

QUALITY SCHOOLING IN THE NETWORK SOCIETY: A COMMUNITY APPROACH THROUGH THE EVERYDAY USE OF THE INTERNET¹

Beginning with a discussion of the latest findings in the information and communication technologies (ICT) and educational improvement field, this article develops a comprehensive strategy to analyse online community building. Far from offering a utopian or dystopian vision, we study the contribution of ICT appropriation as a tool for collaboration, participation, and co-responsibility in the everyday functioning of classrooms and schools. To do so, we examine and discuss school policies, expectations, and the current rate of internet use among administrators, teachers, and students from a representative sample of 350 schools in Catalonia (Spain). Our results show a sparsely connected education system, in which the integration of ICT does not appear to trigger a substantial revolution in established schooling practices. Our concluding statements defend the importance of ICT in education as the ultimate means of interaction that may enable community building to improve the processes of managing, teaching, and being educated in the network society.

Does improved technology mean progress? Yes, it certainly could mean just that. But only if we are willing and able to answer the next question: Progress toward what? What is that we want our new technologies to accomplish? [...] In the absence of answers to these questions, technological improvements may very well turn out to be incompatible with genuine, that is to say social, progress. (Marx, 1987, p. 41)

1. INTRODUCTION

Although educational research has not always provided the expected empirical evidence, the debate about the role of information and communication technologies (ICT) in improving learning and education at large has been fundamentally led by an excessively optimistic view on the matter (Beastall, 2006; Buckingham, 2007; Miller & Olson, 1994; Reynolds, Treharne, & Tripp, 2003; Selwyn & Gorard, 2003; Trend, 2001). While this is not a specific problem –or restraint– of this context (see Mattelart, 2002, and Webster, 2002, for a broader discussion), one must admit that education has been one of the main harbours for a rhetoric about the benefits that technology may generate in the transition towards an information society (see, e.g., Papert, 1993, Perelman, 1992, and Tapscott, 1998). However, how these benefits will precisely materialise still remains unclear, if one intends to avoid producing a utopian discourse to discuss them.

According to the evidence provided by international comparative studies (see, e.g., Eurydice, 2004, Kozma, 2003, Law, Pelgrum, & Plomp, 2008, and OECD, 2005), progress has been observed in the infrastructural capacities of schools, but we cannot conclude that this has translated into a substantial improvement in the students' learning processes. A wide gap between ICT access, use, and quality use seems to be the key to explain the absence of educational changes (Drenoyianni, 2006). But more importantly,

¹ A preliminary report of our on-going research was partially presented at the International Congress for School Effectiveness and Improvement (ICSEI), January 2–5, 2005, Barcelona, Spain.

these results yield irrefutable empirical evidence against the widespread optimism regarding the power of ICT: In practice, their presence in schools does not improve the students' academic performance.

Taking this apparent contradiction as a starting point, we will start this article by briefly discussing the main results obtained from the basic research conducted during recent decades on the role of ICT in educational improvement. After a critical revision of the traditional approach to the question, we will present an alternative based on the analysis of the contribution of ICT to the improvement of school functioning. To do so, and before presenting the methodological basis of our empirical research, we will take a look at the evidence revealed by research in the fields of School Effectiveness (Purkey & Smith, 1983) and School Improvement (Hopkins, Ainscow, & West, 1994) (SESI) with regard to the importance of aspects such as collaboration, participation, and co-responsibility for the school's success.

In the context of a society that is progressively organised around information networks (Castells, 2000), the goal of this article is to analyse the way in which students, teachers, and managers incorporate ICT –and specifically the internet²– in the communication and collaboration practices typically found in the context of school. In this regard, as shall be discussed later on, rather than attempting to demonstrate the existence of specific learning benefits (i.e., an increase in students' achievement in standardised tests), our interest lies in examining their role, in the broad sense of the word, in the improvement of the processes of managing, teaching, or receiving an education that comprise schooling. In an attempt to avoid any causal connection between ICT incorporation and educational improvement, our ultimate goal is to assess the eventual transformation of these processes through the inspection of their actual appropriation³ for collaboration, participation, and co-responsibility. In other words, from a social and community perspective, we want to examine the way in which the internet is incorporated into everyday activity by the various actors involved in building and maintaining the social relationships that can contribute to quality schooling in the network society.

2. A HALF-CENTURY OF RESEARCH ON ICT AND EDUCATIONAL IMPROVEMENT

According to reports by Cuban (2001), Johnson and Maddux (2003), and Wellington (2005), the acquisition and massive introduction of computers in schools over the past 25 years have been strongly linked to high levels of expectation regarding their usefulness as an instrument for educational reform. However, despite the constantly growing investment in ICT (Twining, 2002), the fact is that the results obtained in practice have

² As a result of the perspective adopted in our research, the non-capitalisation of the word “internet” in this paper –as in the common use of terms like “television”, “radio”, “newspaper”, and “telephone”– is a deliberate expression of its daily use and humble nature.

³ Although the term “appropriation” may be commonly used in situations in which a subject sets an object apart for his/her particular use in exclusion of others, in this article we use “ICT appropriation” to denote the process of their meaningful incorporation in concrete contexts of actions of everyday life. See Universität Siegen et al. (2010) for a recent utilisation in a broader study of the social consequences of ICT for the European Commission, and Dwyer, Ringstaff, and Sandholtz (1989), for a seminal discussion in the particular context of ICT introduction in schools.

not been more useful than prior technological innovations, if we analyse them from a historical perspective (D. K. Cohen, 1987; Cuban, 1986). In line with the results obtained in the international comparative studies to which we referred earlier on, evidence even demonstrates the need to reconsider whether those investments are really necessary (Armstrong & Casement, 2000; Oppenheimer, 2003), given the little benefit obtained in terms of educational improvement.

