state of the art

will get done, but it will respond to a several of partial questions, which should help answer the central question research. The literature study will help us understand the historical overview of the implementation of ICT in education overall, Spain and the Castile and Lion and also know the policies in this regard.

Once in possession of as much of the data from literature, it has been considered that the best option for this research is the direct observation and surveys. Firstly, we will make a case study (or case report). A selection of five representative schools will be used and their work with ICT will be seen in elementary education. The observer will collect their data directly to generate realities necessary for this work, namely, ICT equipment and organization, relationship teaching time / time using ICT, information to families, observations socioeconomic reality of the area which houses the school (in this sense the sample of schools for the study aims to be representative of rural area and urban area, at least), relationship between teaching programs and use of ICT and the ICT tools that are applied to the development of elementary education curriculum, such platforms, WebQuest, portfolio ... and data about the motivation of teachers and students.

The observation will give us quantitative data equipment, relationship teaching time / time using ICT... socio-economic reality - and qualitative data ICT organization, motivation, etc.- In addition to the case study for achieving our goals, questionnaires will be developed in order to collect data from a representative sample of the school community. Questionnaires will be developed taking into account the following information: What information do we need? Firstly, confirm some of the data collected (observed) in the case study as the ICT provision in classrooms or the instruments used.

Secondly, the perception of the different sectors of the educational community about motivation in the teaching / learning related to the implementation of ICT in the classroom. We also need to know, in order to establish a possible link between results and use of ICT, the availability of students outside the classroom (at home) to computers, tablets, etc.

What people do we need their opinion of?:

Elementary Education Teachers.

Elementary Education students.

Elementary Education mothers / parents / Guardians. Consulting Teacher Training

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Centers (CFIEs).

With these assumptions, the result will be the development of four questionnaires and subsequent selection of sample to fill them. Moreover, it is possible that after reading and analyzing some of those answers, the researcher decides to conduct an in depth interview for further information that may be useful for achieving the objectives. With these interviews exclusively-predictably-teachers would be achieved more directly to inquire about their own perception about motivation and influence the results from the use of ICT.

Finally, it is also intended to collect historical data on academic achievement from the selected school. We have, therefore, quantitative and qualitative data. As regards the scope of the quantitative software, after an investigation, the possibilities are varied. This researcher prefers the SPSS, but the economic cost could be a deterrent; we have revised others software, and PAST program could meet our expectations for completeness of results, despite some limitations. But research is concerned here it seems a valid software.

As options for the analysis of data generated in qualitative terms, NUD.IST is preset program, one of the most widely used as a tool for qualitative research. This program allows you to design a system of established categories based on the purpose of the investigation.

2.5 Research plan

Our research plan covers a four years period, considering that the research will be done part-time because of the personal circumstances of the researcher. So, after careful study of the processes to be followed, the work will be divided as follows, being permeable to flexibility that may arise from the process or factors external to the research:

2.5 Research plan

TASK	CALENDAR / TIME OF PREPARATION
Literature review	September-November 2014 (2 months)
Development of state of the art	December 14-February 15 (3 months)
Selection of collection methods data	March 2015 (1 month)
Development of questionnaires	April-June 2015 (3 months)
Sample selection for case studies	July 2015 (1 month)
Implementation of case studies	September-December 2015 (3 months)
Review / update of questionnaires	January 2016 (1 month)
Sample selection for questionnaires	February 2016 (1 month)
Implementation of questionnaires	March-May 2016 (3 months)
Data Collection	June-July 2016 (2 months)
Data processing	Sep-December 2016 (4 months)
Study and comparison of results	January-May 2017 (5 months)
Writing partial articles	June-July 2017 (2 months)
Writing report	September 17-February 18 (6 months)
Preparation of the thesis defense	March -April 2018 (2 months)
Thesis defense	May 2018

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Director thesis

3.1 Director proposal

Enric Guaus is a researcher in sound and music computing at the Music Technology Group, Universitat Pompeu Fabra, and professor at the Sonology Department, at the Escola Superior de Msica de Catalunya. He obtained a PhD in Computer Science and Digital Communications, in 2009, with a dissertation on automatic music genre classification. His research interests cover music information retrieval and human interfaces for musical instruments. He is assistant professor in acoustic engineering at the Universitat Pompeu Fabra and lecturer in maths, electronics and computer science at the Escola Superior de Msica de Catalunya. He is also a consultant professor at Universitat Oberta de Catalunya and collaborator at different master programs. He is member of the Observatori de prevenci auditiva per als msics i de la Barcelona Laptop Orchestra.

3.2 Relation to UOC

He is consultant professor at Unviersitat Oberta de Catalunya and collaborator at different master programs.

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