CHILDREN, YOUNG PEOPLE AND DIGITAL INEQUALITIES: THE INFLUENCE OF ACADEMIC PERFORMANCE AND FAMILY CONTEXT

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Abstract

The analysis of the emergence of ICT in the world of young people frequently offers uniform depictions of how the different contexts of their everyday life are changing. From an alternative perspective, we will show that not all children and young people appropriate technology in the same way or get the same benefit from it. Specifically, we will show how inequalities in such factors as academic performance and the conditions of young people's home lives affect this different appropriation. Our analysis is based on the data obtained from two successive pieces of research, first in Catalonia and then in Spain, with two statistically representative samples of children and young people in primary and secondary education.

An alternative standpoint

Frequently, and ingenuously, we want to believe that the influence that information and communication technologies (ICT) have acquired in the everyday lives of children and young people must necessarily have a repercussion on their academic performance. In some cases, we feel that the use of these technologies, placed in the technologically skilled hands that we attribute to all young people, will lead to an improvement in their school results. In other cases, however, we gaze with fear at the connection these same children and young people have with the Internet, primarily if we refer to the use that they make of the web when they are not in school. In this case, we warn of the dangers of

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leaving the Internet in these same hands and, consequently, of the need to take measures to prevent its potential negative influence on academic performance.

This perception has spread rapidly and adapted to each new technological development, to become a sociological metaphor for our relationship with a wide range of technologies (Wartella & Jennings, 2000; Selwyn, 2003). The emergence of information and communication technologies (ICT) in the world of young people is frequently observed, from a determinist position, as responsible for the changes in their way of communicating and relating, of playing or of using leisure time, and also in their way and capacity to learn. In light of the new social structure of our time, based on the technological revolution of ICT (Castells, 1999), these visions have succeeded. Such metaphors as digital generation, net generation, gamer generation, instant message generation or digital native are used time and again to evoke assumptions about the position of children and young people within the framework of the "techno-cultural revolution" (Facer *et al.*, 2003) that imbues our day-to-day, to refer to the preeminent place of technology in their social activity and, ultimately, to suggest the huge potential of technology to transform their ways of learning.

The alternative analysis that we offer of this process adopts a number of distinctive characteristics: firstly, it places itself in the viewpoint of young people with the conviction that with regard to technology they constitute something more than a passive recipient; secondly, it seeks to provide an alternative perspective to the essentialist positions (Facer *et al.*, 2003) in which all young people of the so-called digital generation are seen as a single entity and in which it is the technology, in itself, that determines their generational difference; in the third place, it considers the young people/children – technology connection as a two-way and mutually constitutive relationship (Hutchby *et al.*, 2001); in the fourth place, it underlines the interest in paying preferential attention to inequality in the forms of appropriation of the Internet. To this effect, we propose an analysis that transcends the formulations of the analytical framework of the "digital divide", both in the definition of interrogatives and in the type of answer, understanding that the division that is established in our immediate context should be seen in its complexity and not solely as a result of the possibility of connection and access to the Internet (Lievrouw, 2000; DiMaggio & Hargittai, 2001; van Dijk & Hacker, 2003). Finally, we should underline the empirical and extensive nature of this research, which contributes representative data to the analysis of the process of incorporation of technology into the everyday lives of children and young people.

The use of the Internet outside school and academic performance: the viewpoint of children and young people

In spite of recent attempts to build an authentic Sociology of Childhood (Prout, 2005), in the last decades, many analyses and studies – based mainly on secondary sources – have led to consider youth and childhood as homogeneous groups made up of passive and non-autonomous individuals permanently in the process of becoming rather than being. In particular, the study of the relationship between childhood and technology, including the most recent ideas regarding the Internet, has long been dominated by deterministic – and in some cases even simplistic – theories. In order to rigorously study the relationship between youth and technology it is necessary to assume an approach capable of incorporating the perspective of young people into the complexity of the social construction that such a relationship involves. Therefore, and with empirical studies at hand, we might be able to move beyond the old debates and begin to understand the current and future consequences resulting from the unequal appropriation of technology by children and young people.