Nevertheless, the study of the educational gains resulting from the incorporation of ICT into educational processes is by no means a new subject of interest for the scientific community (see, e.g., Clark, 2001, Clark & Salomon, 1986, Saettler, 1990, and de Vries & Mottier, 2006). Encouraged by the development and popularity of distance education, educational research developed in the context of Media Comparison Studies (Lockee, Burton, & Cross, 1999) is an attempt to demonstrate the harmlessness of media delivering a distance education comparable in its effects to face-to-face classroom education. Additionally, while subsequent technological innovations such as the transistor radio, the television set, or the computer established their presence, this interest veered towards the configuration of an ample debate focused on the comparison of the effectiveness of the different media (see Russell, 2001, for a thorough review of the matter). Traditional teaching was, naturally, included amongst them, under the hypothesis –and belief– that there might be some kind of learning benefit linked to the use of new technologies.

Thus, during the second half of the 20th century an evolution took place in the hypotheses that have dictated the directions of research as well as in the methodology used to prove them. Non-analytical, descriptive works, which have usually been optimistic about the role of technology, progressively started to give way to a methodological sophistication aimed at finding the causal connections between media use and academic performance (Hannafin, 1986). The moment had arrived to generate evidence to prove the capacity of ICT to improve instructional effectiveness, assessing their impact on quantitative educational outcomes (i.e., students' academic results) through experimental and quasi-experimental research designs (Ross & Morrison, 2004). As in other areas such as agriculture or medicine, in which the adoption of new practices is contingent on the prior empirical demonstration of their effectiveness, an accumulation of research on ICT gave way to the first systematic reviews –generally meta-analyses (i.e., Khaili & Shashaani, 1994, C. C. Kulik & Kulik, 1991, J. A. Kulik & Kulik, 1987, and J. A. Kulik, Kulik, & Cohen, 1980)– about the empirical evidence obtained from experimental designs. In light of these results, ICT seemed to become an aid or supplement to the teacher's work, and, therefore, hopes regarding their capacity to improve learning processes began, at least partly, to be materialised.

However, due to both the shortcomings inherent to the use of meta-analysis (see Andrews, 2005, Slavin, 2008, and Torgerson, 2006, for an exploration of such limitations in the field of educational research) and the methodological deficiencies found in some of the studies reviewed (see, e.g., the work of Clark, 1985, Maddux, 1995, Rachal, 1993, and Reeves, 1993 and 1995), the conclusions found in these first studies were in fact brought into question. Beyond their well-established optimistic discourses, and once the necessary precautions are taken, we can claim that there is indeed very little high-quality research evidence to demonstrate an effective benefit of ICT use in education. Technology, therefore, would not have an active role of its own in improving the learning and teaching processes. And this would explain why adequate evidence is not found in

those studies were we to establish strict criteria about the quality of research designs considered in those reviews (Clark, 2001; Russell, 2001).

As Clark (1994) convincingly argues, “if learning occurs as a result of exposure to any media, the learning is caused by the instructional method embedded in the media presentation” (p. 26). In other words, what would really cause any learning gains, according to studies aimed at such a demonstration, would not be the introduction of ICT in the learning and teaching processes per se. Instead, educational improvement would be found in the educational intention –that is, the instructional methods, following Clark’s approach– behind teaching innovation, in which the use of ICT has also been developed. Being unable to control adequately for differences between experimental and control groups, that is to say, those differences that appear not only in ICT use but also in the teaching and learning methods involved, one could argue that a false effectiveness has been systematically attributed to the comprehensive research reviews cited above. Consequently, due to the incorrect claim that educational gains appear simply as a result of the implementation of ICT, a deterministic position about its role in educational improvement has been widely but also mistakenly privileged.

To conclude this first part, and according to the results that international comparative studies presented decades later (Eurydice, 2004; Kozma, 2003; Law, Pelgrum, & Plomp, 2008; OECD, 2005), the mere presence of ICT in the teaching and learning processes does not necessarily involve a net increase in traditional educational outcomes. This, in fact, does not imply any intrinsic contradiction with respect to the evidences available from previous research undertaken in the field as has been incorrectly pointed out. However, as a non-deterministic technological approach such as ours suggests, it is important to note that, although ICT use does not result in a gain in itself, it is possible to observe such an educational improvement if we take into account the educational intention –the embedded instructional methods– with which ICT are finally incorporated into the educational processes.

It is for this reason that an exhaustive analysis of the use of ICT by the multiple actors involved in a school’s daily activities seems relevant, going beyond the mere comparison of the different delivery modes (Sener, 2005) including traditional classroom teaching (i.e., face to face). This would be of particular relevance if, as in our case, the focus is moved from the traditional academic outcomes to the actual transformation of the processes that comprise everyday activity in classrooms and schools, exploring ICT appropriation from a wide and complex perspective that considers both their internal functioning and their opening to the external context. It involves defining educational improvement in a less restrictive manner through the analysis of the eventual enhancement of the schooling processes: namely, managing, teaching, or being educated in the schools. More specifically, as it is our intention in this article, it involves developing a comprehensive community approach to promote quality education in schools and secondary schools.

3. A COMMUNITY APPROACH TO QUALITY SCHOOLING IN THE NETWORK SOCIETY

In his discussion of the possibilities and limitations of ICT in the field of SESI, Rudd (2001) presents these two major areas as unrelated and underresearched. After discussing the absence of a specific measure to assess the influence of ICT in the classic analytical models employed to study successful schools, Rudd laments the insufficient amount of conclusive evidence in the most recent studies. On the one hand, too few theoretical discussions about the role of ICT as a key factor in SESI literature have been developed. On the other hand, a small number of empirical researches have been presented, in general limited to small-scale studies of particular initiatives or projects. Following his argumentation, this fact could be explained by the particular difficulty in isolating the impact of technology in schools from the multiple factors that explain changes in successful schools (Rudd, 2001, pp. 214-215).

