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Internet, Youth and Life Perspectives: Assessing the Impact of ICTs Usage in Schools

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Abbreviations and Acronyms

CDI - Committee for Democratization of Informatics

CNTE - National Confederation of Workers in Education

CPS - Center of Social Policy

EIC - Schools of Informatics and Citizenship

Embratel - Brazilian Enterprise of Telecommunications

FUST - Fund of Universalization of Services of Telecommunications

GDP - Gross Domestic Product

IBASE - Brazilian Institute of Social and Economic Analysis

IBGE - Brazilian Institute of Geography and Statistics

ICT - Information and Communication Technology

IMF - International Monetary Fund

Inep - National Institute of Studies and Educational Researches

MCT - Ministry of Science and Technology

PNDA - National Survey by Sample of Households

POPs - Points of Presence

Pro-Aim - Program of Improvement of Information about Mortality

RNP - National Network of Research

Seade - Foundation State System of Data Analysis

UNCED - United Nations Conference on Environment and Development

Unicamp - University of Campinas

USP - University of São Paulo

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An immense and ever-increasing wealth of knowledge is scattered about the world today, a wealth of knowledge and suggestion that--systematically ordered and generally disseminated--would probably . . . suffice to solve all the mighty difficulties of our age, but that knowledge is still dispersed, unorganised, impotent . . .

H. G. Wells, *World Brain*

Chapter One - Introduction

It is an unquestionable fact that the internet plays an increasingly important role in (mostly, but not only) urban areas throughout the globe. Exploring its interactivity is an amazing incentive to creativity, curiosity, knowledge and sociability. New Information and Communication Technologies (ICTs) represent new ways of learning and discovering a new world of sources of information. They can be used as a tool for didactic-pedagogic resources, networking and/or as an object of reflection of the present society, which is changing increasingly fast due to technological developments. Moreover, the internet has an irresistible appeal, especially among children and teenagers. Thus, it has become a common discourse that the technological preparation of these young internet users represents more and better opportunities for them, their families and communities.

In Brazil, for instance, The Green Book of the Information Society (2000) published by the Ministry of Science and Technology (MCT), states that the knowledge society[1] represents a profound change in the organization of social, economic and cultural relations. For this reason, knowledge is pointed out as a key factor to establish or overcome inequalities, to aggregate or dissolve values, to create or eliminate jobs, to spread or concentrate well-being. The negative aspect of the knowledge society, thus, is the inequality of access to the computer and the internet: the digital divide.

It is argued that the digital exclusion is as serious as the other categories of social exclusion because it represents a powerful barrier in the search for better jobs and a decent standard of living. Silveira (2001), for instance, claims that because those included in the knowledge society have much more opportunities than those who are left out, the fact of not having computer skills actually increases the risk of social exclusion via digital divide, especially in places such as São Paulo city, where the main economic, governmental and production

activities have moved to the web and where already exists a great distance between the university elite and the big mass of illiterates.

Inevitably, after reaching several sectors of society, ICTs are now considerably affecting the educational field, basically, through the introduction of the computer in the classroom, with its interactive programs and internet resources. This fact has been seen with euphoria by some educators, but also with a lot of concern by others. However, despite of governmental and non-governmental initiatives for digital inclusion and the huge amount of literature on the issue, relatively little is known about the impact of ICTs on the lives of young internet users of the so-called developing world.

For this reason, this research paper aims to tackle this issue. Through an actor oriented approach it will analyze the relationship between the use of the internet and social inequality, taking into account the visions and opinions of students of the 3rd grade of public and private schools of the Secondary Education level in Sao Paulo city, Brazil.

This paper is organized on six chapters. Chapter one introduces the subject of investigation, theoretical framework, methodology and objectives of this study. Chapter two provides a brief background of socio-economic aspects of Brazil. Chapter three tells the historical process of the introduction of the internet in the country and the rates of internet access according to different socio-economic environments. It also gives a critical account of a few governmental and non-governmental initiatives aimed at digital inclusion. Chapter four starts with a more detailed account about the method of research and introduces the environment (neighborhoods and schools) as well as the profile of the first actors (teachers and parents) of this study. Chapter five focuses on the main object of the study: the students. It reports and analyses data collected through the administration of questionnaires and interviews during field work. Finally, Chapter six concludes discussing the general arguments and comparative implications of the material presented in the previous chapters, and also outlines a few suggested areas and recommendations for further research.

1.1 - Theoretical Framework

Since the boom of the internet by the end of the twentieth century much has been said about the importance of new information and communication technologies and their impact on societies all around the world. Telecommunications play a key role in this new

technological revolution, since the faster information is transmitted, the faster money can be transferred and the more can be profited from the market variations. The 'old industry' has also adopted communication mediated through computers. Main offices and their branches are increasingly inter-connected via intranets or the internet, in what is currently known as net-corporations.

But this is only one example of how the capital is becoming more and more dependent on networks. Some time ago it was evident that all repetitive human activities, even those highly complex, could be 'informatized'. Now it is clear that such operations can be performed, managed and shared through information networks, in a process that is fundamental for the growth of the capitalism's value and its process of permanent accumulation. The time of circulation of the capital was reduced, whilst the most valuable product, the commodity with higher aggregated value, is now the information. In other words, the money-capital was transformed into information-capital (Dantas, 1996).

However, the idea that technology plays a major role in society is not a novelty; it dates back at least to the initial periods of the Industrial Revolution and, before that, to the eighteenth-century Enlightenment. Twentieth-century scholars referred to this idea as "technological determinism"[2], which was formulated with the contribution of two lines of thought: one enthusiastic, the other critical. Deterministic thinking affirms that changes in technology and science are powerful agents of social change, having a much greater influence on societies and their processes than any other factor. This is especially significant because deterministic thinking was established when people started attributing **agency** to technology as a historical force (Smith and Marx, 1994).

Technology skeptics as well as technology enthusiasts have very well funded claims on what is happening to our present economies and societies. According to technology skeptics, technologies are neither new nor novel; there has been a century-long control revolution, a development of increasing sophistication in using information to handle complexity. They question the power of transformation attributed to new technologies, showing special concern about the emergence of new ways of polarization, isolation, and social control. Leo Marx (1996), for instance, recognizes that new technologies will surely help to stimulate many radical changes in our society, but critically points out that it would be naïve to rely on them as the solution for social and economic problems of the urban low-

income communities and that comparable exaggerated expectations have been inspired before by other 'new technologies'. He argues that:

> "These predictions exemplify the utopian thinking provoked by the advent of the new information technologies. An especially popular vision - it had been evoked by the coming of the railroad, the telegraph, the telephone, the radio - is of unprecedented harmony that will replace social stratification. The new means of communication will bring strangers together. Such futuristic visions also reveal the character of prevailing assumptions about "technology" itself - the sort of entity it is. It often is depicted as if it were a palpable thing - a complicated kind of tool devised by a few geniuses, members of a technically gifted elite - and an embodiment of virtual autonomy and **agency**. "Technology" is tacitly accorded autonomous power in that its efficacy is perceived as largely unconstrained by the circumstances of its origin or dissemination, and it often is implicitly endowed with agency, as if it is inherently capable of making things happen - of determining the tenor of human behavior and, indeed, the course of human events" (1996: 136-137).

