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Use of information and communication technologies by Latin American children and adolescents:

The Interactive Generations Case

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ABSTRACT

During the last years the relationship among children, adolescent and new technologies has been one of the most active and interesting research fields. Both in the US and Europe there has been a clear interest well addressed by a relevant group of researchers from different perspectives. This paper presents how this issue has been dealt with in the case of Latin American children and adolescents through a research project funded by Telefonica and Foro Generaciones Interactivas and conducted by some researchers at the University of Navarra. The paper has a double approach: first, a quantitative exploration of the level of exposure to the technology of this age group in those countries; secondly the potential risks to be avoided and opportunities to be exploited in the use of the technologies by children and adolescents. The paper presents some findings of a comparative study that during three years surveyed over 200,000 minors (6-18yo) in nine Latin American countries. Although the socioeconomic and cultural conditions of those countries affect penetration rates and use of technology, research finds that as in other developed countries, technology penetration, affinity and level of use of this age group are well above national averages. As it will be explained, there are however notable differences by country, age and gender.

INTRODUCTION

The adoption of a new technology always raises issues that attract the interest of researchers. Some of the recurring themes arising from the emergence of an innovation are the motivations to adopt innovations sooner or later (Rogers, 1962), the changes that the arrival of a new device has on habits, behaviours and conducts (displacement effect) of existing devices users, possible psychological or perceptual changes, and positive or negative effects that the new technology will have on the scenarios it affects. Of course, many of these issues begin and are supported in quantification exercises and in the description of profiles of new technology users. This is done to predict or establish consumption and adoption patterns as well as different uses of the new technology. The impact that an innovation can have on certain groups is another issue that has traditionally attracted the attention of researchers.

In this context, ascertaining the extent to which information and communication technologies affect children attracted significant interest for several reasons. One was the ease of access that this age group has to these new devices, and the great appeal that they seemed to have. In this sense, and despite its non academic perspective, Don Tapscott's *Growing Up Digital: The Rise of the Net Generation* (1998) had a strong impact bringing the public attention to this issue. Besides Tapscott over optimistic approach a strong defensive position was taken upon the arrival of these new devices and technologies into the lives of children. However, their educational, transformative and participatory potential led to public and private initiatives becoming common in the late nineties to promote an increasingly intensive use of ICT by this segment. The Kaiser Family Foundation, the National Institute on Media and the Family or The Markle Foundation were some of the first institutions setting up research efforts to understand in which extent US children were using the new technologies. In this country the most important source for information is now the "Pew Internet & American Life Project" who covers, among other issues, the role of ICTs in adolescents everyday life.

In Europe, Livingstone and Bovill published "Young People, New Media" in 1999 which dealt with "children, young people and their changing media environment, focusing on the diffusion, uses, experiences and significance of media and information technologies among 6-17 year old. The subject of children, young people and the new media attracts considerable public and academic interest" (Livingstone and Bovill, 1999: 1). This impressive piece of research was followed since then by a relevant research project coordinated by Sonia Livingstone under the European Commission's Safer Internet and Safer Internet Plus Programs, EU Kids Online (Livingstone and Haddon, 2009). The project, still running, has

established the agenda both in the academic and the political scene regarding this field. One of its latest and most remarkable outputs is the creation of a database, accessible through the LSE website, of European research on children and young people's online activities, risks and safety[1]. Other relevant contribution in this field is Livingstone's (2003) proposal of research agenda for this field.

Buckingham (2006/2007) and Turkle (1995/2011) among others have approached the subject from a more theoretical perspective offering interesting questions about the kind of relationships the technological scenarios are creating and how it affects to children and young people.

THE LATIN AMERICAN APPROACH

In 2007, a group of Spanish researchers launched a project aimed at ascertaining the level of penetration, the assessment and the impact that new screens (mobile, internet, video games) were having on Latin American minors. Their interest in the subject has distant and close origins.

The distant origin responds to the background of the research team, who are specialised in communication targeted at children, mainly television commercials, and in the communication opportunities that the interactivity of the new technologies has allowed. In an effort to ascertain the extent that children, adolescents and teens were relating to the new technological reality and the impact that its use was having on different areas of life (school, family, consumer and leisure environments) a research project, first national and then regional, began with the support of public and private funding.

The close origin responds to the proposal made by Telefónica Internacional to extend this project to several Latin American countries in which it operated. Telefónica provided the necessary financing to implement the data collection tool, the subsequent collection and statistical analysis, and the publication of results. In addition to the financial resources made available to the researchers through a research contract with the University of Navarra, the operator provided the team with the material and human resources associated with the areas of the company's corporate reputation and the Telefónica Foundation. This support facilitated the collection of accurate information for the sample designs in the respective countries and the work to achieve representative samples in each country. In countries where the Educared program was present, which is a Telefónica Foundation

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[1] Database is avaible at: http://www.lse.ac.uk/media@lse/research/EUKidsOnline/DB/home.aspx

project that aims to promote the use of technology in educational settings, it was the main institutional support to achieve the various objectives that had been set for the project.

