A comprehensive model to assess the implementation of educational ICT policies

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ABSTRACT

The research presented here is part of the Project called “Regional educational policies and their effects on educational innovation supported by the integration of ICT in schools” which is inside of National Master Plan of Scientific Research, Development and Technologic Innovation. The main aim of this paper is to present a comprehensive model for assessing policies for ICT in education. For that we are going to review international and national literature about educational innovation with ICT in three levels: micro, meso and macro. This let us to identify key factors related to the impact of policies for ICT in education that they are present in situations that could be considered innovative. This type of comprehensive approach not only is focused on addressing the integration of ICT from what happens in classrooms, but also consider contextual factors, organizational factors, professional profiles, methodological issues, believes and skills, and training factor that affect to different areas of educational performance and actors involved in it.

Keywords
Information and Communication Technologies (ICT); Assess educational policies; Educational innovation with ICT.

1. INTRODUCTION

Educational stakeholders recognize the role of ICT as a key enabler of innovation and creativity in Education and Training (E&T) and for learning in general. Throughout Europe there are diverse national policies for ICT in education and many activities are undertaken to promote the use of ICT in education and training in Europe. (Eurydice, 2011).

The most important enterprise that addressed educational policies bore in Lisbon with the initiative e-Europe in 2000. In Spain, researches about policies for ICT in education have carried out several researches to know impacts that these policies have taken in communities where have been developed. These researches have pointed out the specific actions that have been taken in each autonomous community. (De Pablos, Area, Valverde and Correa, 2010; De Pablos, Colás and González, 2010; González-Pérez, 2012a, 2012b and 2010).

Putting ICT-enabled innovation for learning into practice on a large scale, involving large and diverse groups of learners and/or teachers at system level, has different enablers and barriers to small-scale projects and initiatives (Kampylis, Bocconi and Punie, 2012). Thus, there is a need to clearly articulate the essential components of innovative learning environments associated with a systemic innovation of Education and Training. (Bocconi, Kampylis and Punie, 2012).

De Pablos et al. (2010) identify positive factors such teacher attitude, educational management, space and resources availability and commitment of managers to incorporate ICT in schools that enable to improve educational practices with ICT.

However, it is also highlighted that there is still an implementation gaps in the use of ICT in education. Thus, they can have negative impact in the innovative use of ICT in education.

According to Kozma (2003) a successful innovation in one place is partly a function of good ideas, but, more important, it is largely a function of the conditions under which those ideas flourished.

2. OBJECT OF STUDY

The main aim of this paper is suggest a multi-dimensional model to assess comprehensively the implementation of policies for ICT in education in three levels: macro, meso and micro. This model is going to be built through the review of current researches that emphasize in key factors for the success of educational policies with ICT. Also it describes the vision of a holistic and systemic model where policies, technology, learning outcomes and organizational dimensions are part of the process to innovate in schools.

3. METHODOLOGY

For this research the data had been collected through a deep literature review that have included a selection of journal articles, books, book chapters, conference proceedings, reports, handbooks and theses, specialized in the field of innovating teaching and learning practices, assessment and factors involved in the successful implementation of policies for ICT in education.

The access to these materials has been by search tools and access to databases such as Scopus, ISOC, ERIC and Dialnet. But it has also been used the system that provide an advanced search through Google Scholar.
4. FACTORS INVOLVED IN THE IMPLEMENTATION OF POLICIES FOR ICT IN EDUCATION

Until now many researchers have been commissioned to study which factors help or hinder the success of educational change in general (Fullan, 2002; Kinsler and Gamble, 2002), and specifically in relation to ICT (De Pablos, Colás and González, 2010; Bocconi et al., 2012).

Some research that approach to these issues more specifically emphasize on organizational aspects, and in the meant by the organization, in this case the school, is ready to implement changes in the organizational structure and daily activity (Underwood and Underwood, 1990; Cuban, 1999). Others analyze external factors of the school that have more presence in the implementation of ICT-based innovations (Venezky and Davis, 2001).

From another view, it was studied the role of the teacher related to the relationships established between innovation supported by the use of ICT and the impact of these on teacher well-being (De Pablos and González-Pérez, 2012).