He proceeds to say that, at present, computer literacy is a prerequisite for most desirable jobs and access to ICTs is a democratic right of every child. However, he questions the promise that ICTs will be a key factor in transforming the lives of urban low-income communities.

Technology enthusiasts, on the other hand, claim that an extraordinary transition from the industrial to the informational mode of production is taking place. This transition is associated with total globalization of the production organization and with a very fundamental technological revolution: the digitalization of information from different media (such as radio, television and the telephone), combined into one information medium, which transmits through broadband communication channels (Schön, Sanyal, and Mitchell, 2001).

The sociologist Manuel Castells is probably the most famous promoter of this view. In his book *The Internet Galaxy*, for instance, he writes that the internet is an essential tool for the development of the Third World, arguing that information technology is the current

equivalent of electricity in the industrial era. He continues to write that "in our age the Internet could be linked to both the electrical grid and the electric engine because of its ability to distribute the power of information throughout the entire realm of human activity. . . . The Internet is the technological basis for the organizational form of the Information Age: the network" (2001: 1). In this new social arrangement, he says, knowledge is an important commodity with a more significant aggregated value; and the effective use of the computer and the internet is an essential tool for the management of communication, economy and power.

The general idea behind this theory is that, if effectively used and transformed according to the local context, the internet would enable developing countries to leap-frog, reaching advanced levels of development in a shorter period of time. In addition, and most importantly, the internet would empower people, providing them the tools that would enable a positive transformation of people's lives and of the social context they live in[3]. Notwithstanding, Castells (1996, 2001) also recognizes that having access to the internet and being able to produce and process knowledge are key factors for determining the depth of the gap between to socially included and excluded. A major side effect of the knowledge society, thus, is that whilst the potential of the internet is proclaimed as a means of freedom, increased productivity, and communication; it also leads to the denunciation of the digital divide caused by inequality on the Internet.

The mounting consequence of these different layers of inequality results in a key polarization that takes place between a core, high-skilled labor force, and a mass of disposable labor that can be used, replaced or employed, depending on the needs and requirements of the market. It leads to huge differences in the effects of internet use on educational performance as well.

In a country like Brazil, for instance, where one third of the population is living below the poverty line, extra costs with internet providers, telephone bills and computer hardware are impossible for the majority of the population. People from wealthier strata of society can have access to cyberspace and to all the information available in tons of websites, stimulating their creativity and enhancing their knowledge. On the other extreme, those who cannot afford the costs of being connected to the cyberspace are deprived from the

world of information and, consequently, prevented from finding basic information, discovering new subjects and new interests.

Furthermore, it is important to note that the implementation of a new technology is a long and complex process. In general, it depends on the availability of complementary inputs or, in some cases, on a complete sustaining infrastructure. For example, cars required extensive networks or roads, gas stations, etc; and the electric lamp required a complex system of generation and distribution of electric power. In addition, in order to be incorporated into the existing social system, new products need an important 'period of accommodation' within which these complementary inputs are arranged. Even when a certain product is a commercial success, the continuity of its commercial success depends on economic, social and other **environmental variables** as well. Thus, the ultimate impact of new technologies is not only a question of technical possibility or enhanced technical performance; rather, it is more about the use of imagination in order to identify and tackle human needs in contexts and ways, that have not been articulated yet (Rosenberg, 1994).

Regardless of skeptical and enthusiastic views about technology, however, it is a widely accepted fact that the computer is a fundamental instrument of communication, economics and power management in the digital era. This research paper does not intend to accept one stream of thinking and reject the other, since we are currently witnessing some of both at the same time. But it questions how realistic it is to expect the advent of the new information and communication technologies to resolve the specific problems of the urban low-income population. This question remains opened and, in the following pages, it will tackle many others that cannot be so easily answered. With this in mind I go to the field. The answers will be far from definite though, but, hopefully, the findings will lay the ground for further discussion and study on this issue.

1.2 - Methodology

The research work is based on primary and secondary data. Initially, relevant literature was reviewed as well as ongoing research of information took place via the internet. Data collection took place during the month of July, in two different neighborhoods of Sao Paulo city, in Brazil. Quantitative and qualitative data was obtained through the administration of

a semi-structured questionnaire and non-directive interviews with 36 students aged between 16 and 23, of one public and one private school.

The questionnaire asked a set of pointed questions on ICTs use, access, needs, habits, opinions, expectations etc. The purpose of using the questionnaire was to have a better idea of the profile of the students of each school and to ensure comparability between different social backgrounds.

Parallel to the collection of quantitative data, a more in-depth understanding of the research topic was gained through qualitative, non-directive interviews. This method of interview was used in order to avoid pre-determined answers or pre-conception of the interviewer in relation to the answers.

In addition, the latest data from the Demographic Census 2000, developed by the Brazilian Institute of Geography and Statistics (IBGE), was used in order to portrait the national, state, and local socio-economic realities.

1.3 - Objectives

The main objective of this study is to understand how ICTs – especially the computer and the internet - have affected the lives and perspectives of students of different socio-economic and cultural backgrounds. What their behavior and habits in the internet are, their challenges and opportunities of access, their opinion about ICTs, their perspectives and hopes related to the use of new ICTs.

The justification of the choice of focusing on the 3rd grade in different socio-cultural environments/realities is due to the fact that it is the last school year of the Secondary Education level of the Brazilian educational system. Considering this "last step" of the Secondary Education as preferential object of study, we can have a better retrospective view of the use of the internet in the education and its meaning for students of different social classes.

This research intends to answer the main question:

- Has the use of the internet in schools positively affected the lives, perspectives and scope of imagination of students from different socio-economic and cultural realities, in terms of offering new opportunities for social and professional mobility?

My hypotheses are that:

- The use of ICTs in schools represents a powerful tool to improve the ways how students learn. However, it is not the solution for improving the quality of education since there are much more immediate pressing needs. In addition, teachers still have difficulties to integrate ICTs into their work due to their lack of computer skills or because they are not aware of the innovative possibilities that they represent.

- The internet has a great impact on the lives, hopes and dreams of students. However, although internet access should be free and available for everyone, the current discourse of governments and the media about 'access for all', 'bridging the digital divide' and the like, is creating the illusion for young internet users that the internet could be "The Solution" for their social and economic problems. Especially those from poorer segments of the society tend to firmly believe that, if they have computer and internet skills, their lives will be much better in the future.