Despite the omnipresence of technology in our society, we should not forget that the incorporation of ICT in all its spheres, and also in the family sphere, has occurred relatively recently. It has been little more than a decade since the widespread commercial use of the Internet has reached families. Studies into this process often respond to market interests and, for this reason, offer a specific type of indicator but do not provide us with what would most help us understand the way in which technology can be incorporated into the everyday lives of young people for educational ends. The analysis of the information provided by the students themselves allows us to add evidence of the ways in which their access to the Internet comes about, but it primarily allows us to approach the effective relationship between access to the Internet by children and young people and their progress in the educational field.

Besides this, our analysis has been aimed at the presence of ICT in the everyday lives of young people, placing attention primarily on the way in which they use the Internet when they are not at school. Research has already referred to the differences in the educational use of technologies at school or at home (Penuel *et al.*, 2002). In some cases, it has been highlighted that in comparison with the use of the Internet in the classroom, the relationship between use outside the class and academic performance is more probable (Ravitz *et al.*, 2002; Harrison *et al.*, 2003) and also that, in this situation, not all students have

the same opportunities (Attewell *et al.*, 1999; Jackson *et al.*, 2006). However, this last association has received less attention. Consequently, despite the available knowledge of the complexity of the digital skills acquired and developed by some young people outside the school environment, we have scant evidence of the way in which these skills are recognised in the school and incorporated into the curriculum.

The process of integration of the Internet in schools should not be viewed as an independent phenomenon from the way in which young people use it when they are not at school, from how it has become a part of the home or from how their families use it. The schools should not be impermeable to the progressive invasion by technology of all public spaces or to the way in which it has penetrated the home, as a private space. By comparison with school, the family environment constitutes a context in which ICT, and more specifically the Internet, are being adopted with greater ease (Papadakis, 2003) precisely due to the motivation of parents to give their children the educational advantages that they see in the fact of providing them with access to the Internet at home. Parents are not removed from the way in which this process is developing, nor do they simply follow in its wake. It was highlighted some time ago (Turrow, 1999) that what allows us to predict with greater certainty the Internet connection of homes with a computer is the fact that the parents have experience in the use of Internet outside the home. This prior knowledge ends up impacting on the willingness of families when incorporating technology at home. We know, also, that interaction between family members is fundamental for the configuration of technology usage routines (Jordan, 2003). Consequently, to understand how the conditions of home Internet use are configured by students, we cannot leave out the role that may be played by the situation they find in their family environment, or the role played by family members or other people with whom the young people share their everyday lives.

Digital inequalities in the analysis of digital inclusion

Since the beginning of studies about the benefits of information and communication technologies for life in the Network Society (Castells, 2000b), the risks of digital exclusion have had a growing presence in political and academic debates. The Internet, the technology which represents the networks driven by information technologies that professor Castells (2000a) places at the very heart

of a new type of social organisation, has been systematically shown to be a technology that is unequally distributed between populations, whatever the level of observation: countries, territories, cities, neighbourhoods, organisations, social groups, households or individuals. However, despite its relatively recent emergence as a research objective, analysis of digital exclusion has been conducted between two very different paradigms. As we will see, one of them is more limited than the other: namely, the digital divide, based fundamentally on the difficulties in accessing technology, and digital inequality, a much broader and more beneficial approach which analyses exclusion from a complex multidimensional perspective.

In the mid-1990s, following a period of optimism which, more than anything else, highlighted the benefits of using the Internet, politicians and scientists quickly introduced and promoted a well-known debate on the concept of the digital divide (Norris, 2001; Compaine, 2001, for an opposite vision of this question). Indebted to the classic formulations about the knowledge gap hypothesis, digital exclusion was defined initially as the growing distance between those who had access to ICT – primarily the Internet – and those who did not (for example, see the influential studies by the National Telecommunications and Information Administration, 1995 and 1998). This has meant that throughout the 1990s and now during the current decade, social scientists have been able to establish a series of differences that refer to access to ICT dependent on social, economic and demographic characteristics, in some cases which it is supposed can be reduced without any form of intervention (Compaine, 2001; Katz and Rice, 2002).