Nevertheless, according to our earlier discussion about the existing research on the relationship between ICT and educational improvement, to present such an approach would be indeed of little interest. On the contrary, and as we will proceed in this article, we consider that the analysis of these matters must avoid dealing with technology as an independent and differentiated change factor. Moreover, it must consider the results and evidences that research in the field of SESI has gathered with regard to quality improvement as a research framework. As shall be discussed later, this is the starting point of this article, in which we intend to propose an analysis of the specific role of ICT –and particularly the internet– as a key tool for community building in the everyday activity of school. Yet, an important question arises: Why should such a social and community-centred approach be so relevant for the analysis of the functioning and improvement of schools?

The complex co-evolution of School Effectiveness (Purkey & Smith, 1983) and School Improvement (Hopkins et al., 1994) has facilitated the creation of an interesting analytical framework to study the school-related factors that contribute to students' prospects for academic success. Although the main goal of this article is not to deliver a detailed analysis of the genesis of both movements, we must nonetheless mention the fact that their development and subsequent convergence has given rise to two fundamental aspects for an approach like ours. It is important to highlight the importance of inequality in the ways in which schools deal with their students and their education, and the necessity to focus the analysis on the processes that occur in classrooms and schools in order to explain their success. Both are important principles that need to be reviewed and summarised in order to present the theoretical foundations in which our approach to quality schooling throughout community building in the network society is developed.

On the one hand, and contrary to what was claimed in the pioneering studies offered by Coleman et al. (1966) and Jencks et al. (1972), the capacity for schools to modify the expected students' performance according to their personal and household conditions became the focus of attention in the first researches dealing with educational inequality (see, e.g., the first important responses to this issue by Mortimore, Sammons, Stoll, Lewis, & Ecob, 1988, and Rutter, Maughan, Mortimore, & Ouston, 1979). As has been discussed on numerous occasions ever since the birth of the School Effectiveness field, studying at a specific school is actually of relevance since, in fact, some schools obtain better results than others, regardless of the socioeconomic background of the students they serve (Mortimore, 1991). In other words, it does matter what school a child

attends, and some attention needs to be paid to analysing the differential methods in which the complex schooling processes are dealt with.

On the other hand, the quantitative, correlational, and very often a-theoretical research of the school's background in relation to the students' success developed as part of those pioneering studies soon revealed its own limitations to understanding and explaining students' improved academic performance (Reynolds & Stoll, 1996). That is to say, the mere identification of the school's characteristics systematically associated to the students' success did not shed light on the processes occurring either in the school or in the classroom's everyday activity (Fullan, 1985). Furthermore, it did not provide any indication about the specific ways in which changes in school functioning could be made in order to achieve educational improvement towards the desired effectiveness (Firestone & Corbett, 1987). Although they were focused on assessment and change relative to specific projects and cases, it was precisely the first studies in the School Improvement field that began developing this line, paving the way to understanding the processes behind educational success to be achieved beyond the mere identification and description of the associated school characteristics.

However, an approach focused on processes, rather than simply the school's characteristics, did not prove to be the best way to proceed either, since its conceptualisation, exclusively focused on applied intervention in specific study cases, was not aimed at the general application of its findings. As we noted earlier, it was the cooperative work of both School Effectiveness and School Improvement (see Reynolds, Hopkins, & Stoll, 1993, for a review of the different approaches) and their respective efforts to unify their guiding principles that led to the creation of a common set of grounds and basics that went beyond the limitations that had been revealed in their early stages. For instance, works by Stoll and Fink (1994), Reynolds et al. (1996), Louis, Toole, and Hargreaves (1999), and Scheerens (2000) ended up shaping a well-established research area in educational quality intended not only to produce a set of generalisable results from a shared analytical framework but also to develop through the careful examination of the underlying process indicators of school functioning that can, ultimately, be manipulated in order to encourage educational change and improvement in schools.

Of the resulting works, and the vast literature generated in this field, one could highlight several that have demonstrated the relationship between school success and what was then termed as its organisation culture (see, e.g., A. Hargreaves, 1994, D. H. Hargreaves, 1995, and Lamperes, 2005). We are facing a school culture or climate (see Van Houtte, 2005, for an interesting terminological discussion) that, as far as an approach like ours is concerned, has been showing a positive and consistent link between the different aspects involved in community building and the improvement of schools (see, e.g., Becher, 1984, Blank, Melaville, & Shah, 2003, Bryk & Driscoll, 1988, Bryk & Schneider, 2002, M. Cohen, 1983, Coleman & Hoffer, 1987, Hickman, Greenwood, & Miller, 1995, Lieberman, 1990, Little & McLaughlin, 1993, Mortimore et al., 1988, Sawyer, 2001, Stoll & Fink, 1994, and Wohlstetter, Smith, Polhemus, & Hao, 2001). The focus turns to key aspects such as, among others, encouraging a shared vision with common values and goals, establishing rules for effective collaboration, creating and fostering a sense of belonging, enabling and supporting a participative leadership based on the interdependence and autonomy of the multiple actors included, involving parents

and enabling them to participate, and encouraging the school to be open to establishing relationships in its local context.

It is precisely these aspects, normally dealt with separately in partial studies, which are the essential elements to be considered for a genuinely community-centred approach in which the school is defined as a social organisation in which different opportunities may or may not be developed and supported for collaboration, participation, and co-responsibility. Our interest is not in assessing an intrinsic and deterministic benefit of technology, or an artificial and flawed comparison between users and non-users. Rather, our goal is to build a comprehensive approach to improve our knowledge about its appropriation as an effective tool for community building in classrooms and schools. And it is within this context, going beyond pointing out their potential as a tool for accessing, managing, and processing information, that we present our research about the role that ICT –and particularly the internet– play in encouraging and developing these opportunities to discover, exchange, and improve the processes of schooling –namely, managing, teaching, or being educated– in the network society.