Hopefully, this paper will also shed some light in the following sub-questions:
And what are the dimensions of knowledge experienced by the well-off and the poor?
Is digital inclusion the solution for the problem of social inequality in the city, or rather, is the ever present discourse of digital inclusion just making things worse for those with little or no access to the internet?
What's the impact of ICTs on the job market and on different groups of people in terms of the magnitude of opportunities and requisite entry skills? Will they narrow or widen income differentials and unemployment differentials?
Have schools and vocational training programs been preparing teenagers and young adults adequately for the knowledge-intensive jobs in the advanced economy? On what basis should we expect that improved public education for low-income youth, boosted by the use of the internet, will allow students to catch up?
Is it true that people become excluded because they are disconnected from internet-based networks? Or has the 'information revolution' just been too exclusive or irrelevant for low-income communities when more immediate problems dominate their lives? Are there any alternatives for overcoming the digital divide? Under what conditions is digital inclusion

transformed into more and better opportunities for those who are socially excluded? How do they perceive and experience the access to ICTs and to information as **empowerment**? How much room is there for members of low-income communities to handle the constraints of their social environment in order to overcome or, at least, cope with the digital and imagination gap?

Chapter Two - The Social Divide

This chapter presents a brief geographic, social and economic overview of the country. Based on the latest data of Census 2000, it examines issues such as education, income distribution, basic infrastructure, employment and ethnicity. Since Brazil is such a vast and contradictory country, a much more complex and profound study would be required to give us a much better understanding of its reality. However, some of the indicators presented here will hopefully provide a few important clues for the understanding its astonishing and well-known socio-economic inequalities.

2.1 - Socio-economic profile of Brazil

With 169.590.693 inhabitants, Brazil is the fifth largest country in the world in population terms (behind China, India, EUA and Indonesia, respectively). Its demographic density, however, is very low: 19,9 inhabitants per square meter. Currently, 81,2% of the Brazilian population live in urban areas[4].

The country can be divided into three distinct social, geographical and economic macro regions. Covering half of the country, the scarcely inhabited North contains the dense and tropical lowland basin of the Amazon, the world's largest rain forest and largest river in volume of water. In the Northeast, agriculture is the main economic activity, however, most of this region is located in semi-arid areas and it is considered the poorest region of country. The Center-South region (comprised by the Center-West, Southeast, and South regions), the country's wealthiest area, contains half of Brazil's total population as well as the urbanized and industrial centers of São Paulo and Rio de Janeiro, which are the third and ninth largest cities in the world.

2.1 - Map of Brazil by States and Regions

Brazil has the 8th largest economy in the world and it has continuously expanded its presence in world markets thanks to its diversified and well-developed agricultural, mining, manufacturing, and service sectors. However, Brazil is also internationally famous for having the worst income distribution in the world. In recent years, economic growth has raised the average income in all strata of the population, but the unequal distribution has worsened the existing socio-economic gap. The average income of the wealthiest 10% of the population is almost 30 times bigger than that of the poorest 40%.

Apart from having a very low income, the 49 million Brazilians who are considered as being poor (those who earn a maximum of half a minimum wage) have little access to essential services, such as basic sanitary conditions and education. The study "The Situation of the Brazilian Population", published in April/2002 by IBGE, cross checked data about income and other social indicators of the year 2001, in order to show how poverty interferes in the quality of life of the population.

From the people who earned up to half a minimum wage in 2001, only 31,6% had access to sewage system, water and garbage collection; whilst in the group of people with income higher than two minimum wages, 86% benefited from those services. In the layer of the poorest people who lived in the Northeast region, the percentage was even lower, 21,6%; whilst in the Southeast region it was 55,8%. On the other hand, among the richest share of the population, the percentage of people who benefited from basic sanitation services (which includes the three services mentioned above) reached 93,4% in the Southeast and 77% in the Northeast.

The study also approached the issue of inequalities among ethnicities. In Brazil, the white population represents 54% of the total, blacks are 5,6% and mulattos 40,4%, according to the latest data of the Census 2000. However, when cross-checking the data of ethnicity with the data of family income per capita, the inequality becomes clear. Among those who live with up to half of a minimum salary, only 34,8% are whites, against 65% of blacks and mulattos. As for those who earn more than two minimum salaries, the proportions are inverted: 77,1% are whites, and only 21,5% are blacks and mulattos. The average income of employed Brazilians also varies according to the color of their skin. In 2001, white workers earned (on average) R$ 757,00 (€ 244,00), R$ 374 more than black workers and R$ 382 more than mulatto workers.

As for productivity, the research found out that 56,4%, or 76,9 million, of the population aged 10 or older were economically active in 2000. Of these, 69,4% were male and 44,1% female. 67,7% of the working population were employees of the formal sector, whilst 22,5% were working in the informal sector, the second largest share of the labor market.

IBGE also analyzed two shares of the population: the poorest 20% and the richest 20% of the population. In the first group, only 26,9% of the people between 18 and 24 years old were in school, against 50,6% of the richest. The research emphasizes that, despite the fact that access to schooling is practically universalized among children aged 7 to 14 years old (96%) with almost no gender difference in enrollments at all levels (Stromquist, 1999), repetition rates amongst the poorest children are still very high. In households with income up to half a minimum wage per capita, 18,7% of the children aged 7 had repeated one or more school years. Eighty-five percent of the children aged 14 had repeated one or more school years in households with the same income. In households where the income per

capita was higher than two minimum wages repetition rates were much lower: 9,3% among children aged 7, and 29,6% among children aged 14[5].

Education and work are directly linked: the rate of employers who had completed at least secondary education was 62,7%. The rates were 33,7% among employees; 20,8% for autonomous workers; 7,5% for non-paid workers, and 1,1% for those working for their own consumption. In addition, in the group of employees within the formal sector (i.e. officially hired, with benefits, etc), 39,1% had 11 or more years of education.

The research points out that, with an increasingly demanding labor market, completing the secondary level of education is essential. In general, education is regarded as a social equalizer in Latin America today; thus social mobility "is associated with a completed secondary and higher education" (Stromquist, 1999: 1). However, not many Brazilians can reach such high level of education. Historically speaking, education was a product intended for the Brazilian elite only. During the colonial period, the Portuguese Jesuits were responsible for providing education for the children of the upper-class. It wasn't before the middle of the twentieth-century the primary and secondary education became a public service provided by the government, due to the fast industrialization of the economy which, consequently, demanded a more skilled and educated labor force. But still, the poor quality of the public education system remains as a key problem that is far from being solved.

In 2000, 79% of all Brazilians who were studying were attending a public school. However, the reach of the public system varies according to education level: it covers 89% of students in primary and secondary education, but it drops to only 29% of students in the higher education sector.