Between September 2007 and June 2008, the research reached more than 80,000 young people between 6 and 18 years old in seven countries: Argentina, Brazil, Chile, Colombia, Mexico, Peru and Venezuela. By December 2011, the total number of children participating in the investigation stood at 200,000, and it was expanded to Spain, Ecuador and Guatemala. Three progress reports were published with the data that had been collected: "The Interactive Generation in Latin America 2008" (Bringué and Sádaba, 2008) "The Interactive Generation in Spain 2010" (Bringué and Sádaba, 2010) and "The Interactive Generation in Latin America 2010" (Bringué et al, 2010). Furthermore, in 2011 a special report on the relationship between Spanish minors and social networks was published (Bringué and Sádaba, 2011a). Reports with data from Argentina (Bringué, et al., 2009), Brazil (Passarelli, et al., 2012) and Ecuador (Bringué and Sádaba, 2011b) were also published. As will be referred later on, beyond the academic value of this work, which provided original information on the relationship between children and adolescents in these countries with technology, its impact on public opinion was remarkable precisely because of its novelty.

As it has been stated above, while the interest about how and why children and adolescents were using the technology has been dealt from very different points of view by private and public initiatives at the most developed countries, it was clear that the information regarding what was taking place in developing countries was lacking at that moment. The Latin American region is big and diverse. The countries this project was covering should not be compared in a simplistic way. This was the reason why the first report published in 2008 included a national chapter authored by a national expert depicting the particularities of each country from and educational, political, and infrastructural points of view. It was made clear that while countries as Chile, Argentina, Colombia or Peru were investing both in infrastructure and educational resources, others as Ecuador and Guatemala were still giving their first steps due also, in the case of the lack of infrastructure, to a complex orography. While the big cities in Mexico and Brazil were at a more developed stage, these countries have bigger territories to be covered and it is usual to find big differences between rural and urban areas in terms of access, infrastructure and also economic and societal development.

It could be useful, in order to contextualize the results that will follow, to quote the World Economic Forum's Networked Readiness Index (NRI) ranking, that every year measures the *readiness* of countries to exploit the opportunities offered by ICTs. It is a good indicator to understand how the technology impacts the competitiveness of the 138 countries analyzed.

The index takes into account three components: the environment (market, political and regulatory and infrastructure); the readiness of the main stakeholders (individuals, businesses and government) to use the technology and the use among these three groups. In 2013 (it is, three years after the research was conducted) the nine countries presented in this study ranked as follow: Chile (34th); Brazil (60th); Mexico (63rd); Colombia (73rd); Ecuador (91st); Argentina (99th); Guatemala (102nd); Peru (103rd); and Venezuela (108th). In this ranking Argentina and Venezuela are heavily penalized because of their complex regulatory and political environment.

THE INTERACTIVE GENERATIONS PROJECT: OBJECTIVES

Between September 2007 and December 2011 the Interactive Generations Project surveyed around 200,000 children and adolescents aged 6-18 years old in nine Latin American countries plus Spain. As will be explained below in the methodology description, not all children who participated in the project were part of the sample that was analysed for research purposes. This is because the project objectives were broader than those of the research itself. The presence of multiple and diverse objectives (research, education, and dissemination) also help in understanding some of the limitations of the research.

The researchers' first objective was to obtain the data necessary to quantify the levels of use and assess the technologies among young people. However, they were aware that many of these countries lagged behind in political awareness and in dissemination on the correct use of technology. Thus, they also sought to provide educational and institutional stakeholders in the respective countries with the data and resources to enable implementation of dissemination initiatives to reduce or avoid as much as possible the existing digital gap in training in this field in these countries and others where the path was more defined.

Therefore, three objectives can be distinguished in the work developed and directed by the researchers in the project: the first linked to educational intervention, the second to dissemination and the project's institutional approach, and a third to the scientific or research.

Objective 1: Educational Intervention

The Interactive Generations project was offered to schools interested in finding out how their students used technology and, above all, on how best to leverage the opportunities it offers while minimising the risks that it involves. Participation in the project began with a self-assessment tool that allowed schools to find out the level of use and possession of technology by their students and the ratings it deserved.