4. ABOUT THIS WORK

We will next present a comprehensive analytical strategy for developing a community approach to quality schooling by examining specific data collected through a research-administered survey in Catalonia⁴ (Spain). As we have already argued, the educational benefit of ICT is closely linked to the purpose for which they are appropriated and incorporated into practice. Drawing on a representative sample of students, teachers, and principals, our work focuses on the traces of community building in everyday life, analysing ICT's specific contribution to the development of collaboration networks in and between schools. Our research, therefore, transcends the boundaries of specific educational institutions and seeks to provide substantial facts and figures for Catalonia's entire non-university educational system.

The results discussed here represent an in-depth examination based on the research carried out in the *Catalonia Internet Project: Schooling in the network society*⁵ (Mominó, Sigalés, & Meneses, 2008; see also Sigalés, Mominó, & Meneses, 2007, for a detailed report on the research project that includes a discussion about the last 25 years of ICT policies and strategies preceding the study). This project was funded by the Department of Education of the Generalitat de Catalunya (Catalan Government) with the support of the Jaume Bofill Foundation. Its objective is the empirical analysis of the process of incorporation of the internet into primary, secondary, and post-secondary education in Catalonia. According to the statistics provided by the Catalan government's

⁴ Catalonia is an autonomous region in the north of Spain, self-governed through its own Parliament, with authority in numerous areas such as local governments, justice, commerce, transportation, housing, health, public safety, social welfare, language, culture, and education. Specifically, and very relevantly for the concerns of this article, the Catalan government has full competences in the planning and execution of primary and secondary education in its own territory.

⁵ The *Catalonia Internet Project* is an interdisciplinary research programme focused on the characteristics and development of the information society in Catalonia, directed by professors Manuel Castells and Imma Tubella and conducted by researchers from the Internet Interdisciplinary Institute (IN3) of the Open University of Catalonia (UOC). See <http://www.uoc.edu/in3/pic/eng/>

Department of Education, the study's universe or population included all the students, teachers, and school principals from the 2,726 educational centres that provided compulsory primary and secondary education, post-compulsory education, and vocational education during the 2002–2003 academic year.

In order to get a thorough representation of the diversity of the population, we designed a random stratified multistage sample of 350 centres, taking into account important variables such as educational levels, geographical distribution, rural/ urban location, and the public/private funding of schools. The field work was carried out between December 2002 and April 2003 and involved the administration of an in-depth, in-school questionnaire supervised by the research staff to 6,612 students, 2,163 teachers, and 1,050 members of management (see Table 1). At a confidence level of 95.5%, and under the maximum uncertainty ($p = q = 0.50$ and $k = 2$), this research enables us to obtain statistically significant information for the entire educational system of Catalonia with a maximum error margin of $\pm 5.1\%$ for school management teams, $\pm 2.1\%$ for teachers, and $\pm 1.2\%$ for students.

Table 1. Participating management staff, teachers, and students from 350 schools.

	Management staff*	Teachers	Students	Schools
Compulsory primary	525	785	2,918	175
Compulsory secondary	246	673	1,883	246
Post-compulsory	177	533	1,269	177
Vocational education	102	172	542	102
Total	1,050	2,163	6,612	350

*Three members of each management team were interviewed in every school: principal, head of studies, and ICT supervisor.

As the reader may recognise, there are several ways in which ICT may contribute to enhancing the schooling experience of students, teaching staff, and management teams (Hepp, Hinostroza, Laval, & Rebein, 2004; OECD, 2001a; UNESCO, 2002 and 2005; Voogt & Knezek, 2008). However, in order to keep our focus on the community approach of this article, we have omitted their possible contribution in any aspect concerning the access, management, and processing of information. Instead, we have focused on the actual exploitation of the new opportunities that may arise to formulate class and school dynamics in a broad sense, including students' and teachers' interactions, patterns of collaboration amongst the teaching staff, school administration, and the opening of the school to the families, other professionals, and the local community.

To examine the data collected in this study, we have developed an analytical model based on social capital theory for a comprehensive and systematic study of the various indicators we have at our disposal concerning the role of ICT in community development both in classrooms and schools. In accordance with Meneses and Mominó (2008), we define the construction of communities fundamentally not as a rhetorical but as a symbolic process, based on the ability of a human group to agree and maintain the belief that (a) its components have something in common, which (b) distinguishes them significantly from people belonging to other groups (A. P. Cohen, 1985). This relational

notion of community, which we formulate through the theory of social capital⁶, facilitates an empirical approach to assess the opportunities for mutually beneficial collaboration that occur in the everyday activities of schools, strengthening both intra- and inter-group relationships.

Table 2. Social capital model for community building in classrooms and schools.

	Bonding social capital	Bridging social capital
Classroom community building (pedagogical perspective)	Teamwork as a class dynamic among students	Participation in joint educational projects Opening up the classroom to the local community
School community building (organizational perspective)	Teamwork as a work dynamic among teachers Participation in the management of the school	Opening up the school to the local community

As has been discussed, our framework focuses on the analysis of these two basic types of indicators (see Table 2), namely bonding and bridging social capital, which we observe from both a pedagogical perspective –regarding the classroom as context of activity– and from an organisational perspective –the wider context of the school. On the one hand, bonding social capital (that which unites, fastens, or binds) is one type of social activity brought about through the formation and consolidation of strong ties that enable close cooperation in relatively homogeneous groups with similar demands and goals. For example, in the school context that we examine in this work, this involves the construction of what we could call a sense of “we-ness” based on the use of the internet to promote collaboration among students in the classroom, the development of strategies for communication, and teamwork among teachers, or the creation of conditions and opportunities for internal groups to participate in the management of the school.