Furthermore, illiteracy and semi-illiteracy are still serious problems. Census 2000 shows that the proportion of people who did not complete primary education corresponds to almost one third of the population aged 10 or older - 31,2% of Brazilians have up to three years of education. In northeastern states such as Piauí and Maranhão the majority of the population is composed by semi-illiterates - 56,6% and 53,2%, respectively[6].

Chapter Three - Holistic view of ICTs

Chapter three tells the history of the internet in Brazil: its beginning, its development and its present stage. Then, using a recent study on digital exclusion, it shows who are the digitally included and excluded. Finally, it gives a few examples of national initiatives aimed at digital inclusion. These were developed and implemented by non-governmental as well as governmental organizations.

3.1 - The Evolution of the Internet in Brazil

In 1988 a few independent networks were being formed in Brazil, interconnecting universities and research centers from Rio de Janeiro, Sao Paulo and Porto Alegre to the United States. The necessity of using this new information and communication channel was pointed out by scholars who, after returning from PhD programs in the United States, were missing the information exchange with scientific institutions abroad.

With the objective of integrating such efforts and coordinating a national initiative of networks in the academic field, the Ministry of Science and Technology created a group comprised of several academic institutions in order to discuss this subject. As a result, in September of 1989, the project of the National Network of Research (RNP) emerged as an initiative of the Brazilian scientific community.

In its first year, RNP used Bitnet ("Because is Time to Network"), which only allowed users to receive files and e-mails. At the same time, the creation of other networks in different states across the country widened the reach of RNP, connecting it to several universities. Then, in 1991, an international line was added to this network, enabling the access to super computers from other countries, national and international data-basis, educational institutions, research foundations, non-profit organizations and governmental agencies[7].

RNP was the first backbone of the country and also the first to operate POPs ("Points of Presence") in regions where the commercial operators arrived much later. In spite of scarce resources, it consolidated a backbone of education and research, and extended its support to several social projects. Parallel to this process, RNP was working in partnership with the

Brazilian Institute of Social and Economic Analysis (IBASE), in Rio de Janeiro, in order to implement the internet in the NGO field.

The internet was officially introduced in Brazil on 18/07/1989, when AlterNex, the first Brazilian internet provider started its operations with the infrastructural and institutional support of RNP. AlterNex was created by the NGO IBASE and it became the first internet provider of the country, outside the academic community.

It is important to emphasize the importance of the role played by IBASE, at least in this phase of the creation of the pilot backbone of RNP, because these two independent initiatives ended up merging, in a mutual effort to enable the Internet project of the United Nations Conference on Environment and Development 92 (UNCED 92). By the end of 1990, IBASE started the "UNCED Information Strategy in Rio" (ISP/Rio), which would be integrated to the agreement between the UN and Brazil for the Eco 92. It consisted of creating the project, development and operation of an internet network, interconnecting all the spaces of this event via micro-computers.

In 1995, with the approval of the Ministry of Communications and the Ministry of Science and Technology, the Brazilian Company of Telecommunications (Embratel) installed its backbone - which connected the national network to the worldwide network - and started to offer its connectivity services to the public in general, giving the start kick to the commercial internet in the country (Afonso, 2000).

In 1994 Brazil was already ranked number two in number of internet users in Latin America (Mexico was number one) [8]. In 1999, though, Brazil had the highest numbers of internet users in Latin America and it was ranked 3rd in the Americas (behind the US and Canada), with about 3 million people connected to the web through hundreds of internet providers.

At present, 12,46% of the Brazilian population (or 26,7 million people) has a computer at home, but only 8,31% is connected to the Internet, which corresponds to about 14 million people[9]. The number of people with access to a computer has increased about 50% in the last two years. However, in spite of the fast development, Brazil still has about 150 million people without a computer.

3.2 - The Digital Divide

The digital divide can be interpreted broadly as the lack of access to three key elements: a computer, telecommunication infrastructure and an internet provider. The result of this kind of deprivation, according to Silveira (2001), is digital illiteracy, poverty and slowness of communication, isolation and powerlessness. He proceeds to argue that, in addition to the cognitive veto and the rupture with the basic idea of equal opportunities for all, the digital divide represents a new barrier for the reduction of social exclusion.

The fact is that the digital divide walks hand in hand with the social divide - it reaches more the people with less education, black people and the less developed areas of the country. Those were also the results of the study "Map of Digital Exclusion", which was developed by Center of Social Policy (CPS) of the Getúlio Vargas Foundation (FGV), based on micro-data of the National Survey by Sample of Households (PNDA) of the year 2001 and on the results of the Demographic Census 2000[10].

The study shows that those who are digitally included have, on average, 8,7 years of education - twice as much as the rest of the population. Thus, the higher the educational level, the more access to the computer. Among those who have 1 to 4 years of education, for instance, the rate of digital inclusion is 4,84%; whilst among those with more than 12 years of education, the rate is 58,92%.

		Rate of Computer Access	**Rate of Internet Access**
Total		**12.46%**	**8.31%**
Years of Education	**0 year**	4.06%	3.45%
	1 to 4 years	4.84%	2.79%
	4 to 8 years	7.60%	4.33%
	8 to 12 years	17.58%	10.74%
	More than 12 years	58.92%	46.81%

Table 3.1. Source: CPS/FGV based on micro-data from PNDA/IBGE.

The average monthly income of those who have a computer at home is R$ 1.677,00 (€ 540,00), representing almost four times the average monthly income of the digitally excluded, which is R$ 452,00 (€ 145,00).

Women also have a slightly higher rate of digital inclusion than men: 12,65% against 12,26%. But according to FGV, women should have a much higher rate of digital inclusion since, on average, their educational level is higher than men's.

		Rate of Computer Access	Rate of Internet Access
Total		**12.46%**	**8.31%**
Gender	**Male**	12.26%	8.19%
	Female	12.65%	8.43%

Table 3.2. Source: CPS/FGV based on micro-data from PNDA/IBGE.

The differences in computer and internet access can also be seen according to the levels of development of each region or State. In the poorest States, such as Maranhão and Piauí (in the Northeast region), the rates of digital inclusion are the lowest of the country. In Maranhão, only 2,38% of the population has a computer at home, and only 1,44% has internet access. In Piauí, the percentages are 3,52% and 2,02%, respectively.

In the most developed areas of the country the rates of digital inclusion are higher. In Brasília, 25,32% of the population has a computer at home and 19,22% have access to the internet. In São Paulo and Rio de Janeiro, 21,75% and 17,92% of the population have home computers. As for the rates of internet usage, they are 15,22% and 12,81%, respectively.