Once the data collection through the self-assessment tool had been completed, a report was prepared and submitted to the school's board of directors along with a series of free educational materials specifically developed by the research team. Among others, they wrote several books for parents and educators with tips and ideas on how to leverage the potential of technology while minimising its risks. They also developed materials for children (games, books, online courses, cases to work in the classroom) for the same purpose. All this content was accessible on the website, but many of them were turned into printed versions to facilitate classroom work in communities with limited educational technology resources.

In addition to these resources, a weekly newsletter was designed with a few simple tips on how to use technology in the classroom, as well as indicating resources that could be of interest, which was combined with another quarterly electronic publication with articles on educational issues.

Objective 2: Dissemination in Public Opinion and Institutional Impact

Another one of the project's objectives was to put the issue of the relationship between children and technology, and the risks and opportunities it poses on the public agenda of these countries to achieve the involvement of governments, institutions and NGOs. For that purpose, once the project began, an opportunity was spotted to aggregate the data collected in participating schools to present a more comprehensive picture of the country and the region to arouse the interest of the public opinion.

This meant that while any school interested in participating in the project was able to do so by carrying out the self-assessment and receiving the educational material, work would be done to ensure that the data collected was sufficiently diverse (public and private schools, children of all ages, from rural and urban areas) to later select a sample as representative as possible from all participants in each country. Invitations were given to schools, and in some countries agreements were established with public institutions that encourage educational communities to participate in the study. For example, the Ministry of Education

of the State of Sao Paulo in Brazil sent a letter to all public schools to present the initiative. In Argentina the Ministry of Education was also worked with in order to achieve the representation of public schools. The approach to the data collection for the second report in 2010 led to improved representative margins by working on the sample needs afterwards and avoiding the extra work that phase one of the project required.

Once completed the reports were submitted to both the media and various stakeholders, such as ministries, parents' associations, NGOs, etc. In all countries where the report published in 2008 was carried out, it was new from every point of view. Although the issue may already have been present in public opinion in some way, there was no work based on actual data that allowed this reality to be quantified. The presentation of the reports created a lot of interest in all countries, and they received attention from the most important news media as well as political and educational authorities in various countries.

The Peruvian Government invited the researchers to present the results at the National Parliament. In Chile the Ministry of Education, and the National Parents Association, were also part of the public presentation of the results. The research was presented at a National event for teachers in Colombia organised by the Ministry of Education and the Ministry of Technology attended by more than 3,000 teachers from all over the country and could discussed about the consequences of the results. Besides that the Colombian Government set up, after this project, a help-line to report illegal and harmful content for children online[2]. This initiative has been carried out since 2008 by the Ministry of Technology, ICBF, Telefónica Foundation, Foro Generaciones Interactivas and Red PaPaz.

As part of this objective, the project culminated in the establishment of an institution to constantly ensure that these objectives would be maintained over time. In Madrid in December 2009, the Interactive Generations Forum was created, which is a non-profit organisation founded by Telefónica, the University of Navarra and the Ibero-American University Organisation. From that moment on, research funding was carried out through this entity. In March 2010, the Forum decided to launch a public call by the Ministry of Technology of Ecuador and carried out the same project in 1,900 schools in the country. In this particular case the project included the design of educational materials that were distributed among teachers, parents and children.

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[2] See: http://www.teprotejo.org

Several practical-oriented books, leaflets, videos, case-studies have been developed during all these years and are available to the educational community of all countries involved through the Foro's webpage[3].

Objective 3. Research Objectives.

The objectives of the research were, as expected, much more specific and focused. It was intended to determine the level of penetration and use of information and communication technologies by minors between 6 and 18 years old in the countries that participated in the project. It also sought to find out their opinions and assessments on a number of issues about how devices (mobile, internet, video) were affecting their family and social relationships, and academic performance, as well as the perception of some risks and opportunities posed by the use of each of these devices.

ICT AMONG LATIN AMERICAN CHILDREN AND ADOLESCENTS: EMPIRICAL RESEARCH

Methodology

Research sample

As explained above, the first report carried out between 2007 and 2008 did not initially intend to conduct a representative study of these issues in the countries participating in the project. The work of the research was more exploratory. It was carried out to discover possible issues that would allow for some sort of comparative research later on.

However, the interest in achieving a representative image was also a desirable goal for the research that would offer data comparable to what existed in other regions and western countries.

This is why, after the effort made in the first wave of 2007-08 on the total received cases, a multistage sampling was applied that combined a stratified and clustered sampling. First, the various geographical areas of each country were established and grouped by schooled population, both private and public and urban and rural areas. Then schools were randomly chosen (unit-cluster) from each area defined above, maintaining a proportional number of schools to the number of children enrolled in each of the described strata. In each country,

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[3] See: http://www.generacionesinteractivas.org

the objective was to sample several thousand children in order to perform complex multivariate analyses with a large number of predictor and confounding variables to achieve sufficient statistical power to assess modifications of the effect.