However, while it was being argued that these differences should be reduced naturally through the gradual spread of the Internet in societies, other persistent templates of differential use of the technologies were being added to the operationalisation of the digital divide in the quest for a renewal of the debate on digital exclusion (see also, for example, the subsequent papers by the NTIA, or the four studies conducted after 2000 by the UCLA Center for Communication Policy). In fact, social scientists interested in at least the digital divide took an important step in redefining their research objectives, moving from what technology – the media in Katz's classic formulation (1959) – could do for people towards what people are actually doing with it. The result of this reformulation has been an important number of research projects which have led to the establishment and documentation of a series of persistent differences – now also in how the Internet is used, not solely access – depending on

economic factors, and also according to variables such as gender, race, level of education, age and even the type of connection used to access the Internet (Haythornthwaite and Wellman, 2002, Castells, 2001b, and Lentz, 2000, provide a number of good reviews on the subject).

Unfortunately, the approximation of the digital divide has not proved a fruitful starting point from which to go further in the search for the reasons for unequal Internet distribution, mainly due to its original dependency on the widely discussed hypothesis of the knowledge gap. At the turn of the millennium, with the gradual dissemination of ICT in societies, the debate needed to be taken up again, including a reflection on the new types of inequality in order to move beyond the more or less intuitive post-hoc explanations based on documented socio-demographic inequalities. In any event, the subsequent spread of the old and obsolete metaphor of the "haves" and the "have-nots" has played a decisive role in the development of a new framework based on a multidimensional approach in the definition of inequality. Although analysis of the informational and social consequences of the Internet was initially a question that was related strictly to access to technology, the vision of digital inequality has led researchers to gradually adopt a new perspective in order to reformulate the old dichotomic gap in a complex and multidimensional phenomenon (for example, Lievrouw, 2000; DiMaggio and Hargittai, 2001; van Dijk and Hacker, 2003).

When access to technology is not the only concern, technological formulations stemming from demographic access differences seem little more than deterministic and of little use (Lievrouw and Farb, 2003). Consequently, rather than being a gender-, age- and income-related phenomenon, inequalities will continue and will have to be explained in terms of the differences between individuals and social groups in relation to fundamental issues, such as motivation, social interest, functionality, skills, knowledge and their effective use. These are the sources of inequality that we need to explain and which will enable us to adopt a complex perspective of a reality – digital exclusion – that is social and not technological.

A multidimensional approach to the digital inclusion of children and young people

However, neither studies in the field of general digital exclusion nor this type of multidimensional approach based on inequality have been so frequent in the study of Internet appropriation by children and young people. In fact,

this group was itself rarely analysed during the last decades of the twentieth century, despite the interest in developing a true and renewed sociology of childhood and youth (James and Prout, 1997, and Prout, 2005). When it has been the case, primarily through partial and indirect studies, scientists have failed systematically in considering children and young people as mere objects and not as subjects in the research process (Cahil, 1992, and Qvortrup, 2005). In other words, they have most commonly been viewed as passive subjects, in waiting, still involved in a process of development, which has proven to be a deterministic, limited and poor focus through which to obtain relevant scientific conclusions (James, Jenks and Prout, 1998). Similarly, as integral components of society, information and communication technologies have not been free from these same scientific and political conceptions, with some criticism emerging of the scant empirical results available on childhood (for example, see Buckingham, 1998, and Selwyn, 2003).