The study also reveals a situation of "digital apartheid" in Brazil: for each black or mulatto person with access to the internet, there are 3,5 white persons in the same situation. Among the mulatto population, 4,06% has a computer at home. In the case of the black population, this percentage is 3,97%. For the white population, the index reaches 15,14%. According to the economist Marcelo Neri, coordinator of this study, the racial and digital apartheids walk hand in hand in Brazil. Even if it were taken into account only the white and black people with the same education and employment opportunities, the chance of a white person having access to the internet is 167% higher than that of a non-white person[11].

3.3 - Initiatives for Digital Inclusion

In the last years, the expression "digital inclusion" has become a widespread trend, motivating initiatives from companies, creating governmental policies and mobilizing the civil society. Many are the strategies to enable the access of the poorer classes to the new digital technologies. It has been argued that the struggle to democratize the knowledge, the

main product of the information society, represents a means of fighting social inequalities (Silveira, 2001).

In Brazil, there are several governmental and non-governmental initiatives aimed at digital inclusion. Some of the most important ones are the following:

Committee for the Democratization of Informatics (CDI)

The most comprehensive alternative for public Internet access so far is the so-called 'telecenter', where people from local communities can have access (usually free access) to computers and to the Internet. In Brazil, the NGO Committee for the Democratization of Informatics (CDI) is the best example of how the telecenter model functions. CDI was created in 1995 and it counts with voluntary work to provide vocational courses in slums and poor neighborhoods. Through the use of ICTs, it also offers courses and workshops about citizenship, ecology and human rights.

CDI argues that information technology has an irresistible appeal especially among children and teenagers. Thus, the technological preparation of these kids, allied with the learning of human rights and ecology, creates more opportunities for them and, simultaneously, for their families and communities. CDI works closely with institutions that work with socially excluded/marginalized groups such as people with physical and mental disabilities, street kids, convicts and indigenous populations.

CDI focuses on the capacity building of communities and on the socio-educational organizations created by them. Currently, there are 750 autonomous and self-sufficient Schools of Informatics and Citizenship (EICs) in 19 Brazilian states. The EIC model was also implemented in Uruguay, Colombia, Mexico and Japan. CDI provides communities with free technical assistance, training of teaching staff and assistance in the development of specific methodologies and curricula for different social groups.

Its financial support comes from partnerships and agreements with companies, institutions, public governments and from individual donors, as well. CDI also promotes permanent campaigns for donations of new or used computers and other hardware equipment, such as printers, scanners, hubs, modems and no-breaks. Equipment with some malfunctioning problems are also accepted and then repaired by specialized volunteers and by former students trained by CDI.

Telecenter Cidade Tiradentes

The municipality of São Paulo created in 2001 its first telecenter in Cidade Tiradentes, a very poor and marginalized neighborhood in the east periphery of the city. It is managed by a council elected and formed by people of the community.

According to the municipality, the telecenter in Cidade Tiradentes is supposed to provide the local community with free access to the internet and e-mail, and a free vocational course on basic computer skills, with notions of software similar to Word, Excel and Internet Explorer (the software used is the free operational system GNU/Linux). In addition, it intends to offer an open channel of communication with the government, as well as, cultural workshops and social projects through the use of ICTs.

Good intentions apart, this is still the only telecenter for an entire local population of about 200.000 inhabitants. It is equipped with 20 computers with broadband internet connection, but only 5 of them are used for free internet access. Furthermore, it has a waiting list of about 4.500 people registered for the course of basic internet skills.

The five computers for open internet access are used by an average of 200 people per day. Each person is allowed to use the internet for 20 minutes, but, in case someone wants to use it a little longer, he/she has to go to the end of the line again. These people look for online job agencies, but also for entertainment, such as chat rooms and games. According to the coordinator of the telecenter, the profile of its internet users is very heterogeneous, being formed by children and elderly people, as well (Dimenstein & Duran, 2001). At present, due to the high number of children that use the internet only for online chatting (which was creating some disagreement among users), the council has decided to temporarily prohibit the access to chat rooms.

The initiative to create this telecenter was inspired in a non-governmental project called Sampa.org, which has already installed 20 other telecenters in Capão Redondo, in the extreme south zone of the city, in partnership with community organizations. It also offers free vocational courses and internet access. With three years of existence, Sampa.org shows figures that are incomparable to any assistance program of the government: 10.000 people use the computers of this organization every month. Besides, they have also created a local

news agency, called "Capão Online", and several homepages developed by its users, which promote several services offered within the neighborhood.

Fund of Universalization of Services of Telecommunications (FUST)

With more than R$ 2 billions of collected taxes by the end of 2002[12], the Fund of Universalization of Services of Telecommunications (FUST) is a federal government fund aimed at the popularization of the Internet. Its budget comes from the compulsory contribution of 1% of the operational profits from all the telecommunication companies of the country and from part of the financial resources obtained through the privatization of telecom companies and the sale of operational rights for foreign telecom companies as well. FUST was approved in August 2000 with the objective of financing the multiplication of access to new ICTs. Also in August 2000, the Brazilian Ministry of Communications officially launched the federal "Telecomunidade" project, which would be financed by FUST. This five-year project is aimed at bringing computers to classrooms, libraries, health centers, museums, and public security agencies, all properly (inter)connected to the internet. But the primary goal of Telecomunidade was to provide 60% of all schools that have more than 600 students, with computers connected to the internet, by the end of 2001. The schools would have to build rooms to accommodate the equipment, but the costs with maintenance, technological update and provision of internet access would be covered with money from FUST during five years (Lobato, 2001).

Furthermore, the project also intends to install computers in more than 12.000 schools of secondary education, reaching a public of 6,5 million students and 280.000 teachers in more than 5.000 Brazilian cities. However, all those plans seem to be threatened. Due to deviation of funds, changes on the rules for the use of this fund and under the pressure by the current demands of International Monetary Fund (IMF) for fiscal adjustments, none of the budget of FUST was used yet (Baggio, 2001).

One of the clauses of IMF's fiscal adjustments bill sets a primary surplus target of 3,75% of the Brazilian Gross Domestic Product (GDP). For this reason, the federal government claims that certain funds aimed specifically at social investments, among which is FUST, are being held back in order to achieve and maintain a 3,75% GDP surplus, complying with IMF's demands[13].

Chapter Four – The Internet in the School

This chapter focuses on the environment in which students, their families and teachers live and interact. What are the socio-economic aspects of their neighborhoods? What is the infrastructure of the schools? What are the opportunities and constraints to internet access in schools? What are the qualifications of the teachers and how do use the internet in the classroom? Has the use of the internet affected the quality of education? What is the professional and educational profile of the parents? Does it have any influence on the life perspectives of their children? It approaches these and other questions but first, it gives a more detailed description of the method of research used during the data collection work.