On the other hand, bridging social capital (which reduces gaps or distances, connects separate points, or creates cross-cutting ties) is a second type of social activity related to less frequent interaction, and which leads to heterogeneity in relationships through the establishment of weak ties between individuals belonging to different groups. In contrast to the connections resulting from bonding social capital, the main quality of those connections that promote what we could term a sense of “you-ness”⁷ is not that

⁶ As discussed in Meneses and Mominó (2008), our research is not based on an individualistic but a collective approach to the concept of “social capital”, which defines it as the set of social networks and social norms that facilitate mutually beneficial cooperation (see, e.g., Coleman, 1988, OECD, 2001b, Putnam, 2000, and Woolcock & Narajan, 2000). The work of Gittel and Vidal (1998) is fundamental for the articulation of our relational conceptualisation of the distinction between bonding and bridging social capital.

⁷ Parallel to what we called a sense of “we-ness” in community building, we are also trying to suggest a different –but not opposed– feeling of “you-ness”. That is, a recognition of those other than us (e.g., out of the boundaries that define us as a human group), whose demands and goals are common to ours, as

they are necessarily weak but that they are more capable of building bridges when compared with stronger bonds. Hence, in this context, our interest lies in the specific ways in which the internet is used to create a sense of co-responsibility and involve others in the school's everyday practices, for example, opening the classroom to the involvement of local community agents, fostering collaboration with other schools through joint educational projects, or generating opportunities for the local community to become involved in the joint-management of the educational centres.

This is a fundamental distinction for an empirical analysis of community building, to the extent that neither of the above two kinds of relationships are interchangeable, nor can the adequate functioning of a group be attributed only to the encouragement of only one of them. On the contrary, following the analytical model for the study of the specific context of schools that we have developed, the creation of a sense of “we-ness” –through the establishment of norms and shared values that distinguish us from others– becomes as important as the development of a sense of “you-ness” –through the recognition of others as worthy partners for mutual-benefit collaboration.

As we shall see in the following section, these are the various opportunities for community building to be found in school's everyday life as we examine it, focusing particularly on the ICT policies promoted by management teams in schools, the views and concerns of the different groups involved regarding their convenience and value for these purposes, and their effective integration into the processes of schooling. Regardless of the specific implementation, be it asynchronous (i.e., through web-based message boards, email conversations, or news rooms) or synchronous conferencing (i.e., through internet relay chat or other instant messaging services), our research is aimed at inspecting the particular purposes that the actual appropriation of the internet serve as technical infrastructure for collaboration, participation, and co-responsibility both in classrooms and schools.

5. RESULTS

Beyond their undeniable potential as tools for accessing, managing, and processing information, the results presented in this article aim to illustrate the extent to which the appropriation of ICT –and particularly of the internet– by students, teachers, and principals is contributing to community development in different areas of everyday life in school. We begin by examining the daily activity in the classroom, which is, for us, the core around which the educational process is organised, and then move our focus to the school as a social organisation in the second part.

5.1. ONLINE COMMUNITY BUILDING IN THE CLASSROOM

In the study of the appropriation of the internet as an effective tool for community building, we shall begin by exploring the classroom as the primary context of everyday activity and interaction. Thus, we will analyse its presence in the creation and support of collaborative networks in three key areas: teamwork in the classroom, participation in joint educational projects with other schools, and the opening up of the classroom to the

valuable partners. Trying to avoid any confusion for the reader, we chose not to use the term “otherness”, since it has been already used with other connotations in other disciplines.

local context. These are three complementary approaches that enable us to observe, according to our analytical model, to what extent the incorporation of ICT in everyday classroom activity contributes both to what we have called the construction of a sense of “we-ness” (bonding social capital) and a sense of “you-ness” (bridging social capital) through actual interaction among the actors involved.

USING THE INTERNET FOR TEAMWORK AS A CLASS DYNAMIC AMONG STUDENTS

In the first place, with regard to classroom dynamics, we have observed that the use of the internet as a tool for teamwork is not a widespread practice in the daily activities of students. If we examine specific school policies regarding the integration of ICT, we soon realise that approximately two thirds of the management teams (71.8%) reported a formal commitment to promote such use in the everyday activities of their classrooms. However, looking at their judgement of their current situation, only a fifth of the school management teams (12.96%) consider the incorporation of the internet as a tool for teamwork among students to be a goal that has already been achieved or that is at a very advanced stage in their classrooms.

Consequently, the perception of teachers concerning the influence of ICT in promoting this kind of work in the classroom is limited. While a slight majority of the teachers (56.3%) agreed that the incorporation of ICT has changed the way they work, only one third of these (32.1%, i.e., 17.5% of the teachers surveyed) admit that the internet has been a useful tool for an effective improvement of collaboration and teamwork among students in their classrooms.

Taking into account the everyday practices that eventually end up taking place in classrooms, we can observe how the use of the internet for these purposes turns out to be relatively small. Thus, approximately two thirds of the teachers (63.0%) acknowledged that they never use the internet to promote teamwork with their students, while no more than a fifth (17.3%) stated that this use is quite or very present in their teaching activity. In this sense, the low penetration of ICT in the classroom’s work dynamics means that only 1 in 10 students in the whole educational system (12.0%) ends up actually using the internet for peer collaboration, mutual assistance, sharing information, and interacting with their classmates.