Despite these limitations, a modest yet growing body of research has tried to remove the old promises and concerns regarding childhood to tackle questions relating to digital exclusion in terms of access and Internet use (Livingstone, 2002 and 2003, for an extensive review of the literature). Initially developed as a secondary result of other general studies about adult populations, latest advances have begun to understand children and young people as a group of diverse and active agents, recognising the importance of their appropriation in significant contexts of their everyday life. In this regard, for example, it is important to recognise the initial works by authors such as Koss (2001), Facer and Furlong (2001), and Valentine, Holloway and Bingham (2002), who have helped arouse interest by looking at their exclusion in general terms and by the negotiation made of their use in education contexts. Empirical studies, such as those by Facer *et al.* (2001), Holloway and Valentine (2003), and Judge, Puckett and Cabuk (2004), have also made significant contributions to developing a focus that concentrates on the inequality of access to new technology, in the continuous search for differences in extra-curricular contexts and the important influence of access at home.

As has also been noted in the evolution of research into the *digital divide* among adult populations, researchers have incorporated the differences in terms of use (as well as the reviews quoted above, see recent studies, such as those by Lenhart, Madden and Hitlin, 2005, and Mediappro, 2006), relating to schools (Levin, Arafeh, Lenhart and Rainie, 2002), comparing Internet access and use between the home and school (Kent and Facer, 2004; Livingstone, Bober and

Helsper, 2005), and even through specific analysis of the differences observed in terms of uses geared towards communication, participation and involvement (Livingstone and Bober, 2004). However, efforts to develop a multidimensional approach to digital exclusion by children and young people have not been so evident. It is true to say that, despite the interesting formulations in this field of research, inequalities in other areas, such as literacy, motivation and interest, are still not that common, with complex explanations, as opposed to socio-demographic descriptions, being the real exception.

So, what is the question?

From this position, we have tried to focus on one of the relationships identified most frequently during analysis of the process for incorporating ICT into the lives of young people. In fact, one of the most lasting concern has been how ICT, and specifically use of the Internet, may contribute to improve students' academic performance. The last decade has seen many different studies which have pursued this objective from a number of perspectives: some have referred to the impact of computer-assisted teaching (Block *et al.*, 2002; Kulik and Kulik, 1991), others to the effects of certain types of software applications (Ryan, 1991) or computer programming (Liao and Bright, 1991). In some cases, attention has been drawn to the effects that technology has on teamwork and on the possibilities for interaction that technology offers (Lou *et al.*, 2001; Cavanaugh, 2001). Analysis of the relationship between technology and performance has also been carried out focusing on the socio-demographic differences such as the gender and age of students (Whitley, 1997; Christmann *et al.*, 1997). The most common question, in any of the cases, has been: "Do we have any evidence of the effects of these technologies on educational results?"

Our research revolved around discussion of the question most often asked in relation to the introduction of ICT in the educational system. Initially, by observing this process from the perspective of digital inequalities, which we have referred to above, we tried to elaborate our research question. We focused on the active role that young people play in this process and in their unequal appropriation of ICT. In short, it is a matter of releasing technologies from the deterministic effect frequently attributed in relation to young people's everyday activities. We specifically questioned the usefulness of the metaphor regarding the impact that these technologies have in understanding the influence of

Internet use on the educational results of children and young people. From this point of view, we could reformulate the question in the following way: "What is the relationship between the appropriation of ICT by young people and their academic performance?" We have tried to answer this question using our data, highlighting the association between the appropriation of ICT and its link to academic progress.

Looking beyond the results that this research topic has given us, in the second stage, with a view to advancing our analytical perspective, we considered the interest of completely reformulating the initial question. The idea is to take into account the way individual differences, such as academic performance and influence of the family, generate inequalities in the appropriation of the Internet outside school. Our point of departure will be the differences in the appropriation of the Internet in everyday life by children and young people, who we will treat as a socially autonomous, diverse and active group. In this sense, our question then becomes, "Is there sustained evidence regarding the effects of individual differences on the appropriation of the Internet?" From this perspective, we do not expect technology to have a uniform "impact" on young people's performance, nor a predictable range of effects that can be disassociated from the diversity of practices and contexts in which ICT are used, or, ultimately, from the specific situation from which every young person approaches the Internet.