4.1 - Method of research

During the work of data collection I had contact with two very different realities. First the public school, which is localized in the periphery of the city and has high rates of violence and poverty. The vast majority of its students live in the same neighborhood where the school is situated and come from families with very low monthly income, high rates of illiteracy, and with a cultural background still very much linked to their regional origins. The students are, in general, the first or second generation of rural migrants from the south of Minas Gerais state or from the Northeast region of the country.

The other reality is the one of a traditional and well-known school within the social environment of the wealthiest strata of the population of São Paulo city. The school is localized in a middle-upper class neighborhood in the central region of the city and most of its students come from different neighborhoods, which, in spite of being geographically spread across the city, have very high living standards in common. Most of their families are from São Paulo or from the Southeast/South regions of the country. All families, without exception, have high levels of education and very high income.

The interviews with students were arranged beforehand with the authorization of the director of the private school and the vice-director of the public school. I called them several weeks in advance and explained what the objective of my research was. Both of them were very interested and helpful, trying to set a better date for me to talk to the

students. Due to the fact that I arrived in São Paulo by the beginning of July, the month of school holidays in Brazil, it was agreed that the best time to make the interviews would be after to school holidays, in the last week of July, since many students were already skipping classes or were out on vacation.

In the meantime, I had the chance to talk to teachers of both schools (five in the private and two in the public school) and also to students from other public and private schools of São Paulo. These informal conversations, especially with students, gave me a very good view of what to expect from my "official" interviews.

The interviews with the students were carried out in the form of group sessions, with 18 students in each school, equally distributed in numbers of boys and girls. The selection of the students took place only a few hours before the interviews, with the teachers of the first class of the day asking for volunteers to take part in a research interview. Each session took about one hour and all the interviews were recorded and then transcripted. In the public school, the group interview took place in the computer room, which, as I found out during the session, was opened specially for this occasion. In the private school, the group interview took place in a classroom that was available at that time.

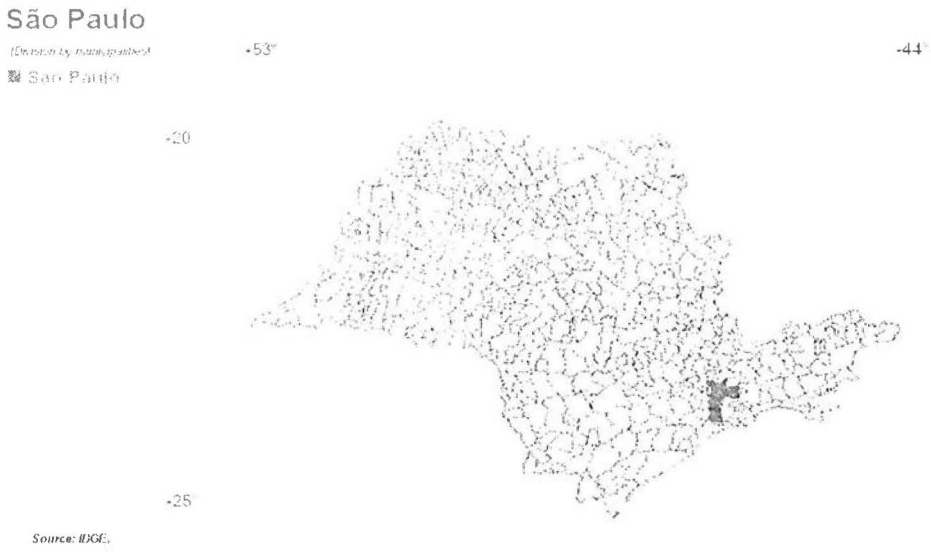
In general, the group interviews were very productive and there were no significant communication barriers between the interviewer and interviewees. The students, especially the ones in the public school, seemed to be very curious with the novelty of having someone "from outside" willing to know about their lives and opinions. Thus, after the first few minutes of interview, when they felt more comfortable to speak up their minds, the conversation continued very easily, since most of the students are very expressive.

In this research paper, in order to preserve the identification of each case study, the public and private schools will be named **School A** and **School B**, respectively. In the same way, the names of students and teachers will not be mentioned. Instead, **each person who took part in the interviews and answered the questionnaires will be identified only by gender** (with the initials M or F) **and school**.

4.2 - The neighborhoods

São Paulo is the biggest and most urbanized of all the Brazilian States (in population terms). According to data from Census 2000, it has 36.966.527 inhabitants, which

corresponds to 21,8% of the entire Brazilian population. However, the entire urban population of the State has been growing at a slower pace than in the last decades: at a current annual average of 1,85%, against 2,56% in the 1980s and 4,51% in the 1970s. It is important to note, though, that in the 1980s the State received 3 million migrants (mostly from the North and Northeast regions), whilst in the last decade, the number of migrants was "only" 1 million.[14]



4.1 Map of the State of São Paulo with Division by Municipalities.

Its capital, São Paulo city, has the third biggest population in the world - 10.406.166 inhabitants. The Census 2000 shows that the city has been growing only in its borders in the last years, which means it is growing only in the areas where there is no adequate infrastructure. Another significant aspect of the living conditions of the capital is that the population tends to be concentrated in the poorest neighborhoods. According to IBGE, 30% of the population of São Paulo city lives in periphery regions.

4.2 - Map of São Paulo City with Division by Neighborhoods/Districts.

Obviously, the capital of the State, as the rest of the country, is characterized by astonishing socio-economic and infrastructure inequalities. In order to exemplify such inequalities, I will use here the cases of two different neighborhoods: Cidade Tiradentes and Paraíso.

Cidade Tiradentes, where school A is located, is a neighborhood in the East zone of the city. The school is surrounded by an immense conglomerate of low income apartment buildings constructed by the municipality and very simple houses where most of its students reside. According to statistic data raised by the municipality of Sao Paulo, it is estimated that Cidade Tiradentes is one of the poorest neighborhoods of the city. According to IBGE, the entire district has 190.559 inhabitants and its 15,00Km² are densely populated. The neighborhood does not have any public library, banks, cultural centers, cinemas or theaters. São Paulo city has only 4,5m² of green area per inhabitant, which is already very

little. In Cidade Tiradentes, however, this number decreases to 0 to 1m² per inhabitant. The only "entertainment areas" are the few improvised dusty football fields.

It does not have a hospital either, and there is only one public basic health center to serve this entire population. The closest hospitals are in the neighborhoods located a few kilometers away from Cidade Tiradentes.

The average income is R$ 300,00. According to the Municipality of São Paulo, the income of 20% of the families are less than one minimum salary (R$ 240,00 = € 77,00), 50% earn between one and two minimum salaries, and 20,5% between two and three minimum salaries. The rates of illiteracy and semi-illiteracy are among the highest in the city, without any significant concentration of people with completed primary or secondary education, let alone college degree.