In 2008, the final sample was made up of 25,467 cases that were distributed as follows and that ensured, on the total number of cases received, a 95% confidence level and a margin of error of 2.5% in the overall data.

Table 1: 2008 study sample composition by country and age group.

Country	6-9 years old	10-18 years old	Total
Argentina	374	1970	2344
Brazil	790	3415	4205
Chile	189	1846	2035
Colombia	815	3292	4107
Mexico	1458	7469	8927
Peru	610	2111	2721
Venezuela	290	838	1128
Total	4526	20941	25467

Source: Interactive Generations Research Project.

The final sample comprised 80.2% of children from public schools and 19.8% of students from private schools. The graph shows how this distribution was detailed by country. This data is relevant given the clear socio-economic differences among students in public and private schools in these countries and taking into account that public education is the majority.

The approach to data collection for the second report in 2010 led to improved representative margins by working on the sample needs afterwards and avoiding the extra work required in the project's previous phase. At this time, now with previous experience, we worked from the scope of the study (school going age children in the participating countries) and sampling goals were established in each country. In this second wave, the sample reached was 24,320 students with a margin of error of plus/minus 0.75%.

This time the statistical objective was an average representative regarding school type (public/private) and region while ensuring proximity to the overall average of their country. To this end, an exploratory data analysis was applied that allowed non-influential extreme values to be refined and at the same time assured the randomness of the sample. This managed to strengthen representation among younger (6-9 years) and older (10-18 years) individuals.

The final sample in the collection of data for the year 2009-10 was as follows:

Table 2: 2010 study sample composition by country and age group.

Country	6-9 years	10-18 years	Total	Error margin
Argentina	819	254	1073	2.99
Brazil	498	931	1429	2.59
Chile	1212	419	1632	2.43
Colombia	3527	3583	7110	1.16
Ecuador	1600	2400	4000	1.55
Guatemala	634	169	803	3.46
Mexico	4728	1502	6229	1.24
Peru	1098	946	2044	2.17
Total	14116	10204	24320	0.75

Source: Interactive Generations Research Project.

Data collection tool

The research team designed two questionnaires for two separate distinct age groups: the first, children between 6 and 9 years old, consisted of 20 questions with a direct and non-valuation response. The second, aimed at young people between 10 and 18 years old, had 126 questions in its long option and 75 in the short option; in this case in addition to direct responses, they were asked their for opinions or assessment of certain issues.

Both questionnaires were divided into five sections: the first requested socio-demographic information (gender, age, education level and occupation of parents), and the following four sections covered each of the four devices analysed in detail (internet, mobile, video games and television). In each section the first questions had an instrumental nature (I have/I don't have, I use/I don't use, level of use, time spent) and they then went on to assessments. Both questionnaires were subjected to various tests to check that they were understood by the group that they were directed to. Furthermore, they were adapted to linguistic idioms of each of the participating countries in the sample, so that in the first phase (2007-08) the online platform hosted 14 different questionnaires based on age and country of origin of the participants.

Findings

Despite the fact that the greater statistical robustness of the sample obtained in 2009 allowed this data to be representative of the universe referred to (children and adolescents enrolled in the participating countries) more certainly than that of 2007, the results of this second phase of the project did not show great dissonance from the previous one. The large sample size and the final effort to achieve a balanced representation probably ensured a relatively reliable image of the reality represented by the sample.

Although some results obtained in the sample collected in 2009 are referred to below due to their greater statistical robustness, another of the major contributions of the study of 2007, in addition to the novelty and magnitude of the sample, was to add one chapter per country, written by a national expert, explaining the social, cultural, economic, technological and legal context in which the survey data should be understood.

Technological equipment

Although to a much lesser extent than their peers in other Western countries, children and adolescents in Latin American countries participating in the study show a familiarity (defined as possession or use) with technology that was always above the average in their countries. The country of origin is the variable that marks the greatest difference in this case could be related to socio-economic differences that characterise these countries. It can be seen as data regarding the average behave according to the different countries in the following table:

Table 3: Access to technological devices by country (10-18 years old). 2010.