Analysis from this dual approach shares a non-deterministic conception of the effect of technology and, consequently, the conviction in the unequal position of young people in the process for incorporating ICT into their everyday lives. At the same time, given the inability of the research to find significant links between the use of technologies in schools and the academic performance of students, we are provided with a dual complementary view of the association between use of ICT, outside the school, and young people's academic performance. Our aim, with this complementary analysis, is to help discern some of the aspects that affect indicators related to the crisis in our education system in terms of academic performance.

Some methodological questions

In order to provide some answers to the questions that we have stated in this chapter, our discussion will be based on the results obtained at the ENS

(Education on the Network Society) research group[1]. During the last decade, and thanks to the support of the administration of the government of Catalonia and the Telefónica Foundation, we have conducted two large-scale research projects based on questionnaires through two representative samples, in order to obtain first-hand information about the appropriation of the Internet – and new technologies in general – by children and young people studying at primary and secondary school.

First, our research began in Catalonia through the "Internet Catalonia Project: Schools in the Network Society" (2002-2007), surveying 6,612 students from a representative sample from 350 schools offering primary (2,918), compulsory secondary (1,883) and post-compulsory (1,811) education in Catalonia[2]. This sample size, according to the population it represents, allowed us to establish our affirmations with a maximum error of 1.2%. Field work was carried out between December 2002 and April 2003 and was funded through the support of the Department of Education of the Catalan government and the Jaume Bofill Foundation.

After this, "The integration of the Internet in Spanish school education: Present situation and future perspectives" (2007-2012) allowed us to extend our research to Spanish children and young people, surveying 15,185 students in a representative sample from 809 schools offering primary (9,655) and compulsory secondary (5,530) studies in Spain. The sample size, in this case, allowed us to establish our affirmations with a maximum error of 0.8%. Field work was carried out between March and June 2007 and was funded through the support of the Telefónica Foundation.

In each of the two large research projects, the method was similar, surveying all the students in a group-class chosen at random in the last year of the selected stage. The questionnaire, which was a standardised instrument that enabled us to gather the opinion of the participants, was developed ad-hoc to evaluate attitudes, perceptions, mastery and use of the Internet, both at school and, especially for this chapter, outside the school. In addition, to complete our analysis, we gathered information about their personal characteristics and family situation.

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[1] ENS (Education on the Network Society): research group at the Internet Interdisciplinary Institute (IN3), a research institute of the Universitat Oberta de Catalunya UOC), http://in3.uoc.edu/web/IN3/recerca/temes/temes.html?idFitxa=11

[2] Catalonia is an autonomous region in Spain, with over 7 million inhabitants and its own government.

Summing up both projects, approximately a hundred specifically trained interviewers visited the selected schools, administering the questionnaires in group, during a tutorial hour under the supervision of the tutor. Data was anonymously and confidentially processed, and the information was aggregated on the basis of analytical categories. Interested readers could check all the technical details about the method of both studies in the research reports published on the Internet[3].

After gathering data, the analytical strategy was organised in two differentiated phases geared towards producing reports and scientific publications at different levels. First, our efforts were directed to the initial descriptive results, posing the initial bivariate hypotheses. On the basis of this overview, representative both for the case of Catalonia and that of Spain, the objective of the second analytical phase was to go into greater depth in the inferential strategy. From a multivariate approximation, we produced new and more complex hypotheses that allowed us to establish the underlying relationships or processes, offering results that enabled us to move from description to explanation.

Therefore, the results on which this chapter is based belong to two independent projects, conducted sequentially to move from what we could observe about children and young people's appropriation of the Internet to some initial explanations concerning this facts. In order to guide the reader through these results, a significant effort has been made to reduce the statistical terminology and present our main conclusions with which this decade of research has provided us.

What is the relationship between Internet appropriation – outside the school – and academic performance?