USING THE INTERNET TO PARTICIPATE IN JOINT EDUCATIONAL PROJECTS

A second interesting space for a community approach to the integration of ICT in the classroom is the formation and consolidation of closer ties between schools by creating new opportunities for them to become involved in joint educational projects. However, as we shall see, despite the internet’s potential for interaction, sharing, and collaboration, we do not find as a consequence a strongly interconnected educational system, aimed at developing such projects between schools.

In this sense, it is important to note that approximately two thirds of the schools (70.5%) reported the promotion of the use of technology for participation in educational projects with other schools to be among their current priorities. However, when we

observed the level of implementation of these policies, we found that a large majority (80.74%) of school management teams considered that such use still needed to be introduced in the near future or, at most, that they had just begun to implement it recently. Taking into account the fact that, as we have shown, a slight majority of the teachers stated that the introduction of ICT has changed the way they work, no more than a third of them (37.3%, representing 20.3% of the teachers surveyed) would agree that it has served to enhance or facilitate their relationships with other teachers and pupils from other schools through their participation in these kinds of joint educational projects.

Yet, there is little evidence with regard to the expected influence of ICT on current teaching and learning practices. From the point of view of both teachers and students, using the internet to carry out joint projects has only a minor presence in their everyday classroom activity. While a minority of teachers (9.2%) stated that these uses are quite or very present in their daily routine, almost three quarters of the teachers surveyed (71.2%) never use the internet for this purpose. Consequently, such a limited presence of ICT in the teaching practices ends up building a context in which, going beyond the autonomy of individual teachers, less than one tenth of the students who connect to the internet during school hours (8.9%, representing 5.0% of the students in the educational system) do so in order to get involved in joint educational projects with students and teachers from other schools.

USING THE INTERNET TO OPEN UP THE CLASSROOM TO THE LOCAL COMMUNITY

Finally, a third area for community building in the classroom could be found in the analysis of the opportunities for opening up its daily dynamics to the local context. In this regard, following the analytical framework in which our research is formulated, here we observe diverse everyday practices, differentiated from but clearly complementary to each other in this perspective, such as the use of the internet for interacting with and forming relationships with families, other educational professionals, and social services.

Focusing on the role parents can play in the daily activities carried out by their children in the classroom, and considering that only a slight majority of the teachers argued that the introduction of ICT has changed the way they work, we find that only 1 in 10 teachers (9.2%, representing 5.0% of the total teaching staff) agreed that ICT has helped to facilitate parental involvement in the teaching and learning processes that occurred in their classes. In this sense, when we examine the actual appropriation of ICT in the classroom, only 1 in 50 teachers (1.8%) considered that the use of the internet to bring about parental involvement is quite or very present in their teaching. On the contrary, a large majority (89.4%) admitted to never using the internet for this purpose.

We thus find a clearly underdeveloped context for interaction and exchange, where the limited involvement of parents in classroom dynamics not only contrasts with other more developed areas of the internal context reported in this article, such as teamwork as a work dynamic among students or teachers, but also with other opportunities to open up the classroom to the local community. For example, approximately a fifth of the teachers (15.8%) use the internet to interact with other local professionals that work outside their schools, whether in education or in the social services. Additionally, just over a tenth of the students who connect to the internet during

their classes (12.5%, i.e., 7.8% of the students interviewed) do so to communicate and exchange with others outside the formal structure of their schools.

5.2. ONLINE COMMUNITY BUILDING IN THE SCHOOL

To address the second part of the results, we must then focus on the daily activity that takes place in the schools as social organisations, regardless of the dynamics occurring in the classroom. According to our formulation, we aim to observe how the appropriation of ICT –and particularly that of the internet– contributes to building what we called a sense of “we-ness” (bonding social capital) and “you-ness” (bridging social capital). Thus, we will discuss the various opportunities that exist to create and enhance collaborative networks through ICT in three key organisational areas: teamwork as a work dynamic among teachers, participation in school management, and the opening up of the school to the local community.

USING THE INTERNET FOR TEAMWORK AS A WORK-DYNAMIC AMONG TEACHERS

Beginning with the dynamics between teachers working in the same school, we have observed how this is not one of the most developed areas of ICT integration for community building either. Based on the analysis of ICT policies, it is worth noting that most schools are considering the use of the internet to promote communication among teachers at the school (64.0%) or teamwork among those teaching at the same grade level (55.1%). However, only a fifth of the school management teams (17.6% and 13.2%, respectively, representing a modest 11.3% and 7.6% of the schools) deemed these objectives to be very advanced or fully achieved.

Accordingly, the teachers’ perception of the influence of ICT on the way they collaborate with their fellow teachers is rather limited. Although a slight majority of the teachers (56.3%) believe that the incorporation of ICT has changed the way they work at their educational level (i.e., compulsory primary, compulsory secondary, post-compulsory, and vocational education), less than one third of the teaching staff (32.2%, i.e., 17.5% of the teachers interviewed) report that ICT have served, in fact, to improve or facilitate teamwork and mutual support with their own peers.

Beyond this perception, the truth is that the evidence we have obtained about ICT’s marginal effect on the daily activity and functioning of schools indicates that there is a great deal of potential for improvement but still a long way to go. For example, only 1 in 15 schools (6.6%) has a computerised system for planning and managing the teachers’ daily activity, while 9 out of 10 teachers (89.1%) acknowledge they never use the internet to communicate and collaborate with the colleagues who teach at the same educational level in their school.

USING THE INTERNET TO PARTICIPATE IN THE MANAGEMENT OF THE SCHOOL

A second interesting opportunity for school community building in our approach is the integration of ICT to support or facilitate participation in the functioning of schools as organisations. As we have seen, expectations about the role of technology are high, though the optimism in discourses has not been translated into concrete practices of

communication and collaboration among the different groups or collectives involved in the daily activity of the educational centres.