In addition, this neighborhood is one of the main areas of drug trafficking and violence of the city. Cidade Tiradentes is an area of maximum juvenile vulnerability levels in the extreme east region of Sao Paulo. Furthermore, the region holds the 4th highest rate of homicides of the city: 102 per 100.000 inhabitants in 2001[15]. Due to this harsh reality, many young people who live in this place try to hide their origin when they are in other parts of the city, because of shame and fear of being discriminated. Especially in job interviews and job applications, many of its inhabitants prefer to give a different address, of relatives and friends who live in other regions, in order to avoid being discarded for the job position.

According to IBGE, 20.773 people aged between 15 and 19 live in Cidade Tiradentes, which represents 11% of the local population. The majority of its inhabitants are migrants or children of migrants from rural areas of the Northeast and south of Minas Gerais state who were attracted to São Paulo in the decades of the 70s and 80s, because of its industrial development and its fame of powerful urban center with a good quality of life. However, due the serious economic crisis that began in the mid-80s, their chances of social mobility have practically disappeared. Not many men could keep their stable jobs and the majority of women aged 17 and older work as maids and cleaning ladies in the better-off neighborhoods nearby.

Paraíso is a neighborhood known as one of the "noble areas" of the city. It is localized in the south-center zone, close to the financial center of the city. Hence, it has a very good transportation net with bus lines to and from almost every region in the city and two subway stations. It has a strong commercial profile, with many shops, services and offices. Despite of the intense traffic in its main avenues, its local residential streets are surprisingly very quiet and the vast majority of its inhabitants live in comfortable apartment buildings.

The existent services sector of the urban center of Paraíso reveals the type of living and consuming standards of the "intellectual-high-middle-class" citizens who lives in this neighborhood. There are hyper-markets, shopping centers, specialized book and music stores, imported products stores, art galleries etc. And apart from the conventional commerce, such as bakeries, pharmacies and flower shops, the neighborhood also counts with fitness centers, cinemas, theaters, cultural centers, bars and restaurants, which represent a wide range of entertainment options.

Despite of being a highly urban area, it also has parks and squares, and the residential streets are tree-lined. Paraíso also has 15 hospitals, 5 health centers, and 9 public schools, four of them with secondary education.

4.3 - The schools

School A was founded in 1976. Its construction was the result of the policy of the Secretary of Education of the State of Sao Paulo, which had to comply with the increasing demand for more study places in a neighborhood whose population was in constant growth. Currently, it has 2.200 students of the secondary level and 57 teachers.

The school has 22 classrooms but not all of them are used. One of them is used to keep broken desks and chairs, and at least two other rooms are damaged by vandalism. It has one library and one computer room with 10 computers, one printer, but no internet connection. This room, which was created in 1995, used to be a normal classroom but, due to the arrival of the computers, it went through a complete reform. At present, it looks like the best room in the school, where walls, windows and furniture are better maintained. The iron door, which was especially made for this room, is also new and, as well as the windows, it is closed with a steal lock.

The overcrowding of the classrooms is one of the worst problems of the school. On average, each class has 48 students, with a maximum of 53 students in certain classes. All the students who attend this school live in this same neighborhood and their standard of living is usually very low. They do not have didactic books, since the low income of their families do not allow them to buy this or any other kind of didactic material. Hence, teachers have to improvise and, often, use their own resources (for instance, pay for the copies of a relevant article) in order to give their classes.

Repetition and drop-out rates are very high. Although there are no official records in the school, it is estimated that of all children that enter the basic education level in the country, only 40% manage to complete the secondary level[16]. According to the vice-director of the school, about 70% of the students are behind in relation to age/educational level, having repeated two or three school years.

School B was founded in 1934 and offers courses of primary and secondary education. It has 2.800 students, 160 teachers and 110 staff. It has a library with more than 40.000 books, magazines and newspapers, archives with audio-visual equipment, and eight multimedia booths where students can consult educational and recreational CD-ROMs, watch video tapes, cable TV and use the internet. The library also has a Xerox machine, one scanner and four color printers. The computer room is equipped with 28 Pentium 233 computers.

The school, which is also an internet provider, uses new ICTs as an extra pedagogic tool for several disciplines. Recently, the school has implemented a program aimed at training teachers in the area of technology in education. The program's material can be accessed through the school's intranet. Each module of the program is followed by the teachers in the form of weekly meetings, which are then complemented with an online work environment.

Teachers use the computer room in order to emphasize the content of a given discipline or enhance the learning process of students.

In the choice for the most suitable software, it is taken into account what can trigger the students' interest in new things and subjects. That is when the internet is used as a resource of information and as the center of discussion among students. The school has a special

staff responsible for searching for useful websites, which are recommended to its students, then. It also incentives its students to use the internet in order to exchange information about several issues, such as recycling and environment, with students from other places in Brazil and abroad.

Furthermore, the internet is also used to send grades and reports to parents, and to publish models of exams. Repetition rates are very low and there is practically no drop-out rate. What may happen are eventual transferences of students to other schools or cities.

4.4 - The teachers

The teachers of **school A** are less qualified professionals and live in much lower socio-economic conditions when compared to those of the school B. They usually graduated after studying during the evenings in private colleges and only one studied in a public university (University of São Paulo - USP)[17]. Most of them have to work in more than one school or teach in two or even three shifts in order to obtain a higher income. In addition, the rotation of the teaching staff is very common because many of them are hired by the State on a temporary contract basis, which is cheaper for the government, but very ineffective for teachers and students. Nonetheless, other factors contribute to the high rotation of teachers, namely, the distance between the school and the teachers' residences, the violence of the neighborhood, bad maintenance of the school building, and indiscipline of the students.

By the time of the data collection, the number of teachers of the school was 57, but, according to its vice-director, three of them were on a medical leave due to stress. Of the 57 teachers, fifty-four hold a college degree, two have a post-graduation degree and only one has a master's degree - the mathematics teacher. Ironically, this teacher is known as an "idealist" because, as one teacher said:

> "He is so qualified and still, he loves to teach and he feels that he has to make a difference in the lives of these kids. He firmly believes that education can change their lives for the better, of course. Once, I saw him going to class with tears in his eyes because he knows how lost these kids are in life. He is a perfect idealist." F.

Taking into account the precarious condition of the school, the overcrowded classrooms, low salaries and heavy work load, it is easier to understand why many teachers do not feel very motivated or enthusiastic about the future of their students.

> "The class is very heterogeneous, difficult to work with, almost nobody has interest. It is going to be difficult for them to find a way. When I was finishing high-school, I had interest in knowing what was going to be of my life tomorrow, but they don't have this (*interest*). They have no interest at all on what is going to be of their future... only the present is important, it is difficult to know what they want from life, they are kind of revolted..." F.