	Average	**AR**	**BR**	**CH**	**CO**	**EC**	**GT**	**MX**	**PR**
PC	**64**	**67**	63	72	**67**	54	67	66	63
Printer	**46**	48	42	**52**	**52**	36	47	46	48
Webcam	**33**	28	35	38	**42**	17	26	33	28
mp3	**45**	51	48	65	50	22	37	48	**54**
Digital Photo	**36**	24	25	31	35	36	33	38	**52**
Digital Video camera	**45**	56	36	52	**59**	21	43	51	32

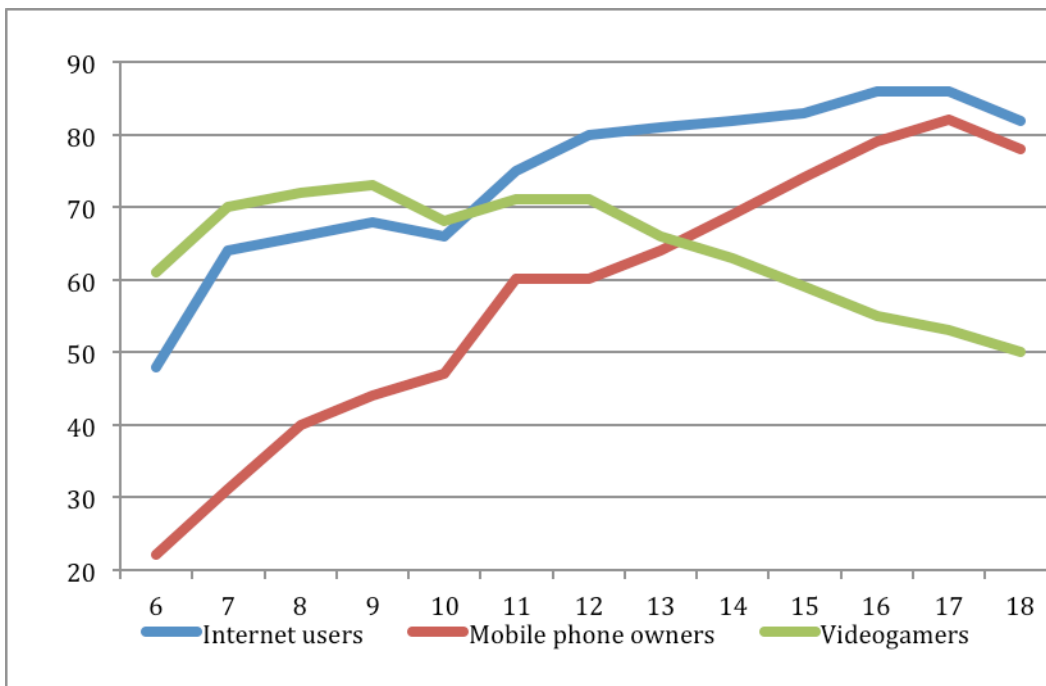**Source:** Interactive Generations Research Project. Legend as follow: *AR (Argentina), BR (Brazil), CH (Chile), CO (Colombia), EC (Ecuador), GT (Guatemala), MX (Mexico) and PR (Peru).*

The older the child, the greater their access to technology

In addition to the country variable, age is a key element that points to a direct relationship between older children and greater access to technology. For these same devices, for example, 49% of the youngest children (6-9) claimed to have access to a computer at home (64% older children), 34% printer (46%), 16% webcam (33%), 23% mp3 (45%), 37% digital photo camera (36%), and 26% video camera (45%).

Another element that stands out and reinforces a particular overall image of this age group as an early adopter of technology is the time when they begin their relationship with it. This is particularly evident at the age in which they declare to be internet users, at the age of owning a mobile, and the age they play video games.

**Graph 1:** Users of internet, mobile devices and videogames by age, in 2010.

Source: Interactive Generations Research Project.

Multiple internet access points

Another distinguishing characteristic of children and adolescents in these countries is that they have access to the internet in many different places. Again, the socio-economic conditions of the region and its infrastructure can help one to understand these facts: with very limited mobile internet access, and still very low in the region at the end of 2013, fixed connections are the usual mode of connecting to the internet. There are countries, such as Peru, where access through cyber cafes is also explained by the investment during the first

half of the first decade of the 21ˢᵗ century in the opening of such commercial public spaces. The school also becomes important in the internet access option for this age group. As explained below, this data is especially important.