With this methodological approach, we will tackle the first aspect of our research. In an attempt to answer the first of the questions that we have asked ourselves, the results show us the probability that students have of displaying an adequate performance in relation to a number of variables that we have considered in our analysis model.

[3] http://www.uoc.edu/in3/pic/cat/escola_xarxa.html
http://www.uoc.edu/in3/integracion_Internet_educacion_escolar/esp/index.html

Consequently, in an initial approximation to socio-demographic variables, we have been able to identify some widely shared associations. In the first place, we noted that the academic performance of young people is significantly related to their age and, ultimately, with the educational stage at which they are. To this effect, it is evident that they find more difficulties as they advance in educational level, with the young people who are studying in post-compulsory secondary education and, primarily, those pursuing some sort of vocational training being the ones who encounter more obstacles in their academic progress.

Secondly, we have also discerned significant differences linked to gender. Girls find significantly fewer difficulties in their school life. Finally, as we could expect, the socio-economic situation of young people also translates into their school results, with those in a less favourable situation being the ones that come up against most problems to progress adequately. We could linger over the analysis of these relationships. In fact, their intensity and sense are consistent with conventional studies of school performance. This is not the main focus of our research but, however, it seems to us to be of interest to linger briefly on identifying the impact that they have on the process that we are studying, precisely to underline the importance that controlling these variables has had in our research to prevent their interference in the results of our analysis.

Advancing progressively towards the resolution of the question posed, we have addressed our attention initially towards the influence of the infrastructure available in the home and, in short, towards the relationship between the possibilities of access to the Internet that young people find at home and their school results. The results of this analysis do not permit this association to be identified. In light of our data, we can conclude that the availability of a connection at home, with greater or lesser restrictions, does not allow us to predict better results of the young people in their school work. Students without a connection at home do not show significantly lower results. What is the case, by contrast, when we take into account the influence of other relevant factors for the configuration of the family environment, such as the frequency of use of the parents or the experience that they accumulate in the use of the Internet? We can see a statistically significant relationship, in both cases, having controlled the effect of the socio-demographic variables to which we referred earlier: when the parents are greater Internet users and they also have more extensive experience in the use of the Internet, their children have a greater probability of having an adequate academic performance.

Besides this, in light of the indicators relating to frequency of access to the Internet, we have been able to identify a negative trend whereby the more frequent the connection, the lower the performance of the young people. This trend could easily be linked to some simplistic representations of the penetration of ICT in the everyday lives of young people which, consequently, underline the risk of its harmful effect. In any event, in line with those shown in other research, these results highlight that mere access to the Internet, both inside and outside the school premises, does not contribute positively to the academic performance of children and young people.

We focused on the question that we are posing and, specifically, on the incidence of the specific forms of appropriation of ICT by young people. In this case, we can see that only certain aims in the educational use of technologies can be significantly associated with academic progress. Independently of such factors as age and educational stage, gender or socio-economic situation, students who use the Internet as a source of information to do their school work obtain a better performance. However, if we take into account a second type of educational use, when the Internet is used as an instrument for networking with other classmates for collaboration and exchange in the resolution of this same school work, the effect on academic performance is not appreciable. Consequently, only some forms of use appear to be linked to a greater probability of school success and it does not appear to be those referring to the huge potential for collaboration and networking that the technologies provide.

Having looked at this first aspect of analysis, as we put forward earlier, we understand that the question on the connection of ICT and academic performance may be dealt with from an alternative aspect. We now tackle this second perspective with the aim of focusing on the diversity of practices and the inequality of contexts in which ICT are used by young people.

Is there sustained evidence regarding the effects of individual differences on the appropriation of the Internet?

Placing attention specifically on the effect of academic performance on the process that we are studying, this same question could be put in the following terms: Do we have evidence that would allow us to state whether the academic performance of students is reflected in the way in which each of them uses the Internet outside school? And, to this same effect, we could still add: In what way

do the conditions that young people find in their family environment have an influence?