Other researchers are focuses on highlight factors related to the process of implementing policies for ICT in education like: i) The study of domains and levels of pedagogical innovation in schools when use ICT (Mioduser, Nachmias, Tubin, and Forkosh-Baruch, 2003; Tubin, Mioduser, Nachmias and Forkosh-Baruch, A. 2003); ii) Frame ICT implementation as a dynamic process in which the benefits of ICT on student learning is mediated by pedagogical and organizational factors in a school setting. (Wong and Li, 2008). This study is focused on the development of multilevel models that analyze the implementation of ICT in managing change in schools, (Wong and Li, 2011) attempt to bridge simple models that accommodate a single dependence relationship among variables, by developing models that conceptually integrate ICT implementation with changes in student learning within a context of managing change in schools. iii) Or the research about factors involved in the implementation of educational innovations using technology. (Nachmias, Mioduser, Cohen, Tubin and Forkosh-Baruch, 2004).

At the national level it is important to note the study about some factors that encourage innovation and best practices with ICT within schools. De Pablos et al. (2010) point out that the conditions that enable to innovate using ICT in schools are mainly the attitude of teachers, the awareness and commitment of headmaster with the integration of ICT in schools and, spaces and ICT resources available to develop innovative project, mainly.

5. RESULTS: A MODEL TO ASSESS COMPREHENSIVELY THE IMPLEMENTATION OF POLICIES FOR ICT IN EDUCATION

In order to capture the complexity and richness of the learning eco-system (Law, Yuen and Fox, 2011) a multi-dimensional model is proposed. The main aim of this model is offer a comprehensive assessment about the ICT-enabled factors that, according to the literature review, are involved in educational innovation with ICT.

The balance and relationship between the theoretical and practical aspect of the study is central to the approach. Three fields of literature are of interest. Firstly, the literature on policies for ICT in education is important to analyze the effect of Government policies and other external influences. Secondly, the literature on management of change in an organization, in recognition of the view that the introduction of ICT into a school setting is simply a specific example of a change. Thirdly, the field of literature relating to use of ICT in schools, in order to uncover any special additional requirements or considerations demanded by this purpose and setting. At this field is important to consider the role of the teachers and how students take responsibility for integrating new methodologies and practices with ICT.

Then, the next table presents a comprehensive assess model whose it has three different influence layers: macro, meso and micro. It is a set of factors that attempt to assess the success on policies for ICT in education.

Table 1. Propose a multidimensional model to comprehensive assess of policies for ICT in education

<table>
<thead>
<tr>
<th>Macro</th>
<th>Meso</th>
<th>Micro</th>
</tr>
</thead>
<tbody>
<tr>
<td>Policies for ICT in education</td>
<td>Learning communities</td>
<td>Develop digital skill in students</td>
</tr>
<tr>
<td>Infrastructure and connectivity</td>
<td>Social committed and responsibility</td>
<td>How contents are apply</td>
</tr>
<tr>
<td>Digital Resources</td>
<td>Leadership &amp; Values</td>
<td>Integrate new methodology in</td>
</tr>
<tr>
<td>Professional profiles (ICT coordinator)</td>
<td>Teacher lifelong learning</td>
<td>how students react with new methodologies</td>
</tr>
<tr>
<td>Management space and time</td>
<td>Teacher qualification in ICT</td>
<td>New ways to assess</td>
</tr>
<tr>
<td></td>
<td>Believes and skill</td>
<td>Resources</td>
</tr>
<tr>
<td></td>
<td>Design content using ICT</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Apply new methodologies</td>
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<tr>
<td></td>
<td>Activities planning</td>
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</table>

To sum up, this model is conceptualized as innovative because it considers the implementation and the use of educational ICT policies in three levels (macro, meso and micro) to improve learning and teaching practices in formal context. According to the literature all factors that have been pointed out before are necessary to get a success environment when teachers attempt to integrate ICT in schools. However, it is not less important to know, what is the point of view from other agents (For instance: headmaster and students) about considering ICT as a transversal factor in the curriculum.

6. CONCLUSIONS

The multi-dimensional conceptualization of the influence layers model proposed here, suggests that is necessary a systematic approach in order to assess comprehensible policies for ICT in education.
This research set out to address this by developing a theoretical framework for the identification of important factors in relations to ICT implementation in Spanish compulsory education. However, next step it will undertake to analyze a study case where the findings mapped back the theoretical framework, so it will help to bridge the gap between theory and practice.

7. ACKNOWLEDGMENTS
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8. REFERENCES