Table 4: Internet access points (10-18 years old group), in 2010.
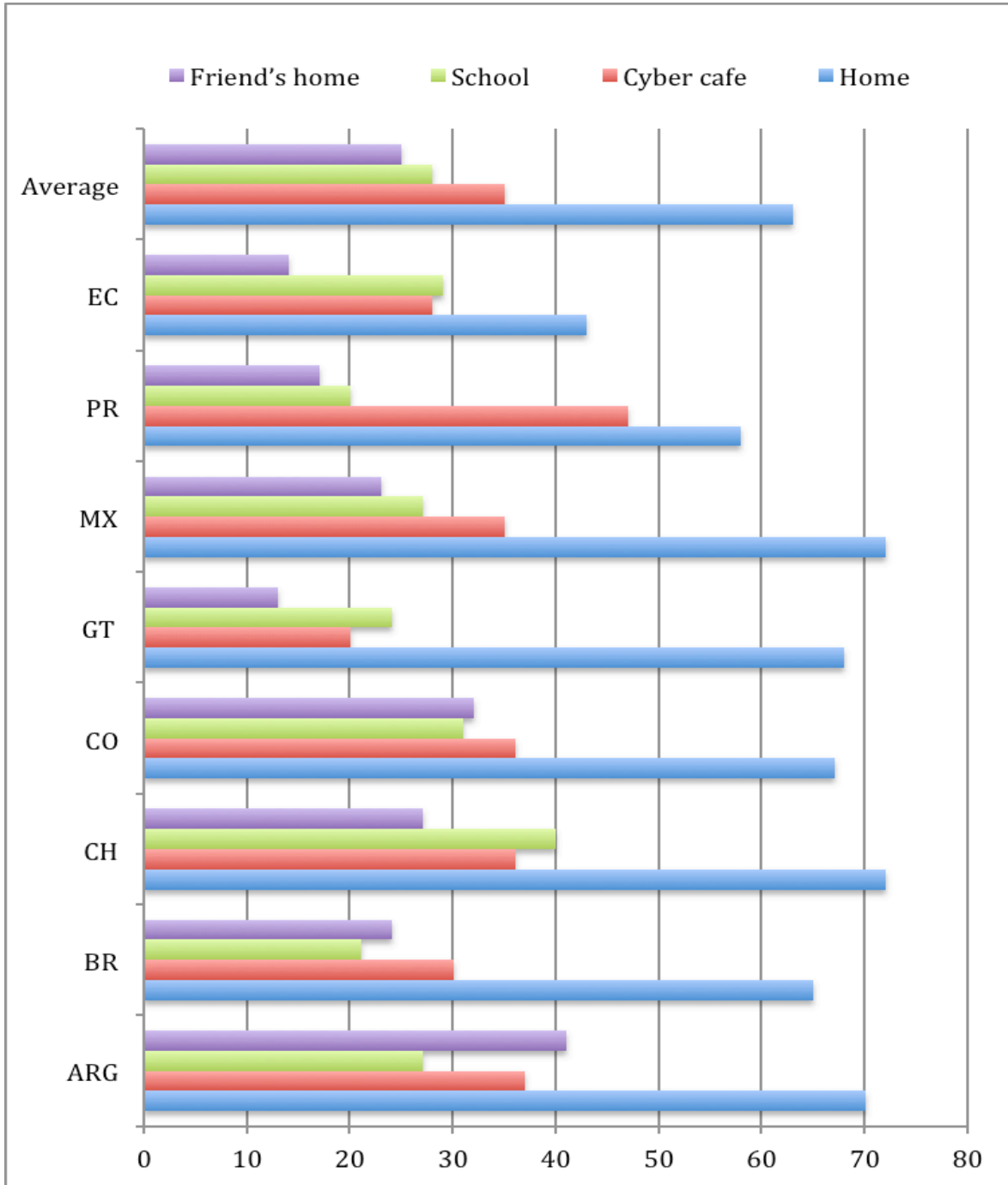
Source: Interactive Generations Research Project. Legend as follow: *EC (Ecuador), PR (Peru), MX (Mexico), GT (Guatemala), CO (Colombia) CH (Chile), BR (Brazil), AR (Argentina).*

A mobile generation

The mobile phone is the most common technological device used by this age group in the analysed countries. The level of ownership of mobile phones, although still far from their peers in other Western countries, shows that the adolescent-mobile relationship has become one of the most defining of this digital era.

As seen in table 5, the uses of mobile phones are varied (communicate, consume or create content, play or personal organisation) and reflect an intense consumption and somewhat sophisticated way to the device that has become the centre of life of many adolescents. The data refers to 2010, when there was still a very limited picture of mobile internet access.

Table 5: Mobile phone uses by country (10-18 years old group), in 2010.

	AR	**BR**	**CH**	**CO**	**EC**	**GU**	**ME**	**PR**	**TT**
Communication									
Make/receive calls	84	94	95	93	87	83	87	88	90
Messaging	93	66	78	72	74	63	82	65	74
Content consumption									
Surfing the net	17	21	26	25	17	16	29	15	23
Watch photos/videos	44	40	59	43	44	27	51	34	44
Listen to music	66	62	67	57	59	47	61	54	59
Content creation									
Taking pictures	45	46	49	43	34	33	41	33	41
Video recording	45	41	54	47	43	35	49	39	46
Leisure									
Playing games	54	45	60	61	54	43	55	50	56
Personal organization									
Clock/alarm	68	58	67	67	53	43	61	54	61
Agenda	54	41	52	49	39	35	45	41	45
Calculator	57	50	66	60	44	39	49	43	53