Our analysis examines how the Internet is appropriated in different ways by different kinds of young people. We look at inequalities in the opportunities that some youngsters more conspicuously may find in the Internet as a public space. Consequently, we are interested in the differences that young people find in their homes in terms of conditions for doing homework and in perceived family support for the student's academic development. Similarly, we have paid attention to the effect that parents, as main educational agents, may have in the use that young people make of the Internet when they are outside the school. To answer this question, we understand that a fundamental influencing factor derives from the relationship that parents themselves have with the Internet. In order to identify it, we have therefore paid attention specifically to the frequency of parents' use of the Internet.

With the intention of understanding this differentiated approach to young people's digital inequalities, we have also looked at their goals, interests and, in the last analysis, their various ways of using it. Specifically, we have paid attention, on the one hand, to the use of the Internet for academic purposes, and on the other hand to other ways usually related to leisure. Let us linger on an introductory description to the frequency of the two types of use to which we refer:

When we focus on non-educational uses, we see that young people are distributed more or less equally across the different frequencies of use. We found that approximately a third of them do not use or hardly ever use the Internet for leisure, another third occupies the middle frequency and the final third are those that use ICT for leisure on a regular basis. The general description of the educational use shows us a different pattern: we can clearly see that the majority of young people, two thirds, say that they hardly ever use the net for this kind of use. It is a minority who regularly use technology in this way.

Over and above this descriptive analysis, we would like to show the factors related to the frequency of this type of use just presented. For this aim, we will look at the influence of socio-demographic variables that we have controlled. We have noted that age clearly influences this dynamic. The young people in secondary education use the Internet more than those in primary for whatever use. Gender also plays a part: boys use the Internet less than girls for educational purposes, but more for leisure. Finally, when we pay attention to the situation in socio-cultural terms we can say that those who enjoy a better

situation make significantly more frequent use of the Internet for educational purposes. The digital divide approach states that the socio-economic differences related to access appear not to be so significant. However, we cannot conclude the same when we take into account kinds of use.

Elsewhere, analysing the frequency of access also enables us to point that access in the family context, more than in other spaces, is most linked to uses for both educational and leisure purposes. Hence, their home appears to be the most favourable context for Internet access by young people. However, trying to answer directly the question that we posed ourselves before, we will centre attention on the inequalities in the appropriation of the Internet and, specifically, on the differences linked to the academic performance of children and young people. From this perspective, we can observe, firstly, to what extent, beyond the influence of other variables, the academic performance of young people may be associated with different ways of approaching the Internet.

Firstly, our analysis allows us to assert that, controlling the other variables (age, gender, socio-economic situation, availability of an Internet connection, and frequency of use by parents) children achieving a better academic performance go on the Internet with a significantly higher probability than more disadvantaged students. Therefore, by deepening the analysis, we can question people's fear of the negative impact on academic performance that is usually expected from mere access to the Internet. But, we will not go to the opposite extreme of highlighting the supposedly intrinsic benefits that should derive from a connection to the Internet.

When we move beyond the simple question of access, and examine types of use, our analysis demonstrates how the Internet is not used by everyone in the same way. The students that have fewer difficulties in progressing, in academic terms, make significantly more frequent use of the Internet for educational purposes compared to those with lower academic performance. Children and young people with better academic performance, conversely, make also significantly lesser use of the Internet for leisure. However, the differences concerning this kind of use are not very significant. Consequently, we noted that the unequal situation that every young person finds themselves in, in terms of academic progress, can be associated to certain forms of appropriation of the Internet, primarily when we refer to the uses linked to educational aims.