To observe this, we focused our analysis on the role of the principals, both in the establishment of the school policies with their management teams and in the way they manage their own interaction with teachers and students belonging to their centres. Thus, with regard to management practices, we have observed that the introduction of the internet in the processes of organisation, running, and administration of the centre is a priority for many schools (76.9%). According to their judgment, this interest on the part of management teams is met with an active and positive attitude by teachers in most schools (81.6%). In fact, given the expectations that the internet can generate as a tool for managing participation at an organisational level, a large majority (82.8%) of the centres' principals considered the internet to be a quite or very appropriate tool to encourage participation at their school.

However, as we stated earlier, there is a notable lack of change in the principals' everyday practices regarding their appropriation of the internet. It is important to note that, although only a minority of school principals (7.4%) does not use the internet in their daily professional activity, only a quarter of them (25.0% of those who use the internet in the school, i.e., 23.1% of the total interviewed) goes online to communicate with their teaching staff. When we look at the principals' interaction with students, the numbers are reduced to such a degree that this activity becomes exceptionally rare. Hence, hardly 1 in 10 school principals (8.3% of those who connect to the internet, i.e., 7.7% of all the principals) do it to communicate and interact with the children and young people that attend the schools they manage.

USING THE INTERNET TO OPEN UP THE SCHOOL TO THE LOCAL COMMUNITY

Finally, to complete our analysis we will focus on the third and final area for community building at an organisational level: opening up the educational centre to the local community. As we have been doing so far, we will begin by analysing specific school policies, in an attempt to determine to what extent they are creating and exploiting new opportunities for collaboration and exchange through the internet with other groups or collectives outside the school. Additionally, we will widen our comprehensive analysis with specific information regarding the professional practices of the principals and teachers in their relationships with families, other professionals outside the school, other schools, and education authorities.

First, focusing on policies regarding ICT integration in schools, we have observed significant variability according to the different actors involved. For example, one must note a significant development in the implementation of the internet to communicate with the education authorities (76.5% reported this objective to be in an advanced stage or fully achieved). However, the same cannot be stated with regard to the school's relations with professionals belonging to other educational centres (47.5%) or, more dramatically, to the communication with families (7.0%), where the incidence of internet use seems more restricted. The differences observed in relation to each are noteworthy, showing a similar trend to that observed with respect to other professional activities not strictly linked to the dynamics of the classroom.

In this regard, for example, a large majority of school principals (83.7%) use the internet to communicate and interact with professionals from other external services (i.e., social services or education administration), a proportion that is slightly reduced when referring to their communication with principals managing other centres (69.1%). Also, taking into account teachers' professional use when not in the classroom, less than a quarter of the total (20.2%) connects to the internet to communicate or collaborate with teachers from other schools. Finally, their relationships with families appear to be the least developed area, where only 1 in 10 principals (12.3%) go online to communicate and exchange with the parents of the students they serve.

6. DISCUSSION

In our previous analysis of offline community building in the Catalan educational system (Meneses & Mominó, 2008), we had the opportunity to develop a comprehensive approach rooted in the everyday activities of classrooms and schools unmediated by technology. This approach formed the basis of an original, empirical, and wide-range perspective that subsequently led to the present study of quality schooling through online community building. Broadly speaking, our results showed an underdeveloped educational system in terms of it seizing possible opportunities for mutually beneficial, collaborative interactions and partnerships in the offline everyday life of the different actors involved.

While the school policies reported by management teams seemed to show a certain interest in such practices, it is clearly difficult to conclude that the promotion of teamwork, participation in joint educational projects, or the opening up of the classroom to the local context were the most widespread strategies. On the contrary, the analysis of teaching and learning practices showed an underdeveloped space of everyday activity in which there was still scope for significant improvement. Similarly, at the organisational level, our findings were not encouraging, despite the fact that this has been one of the traditional opportunities for school community building. In addition to finding some incipient signs of a culture of collaboration among teachers, the examination of opportunities for participation in the schools' decision-making processes showed little evidence both internally and externally. Additionally, different patterns among the different actors –principals, teachers, students, parents, and other local professionals– were also revealed, which is typical of somewhat more traditional forms of school management.

Now, in light of the new results presented here concerning the appropriation of ICT, we are providing crucial information to obtain a better representation and understanding of these processes, taking into account the central role that the internet may play in the functioning of schools. Ultimately, in a society increasingly organised around and through informational networks, one must ask to what extent and in what way the use of ICT in general, and the internet in particular, is being integrated to generate and support communication, collaboration, and exchange networks in the everyday practices of classrooms and schools. The answer, while complex, seems to lie in one simple fact: There is still a scarce presence of ICT-mediated practices in the processes of schooling, both in classrooms and schools as social organisations, for the construction of a sense of “we-ness” and a sense of “you-ness”.

Therefore, despite the interest raised in the process of ICT integration in schools, we have observed that the appropriation of the internet for classroom community building in fact remains a marginal practice. Whether in the promotion of teamwork among students, the participation in joint educational projects with other schools, or the opening up of the classroom to the local community, we have only observed some signs of emerging school policies that, at best, only lead to a modest transformation in teaching and learning practices. We observed that in some classrooms the internet was not appropriated in general as a tool for collaboration, and consequently we may safely claim that there is little evidence that leads us to identify important changes in the traditional practices of teachers and their students.

On the other hand, at the organisational level, our results also show quite a similar state of affairs to that previously observed in the analysis of offline school community building. Whether in collaboration among teachers, in participating in the schools' decision-making processes, or in opening up the educational centres to the local context, underdeveloped school management policies have also had a limited impact in practice despite the high expectations that ICT have generated in this regard. In this sense, it reveals how the scant presence of the internet in daily activities seems to have a small influence on the interaction and collaboration between different internal collectives, where the interest reported by the management teams about the potential of the internet to foster participatory mechanisms in schools contrasts with the limited use they actually make of it for communicating and sharing with their teaching staff and students.