Source: Interactive Generations Research Project. Legend as follow: *AR (Argentina), BR (Brazil), CH (Chile), CO (Colombia), EC (Ecuador), GT (Guatemala), MX (Mexico) and PR (Peru).*

School as an educational reference

As noted above, internet access at school is a point that, without being controlling, is important for many children and adolescents in these countries. Additionally, it has also been seen that there is a positive relationship between increasing age and increased use of technology. It seems clear that there is a direct relationship between school and the use of technology in many of these countries. According to survey data, 42% said that one of their teachers uses internet in education in some way, while 6% said that almost everyone does and 4% said that everyone does. Compared to the low presence that parents have in this scenario, the potential mediating role of teachers is key in the formation of this age group on the risks and opportunities offered by the internet.

In the 2008 report, many national experts pointed out the various policies that the governments of each country were carrying out to ensure wider internet access for children and adolescents: investments in educational centres appeared marked as priority in all countries.

Risks

The risks posed by internet use are evident in this age group. Using the classic distinction of risks divided into content, contact and behaviour, adolescents in Latin American countries are arguable not exempt from exposure to these risks.

In regards to content, it should first be noted that 73% of teenagers between 10 and 18 years old indicate that they usually just surf the internet alone, which limits the possibility of parental involvement. With regard to a content filtering service, only 16% on average identify this service on their usual network connection. When asked about their preferred content online, games, music, sports and jokes where identified as the most interesting. In average the consumption of adult content is interesting for 8% of minors, but the figure rises to 24% among boys from 10 to 18 years old, while among girls of the same age it is barely 2%.

Contact with strangers is also relevant among this age group: 50% of the sample acknowledged having dealt with a stranger on the internet. Of these, half have taken the step to physically meet them and the rest just communicate virtually. The potential risk associated with this type of behaviour is evident to the extent that adolescents disclose personal information among their contacts. In terms of risk behaviours, on the one hand,

practices that relate to privacy management could be identified, and bullying or cyberbullying situations on the other.

Among the first, it is highlighted that 17% of adolescents between 10 and 18 years old believe that they can indiscriminately disclose any personal information via the internet: boys (20%) assume this to a greater extent than the girls (14%). In regards to the information from other people in agreement with this practice it falls to 13%, and there is little difference between boys and girls (14 vs. 11).

Cyberbullying has a distinguishing feature in these countries as it is usually done through mobile phones. While through internet services, 4% on average claim to have upset someone, the figure rises to 12% through a mobile phone. This practice does seem to be stronger in some countries than others: whereas in the case of Argentina, for example, 16% of teens report having used a mobile phone to upset others, in Colombia or Peru the percentage is not so pronounced (10% and 9% respectively).

A discordant reality

It is clear that there are notable differences in children's use of technology, and their perceptions and experiences based on their country of origin. Argentina, Chile and Colombia are countries with medium-high technology penetration, which are levels very close to young people in other Western countries in some cases. In these cases, the experience of use and assessment that young people make of technology is also closer to their peers in Europe or USA.

Brazil, Peru and Mexico are among the mid-level penetration group, and have some characteristics of their own. Brazil stands out due to penetration level of home internet connections and that its youth show high interest in online news content: 23% versus 8% of the average in other countries. In Peru, the role played by internet cafes stands out as they constitute the second most common point for minors to browse, after the home. Mexican minors stand out playing the most hobby games in all versions: online, computers and consoles.

Ecuador and Guatemala are part of the group with a medium-low level of penetration and access to technology, where other variables, however, resemble the averages.

It is obviously not possible to speak of Latin America as a single region: the economic, social and cultural differences are evident, as demonstrated in expert chapters in the 2008 report.

In any case, two elements common can be highlighted in all countries: the penetration levels of the various devices and technologies between the age group studied always outperform national averages, and mobile phone is the most widespread device with rates between 80% and 95% and pertaining more to minors. These two features are similar to their peers in Western countries.

Discussion

It is easy to understand that economic and cultural differences have an impact on how and in which extent children and adolescent all over the world are accessing and using the internet and other technological devices. This research made clear that despite the differences the affinity and exposure of the youngest users is higher than the national average also in the Latin American countries, following a pattern that could be observed in the most developed societies: children and teenagers have been early adopters of these technologies and in some cases they are leading the adoption of the new devices.