Elsewhere, we will analyse to what extent the behaviour of parents with regard to the Internet and, from a broader viewpoint, the situation that young people find in their homes in relation to their school work, is linked to

differences in their children's specific use of the Internet. Starting with the first one, we are interested in finding out how the factor of family proximity to the Internet may contribute. We can ask the question: to what extent does the behaviour of parents, with regard to the Internet, influence children's specific use of the Internet outside school time? Even though we initially stated that a higher frequency of use by parents is related to significantly higher odds for their children to be Internet users, we cannot state the same, when we focus on both kinds of use. Although a statistically significant relationship does not exist with respect to leisure-related purposes, the data shows an interesting effect on educational purposes. The young people, whose parents use the Internet more frequently are, simultaneously, those who are more likely to make use of the Internet for educational purposes. Therefore, we take an approach to how this factor of family proximity to the Internet may contribute to a reduction of inequalities in young people's appropriation of the Internet.

Secondly, beyond the connection of the parents with technology, when we shift attention more broadly towards the conditions that young people find at home to do their school work, we can see that inequalities in the support students receive from families appear to be related to the ways that students are appropriating ICT. Those students that have more resources for their educational activity make more use of the net for educational purposes. However, and it is important to note it, this association between resources and use is not maintained when it comes to students' use of the Internet for leisure. In the same way, the young people who enjoy a better perceived family support for their educational activity, make increased use of the net for educational purposes. Again, this association is not observed when we focus in non-educational uses. Consequently, digital inequalities in terms of use are also linked to the different conditions related to their parents and the environment they provide to their children at home.

Some conclusions and further challenges

Answering the fundamental question about inequalities – in Sen's (1992) words "inequalities of what?" – our attention is drawn to the study of inequalities in children and young people's appropriation of the Internet, the socially constructed artefact (Abbate, 1999) that clearly epitomises the new type of informational networks characteristic of the Network Society (Castells, 2001). Taking as a point of departure the socially autonomous and heterogeneous

nature of this collective with regard to the Internet, we do not simply intend to establish the evident unequal access to technology in terms of socio-demographic characteristics. Rather, we propose a complex analysis that goes beyond these typical formulations found in the "digital divide" framework.

According to the classic reformulation by Katz (1959) regarding the influence of the media in our society, our goal has shifted from what technology does to children and young people to what they actually do with such technology. Applied to the specific case of the Internet, and controlling for socio-demographic characteristics, our analysis allow us to identify differences in access and types of effective use focusing on inequalities in academic performance and the influence of the family environment. The Internet is not only more present in the every-day life of lower-academic performance students. Furthermore, we can also identify some sort of Mathew effect[4] (Merton, 1968), showing us that those children and young people who enjoy a better position are also those who catch the opportunities around the educational use of the Internet more easily. By contrast, those who have a less favourable situation, are the less able to make profit about it.

Hence, those who enjoy a better academic performance and family context are more regularly connected and make more frequent use for educational purposes letting us to remark that digital inequalities do not seem to be a strictly technological matter. As we have noted neither the availability of a connection at home nor the mere frequency of use allows us to predict better results of young people in their school work. It is necessary to take into consideration social-construction processes to better understand the reciprocal influence between technology and children and young people. Access to the Internet, far from being beneficial or damaging in itself, probably responds to different ways of appropriation. These different ways must be identified in order to reduce the disadvantageous situations of some children and young people with regard to the Internet, which in our analysis we have linked to academic performance and family influence.

Given the complexity of such a task, our research has tried to offer some insights for discussion on the role of the school's and families' contribution to their present and future inclusion of children and young people in the Network

[4] This effect gets its name in reference to the bible quote from Matthew (XXV, 29): "For unto every one that hath shall be given, and he shall have abundance: but from him that hath not, even that which he hath shall be taken away".

Society. Are the schools taking advantage of all the opportunities on the Internet to pursue the educational goals? In what way can the curriculum and the organisation of our education systems be adapted to a society progressively organised around information networks? What education policies do we need to ensure that all young people, not just those who have better home conditions, make profit of the educational opportunities to use the Internet to improve their academic performance? What role should families take in this process? How can they take joint responsibility for offering the best possible conditions to their children? How far can the Internet itself offer a real opportunity for collaboration between schools and families to pursue their aims?

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