School principals, management teams, teaching staff, students, parents, and other local actors not belonging to the formal structure of the school are not, generally speaking, appropriating the internet in order to support and develop networks of communication and collaboration. Beyond claiming that there is potential in ICT, and particularly the internet, we have gathered in this study sufficient evidence to illustrate how its progressive introduction into schools has thus far not been translated into a substantial increase in opportunities for improvement through online community building. On the contrary, our results show a sparsely connected education system, both in its internal functioning and in its relationship with the external context, where the integration of ICT does not appear to spark a substantial revolution in established schooling practices. However, further and more in-depth research is needed to improve our understanding of the interplay of these phenomena, paying particular attention to the multiple factors that may be interfering in the appropriation of ICT for community purposes, be it through bonding or bridging, in the everyday life of classrooms and schools.

7. CONCLUSION

In this article, we have presented a community approach to quality schooling by analysing the introduction of ICT, and particularly the internet, into the daily processes of managing, teaching, and being educated in classrooms and schools. After discussing their potential for educational improvement, we have pointed out the benefit of examining the actual appropriation of the internet, not only for its desired effect on educational outcomes but also as a significant instrument for improving the complex process of schooling in the network society.

Drawing on the research carried out in the field of SESI, we have been interested in the social and community aspects that have been consistently linked to educational success throughout the educational research that has appeared in recent decades and, therefore, in analysing the role that ICT can play in this regard. In an attempt to avoid offering a utopian (or dystopian) vision, or merely considering the presence of ICT as an independent or separate element of school dynamics, we have developed in this research an empirical approach based on the social capital theory, which allowed us to observe the actual appropriation of the internet in the daily activities of principals, teachers, and students. Unfortunately, as we have shown in the case of the Catalan educational system, there is little evidence to suggest that, beyond some particular innovative practices, the introduction of the internet is contributing in a significant way to community building both in classrooms and schools.

There is, nevertheless, a benefit in observing the results we have obtained in this study, paying particular heed to the potential of ICT for improvement in educational planning and reform. As we have argued, this may be a refreshing perspective on the ongoing research in the area of ICT integration in primary and secondary education, rooted in some of the fundamental efforts established in parallel contributions that did not consider their role (see Bryk & Schneider, 2002, Furman, 2002, Louis & Kruse, 1995, and Sergiovanni, 1994). This perspective offers a fertile space for significant contributions through examining the actual functioning of our schools. Whether in the dynamics of the classroom, in the way schools organise their functioning, or in the opening up of these two contexts of everyday activity to the local community, it is through the creation of new and better opportunities for teamwork, participation, and joint responsibility that we can find some principles for ICT integration in schools that may not be driven just towards efficiency but by a desire for genuine educational improvement (Wrigley, 2003). By way of example, this is the case with the student digital-journalism project *Escoles en Xarxa*⁸ (Networked Schools), organised by the publication *Escola Catalana* and supported by the Catalan Government's Department of Education, among other institutions.

Commenced in the 2004–2005 academic year, and with a significant increase in participating schools now reaching approximately 350 (235 primary schools and 111 secondary schools), this project aims to improve the composition skills of students through the use of ICT in the classroom (Martín, 2006). To this end, teaching methods are structured around a network of blogs, in which each school has its own as a tool for active and independent communication of the students' experiences at their schools. Under the premise of offering a channel of expression from their own classrooms, its philosophy is based on decentralisation and self-management and enables a high degree of flexible organisation to adapt easily to the plurality of specific educational scenarios in each of the educational centres involved. Additionally, a communication channel specifically aimed at promoting the interaction between participating teachers is offered in order to facilitate the exchange of actual experiences in the implementation of the project at each educational level.

⁸ <http://escolesenxarxa.vilaweb.com>

However, as we have argued, we should not limit its benefits to just the development of linguistic and journalistic skills through the intensive use of ICT. In addition to the undeniable individual benefit for students who put their skills into practice in a meaningful context, the project becomes an excellent vehicle to stimulate teamwork between students and their teachers, to reflect on and share everyday life experiences in their schools and their local context, and also to establish a network of communication and exchange between students and teachers from the different schools involved. Far from being a technically natured achievement in itself, instead ICT use becomes an opportunity for the development of a culture of participation, openness, and co-responsibility; in other words, to contribute to the generation of an educational environment in which teachers get support to pursue the educational goals, go beyond them, and help their students to success and flourish.

After all, introducing ICT with a view to developing mutually beneficial collaborative networks is, at the same time, more than a mere instrument for carrying out educational objectives (i.e., the curriculum). It is an end in itself, in the way that it provides the opportunity to put into practice the value of a meaningful, committed, socially responsible, and participatory education in which new technologies are incorporated into daily activities to improve the quality of the schooling processes. This is the real challenge for schools, which should never lose sight of the ability of the different actors involved to establish and develop collaborative networks with the technologies –new or old– used to enable them to achieve this end.

Finally, further and more in-depth research is clearly necessary, not only through extensive and exploratory studies like ours but also developing other perspectives and methodologies that enable us to continue the long tradition of studies in the field of SESI. We should pursue this objective, as we have argued in this article, by paying particular attention to the educational purposes to which the incorporation of ICT in the different contexts of schooling does or does not respond; that is, challenging the complex process of educational innovation as an opportunity not to revolutionise but to further strengthen and reinforce educational goals through the improvement of the specific processes of managing, teaching, or being educated. Only then, going beyond the mere consideration of its presence, will we be able to properly understand the role of ICT appropriation as a tool for improvement that, paraphrasing Marx (1987), translates technological advances into genuine educational progress in the pursuit of quality schooling in the network society.

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