Following the research agenda proposed by Livingstone back in 2003, it could be said that this research contributed in first place to the needed empirical research on children's use of the internet. But besides that, the wide range of questions included in the survey make it possible to contribute from a Latin American perspective to the "key questions of theoretical, empirical and policy significance" identified by Livingstone (2003:160): *opportunities for communication, identity and participation* (use of social networking sites and personal blogs or videologs, use of mobiles devices and internet mainly for interpersonal communication); *dangers of exclusion and digital divide* (the clear impact of the urban/rural environment in the exposure and access to technology); *dangers of use* (harmful contents and contacts, cyberbullying practices, addiction).

While the research shown that the school access to the internet and teachers involvement could be key factors to explain some differences on how and what for these kids are using the internet, further research would be needed to cover in a more detailed way the opportunities that the internet poses for *education, learning and literacy* in these countries.

Limitations and difficulties

The study by Interactive Generations has some clear limitations from the point of view of research. The most important are as a result of the diversity of the objectives, which hindered a clear approach to the research. In the data collected in 2007 and 2008, it also meant that sampling was applied afterwards on the data collected. The volume reached,

almost 100,000 young people surveyed, allowed conclusions to be drawn with a margin of error. The design of a questionnaire that met not only the research objective but also the educational intervention prevented the use of those other already available in other regions, which would have simplified the comparative task.

Further Research

The intention of the Interactive Generations Forum to investigate the relationship between young people and ICT in Latin American countries should be able to follow the path of similar efforts, such as EU Kids Online project, in its task of establishing standardised questionnaires and comparative elements. Furthermore, beyond the diagnosis of the situation it would be very interesting to address the role that cultural differences have on the issues studied.

It could be also interesting to compare the results of this research with other countries and regions as Europe or the US.

CONCLUSIONS

As we have seen it has happened around the world also youngsters in Latin American countries are accessing and using information technologies to a higher extent than adult population. The presumed educational purposes behind technology adoption and the appeal for this target group due to its functionalities (entertainment and communication possibilities) could help to explain this gap.

But the fact is that despite this age group is using these technologies less intensively than their counterparts in other western and developed countries it is possible to establish common trends on how and what for they are using the internet and mobile phones. For them these screens are mainly communication and leisure devices: making and receiving calls, sending messages, taking pictures, recording videos, listening to music or just playing games are the most usual activities.

Mobile phone is the key device for this youngsters and despite their lack of access to the internet through this screen, it plays a central role in their interactive activity and also in their exposure to risks: in these countries the mobile phone has also played a central role in

cyberbullying. The emergence and generalization of wifi connections must be taken into account as it could pose new risks for this age group.

Besides the common trends there are also significant differences among countries that make a more in depth study of the cultural conditions and how these affect the adoption and usage of technology necessary.

The role of governments in the exposure of these children and adolescents to technology has been remarkable as the school has been and still remains for some of them the first and main place where they connect to the internet. Teachers could make a strong difference in their online behavior if only they were aware of risks and open to explore and take advantage of the opportunities technology offers. The challenge for governments and institutions is really important in this area.

It could be said that this generation of Latin American youngsters is eager to use and take advantage of the opportunities and amenities the technology is offering to all of us. But the lack of training, awareness and experience of their parents and teachers must be dealt with in order to assure company and valuable advice.

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Annex 1: Data collection details

The questionnaires were available through a website, www.generacionesinteractivas.org, where the entire process was centralised: the schools expressed their interest in participating in the research through a form that could be completed on the website. Then the school was approved and given a unique code that would identify it and allow all participating students to access the survey. The school had the autonomy to decide which age group (between 6 and 18 years old) took the survey. A survey was accessed through the computer rooms of the schools in the schedules and sequences established by them and with the support of their teaching staff, who notified those responsible for the project that the data collection was complete.

Two alternatives were implemented for schools interested in these issues in which there was widespread internet access. In the case of schools that had computers but did not have internet access, a stand-alone version of the questionnaire was developed that allowed offline student responses to be collected and then uploaded into the database. In schools that did not have computers, paper questionnaires were used which were then uploaded into the database by project staff in each country. In all cases, registration in the school and contact the person responsible in each school was conducted via the Internet. At least one email account was requested to facilitate the sending of the identifying passwords and material generated later. There was no case in which a school could not participate due to a lack of, at least, one email address.

Upon receipt of the notice of survey collection completion, the first task of the research team consisted in downloading the data from the online database and the necessary filtering to remove duplicate, incomplete or erroneous questionnaires. Then a custom report was generated for the school that described the use and ratings that their students gave to each device. The data was showed overall, for the entire school, and disaggregated by courses or educational levels and with a significant graphical component to facilitate understanding.

The questionnaire was fully amended in 2009 to include some questions that were not present in the 2007 questionnaire that had begun to be relevant in internet use: mobile access, social networking, online games, etc. The number of questions remained the same, although issues that had been confusing in the previous phase or that contributed repetitive or low value information were removed.

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