Both of the teachers I talked to had e-mail addresses, but only one of them had a computer at home with dial-up internet connection. When it comes to the use of the computer in the school, one teacher said that it has not changed anything in the lives of her students. There are only ten computers in the school, which are supposed to be used by all students. However, due to the overcrowded and high number of classes, it is practically impossible to make use of the computer room.

> "There are just too many classes in this school and we have only one computer room. It is really difficult to implement an effective schedule for the use of the computer room. When we finally manage to use it, there are not enough computers available. Usually, we have about four or five students per computer so that one uses the keyboard, another one uses the mouse, and the other two or three just watch. Then, they change places so that everybody has the chance to touch the computer at least." F.

Additionally, the school does not have computer maintenance or teachers' training courses. When asked how they did to use the internet, since they had so many students, the answer was:

> "The internet?! We don't have internet, we just have the computers! The students only use them to play games or to draw." F.

According to the vice-director, vocational training is non-existent and this fact, especially, is very frustrating for teachers and for him. As he puts it:

> "I think every one in this school, in particular, wants to help these kids somehow. We are all very much interested and involved in trying to show them some good perspectives of life. But here, we just don't have the proper tools and resources to prepare them for the job market." M.

> "What I notice is that they don't think about having a real professional career. They only talk about working in the informal sector or helping someone in the car wash or local market. They usually say that a relative or a friend works somewhere, in a house, in a shop, in a small industry, and these people will help them to get a job in those places. You see? Their scope of professional perspective is very small. The idea of going to a public university, then, doesn't even cross their minds." F.

Furthermore, the school hardly has any educational software and even if they had them, teachers do not have the necessary skills or training to use them.

> "During last elections, the State opened a teachers' training course that was held in a hotel in a city close to Sao Paulo (city). It was a course aimed at training teachers on how to make use of the computer in the classroom, how to use the internet etc. A few teachers managed to go and watch for a few hours. Everything was for free, including lunch so, for most people, this course was a kind of time-off from the stressful routine of the school. After the elections, we never had anything like that anymore. But, even if we had, how could I ever attend a course like that? I give classes in the mornings, afternoons and evenings!" F.

According to the survey "School Portrait 3", published by the National Confederation of Education Workers (CNTE) [18], 48% or almost half of the basic education professionals (formed by teachers of primary and secondary schools) do not have access to the computer or to the internet. Their main source of entertainment is watching TV and only 6% can

afford going to the cinema or theater once a month. The majority of these workers (83%) are women, 53,1% is aged between 40 and 59, and has 12 to 18 years of working experience.

The teachers of **school B**, on the other hand, are highly qualified and very well trained. All of them are graduated in the best universities of the country, usually the public ones, in areas related to the disciplines they teach. Having specialization courses, post-graduation and master's degrees are very common among teachers. Most of them speak at least one foreign language and have lived or traveled abroad several times.

In socio-economic terms, they belong to the middle or upper-middle class, enjoying a very comfortable and stable living standard, which can be noticed not only by the fact that the vast majority of them teach "only" in this school, but also by the number and models of cars parked in the teachers' parking lot.

All of the five teachers who were interviewed have at least one computer and internet connection at home, which is used everyday, not only for searching issues relevant to their disciplines, but for personal use, as well.

Moreover, teachers also use the internet to prepare their classes and, in many aspects, it has become an extension of the classroom, extrapolating the limit of the actual school hours, as a few teachers have stated:

> "The internet brought to school a new way of lecture. Students can develop extra activities with material collected via the internet. One of my students created a website with pictures and information found on the web as a school work." F., History teacher.

> "Dynamic resources offered by certain websites may awake the curiosity of the students and facilitate his/her learning process. Graphics and exercise programs found on the web can be used as an interactive tool to complement the work developed in the classroom. There are websites that help their users to elaborate complicated geometry calculations and, at the same time, show the students the formulae that were used to find the results." M., Mathematics teacher.

According to teachers, the use of the internet has also affected the level of interest and participation of students.

> "Students who use the internet to complement their studies end up more involved with the lectures. One positive example of the use of the internet occurred when I asked for a work about parliamentary system. The students made a research via the internet and even sent e-mails to deputies and ministers asking for their opinions. Even the Health Minister, José Serra[19], answered." F., History teacher.

> "There are websites in the internet that motivate students to discuss polemic issues in the classroom. Under my supervision, my students even accessed websites developed by skinheads in order to discuss aspects of Nazism and Fascism." M., History teacher.

> "There are many websites that bring information that cannot be found in didactic books. In this sense, they become a complementary tool to the lectures. There are websites where we can find pictures and texts related to a certain issue. This helps the learning process, especially if the students need cultural information." M., History teacher.

However, all teachers emphasized that although the internet is an important source of information, it is not a substitute to books and to the students' own ability to learn and produce knowledge:

> "Computers can help the student, but do not substitute the need to think. For that, the student must receive proper orientation. Even the calculator can be used for pedagogic objectives. For solving problems, calculation is only one of the needed phases. Education must work with the development of the entire logic." M., Mathematics teacher.

"The internet is a wonderful tool for research and exchange of information, but has to know how to use it. The computer or the calculator will never give you a ready and final answer." M., Mathematics teacher.

"I think that, before recommending a website to a student, the teacher must remind him/her that the most reliable source of information still is the book. Some students believe that in the internet everything is ready and end up obtaining incomplete or even improbable information." M., History teacher.

The speed and ability to find and select information are some of the positive aspects of this digital generation. However, many teachers are worried with the effects that electronic communication might have on students. Among such effects, they notice that is more difficult for students to read discursive texts or to concentrate for a long time in only one activity. Traditional lectures, in which the teacher speaks and writes in the blackboard, do not catch the attention of the student during the complete period of the lecture.

"The adolescent is super exposed to information and has the ability to process several things at the same time. But he/she has difficulties to make a profound study in any subject." M., Informatics teacher.

In order to compensate this excess of electronic language, school B has increased the load of readings and is working with complementary activities that are typical from the pre-digital era, such as handcraft courses where students have to assemble boxes and prisms in order to train the observation of tri-dimensional objects.

4.5 - The parents

In relation to the profession of their parents, the students from **school A** mentioned professions of low qualification and low income. The fathers have professions such as, construction worker, waiter, truck driver, vendor, painter, and printer. Three of them are pensioners and two are unemployed. As for the profession of their mothers, the majority is housewife (5) and one is a pensioner. The others work as maids, dressmaker, and cook. The

mothers who are unemployed usually try to contribute to the family income selling home-made food and sweets, washing and ironing clothes, or making small sewing repair services.

In educational terms, none of the parents have reached the secondary education level. The majority is illiterate or semi-illiterate, with 0 to 4 years of formal education. Only two fathers and two mothers have eight years of education, which corresponded to the conclusion of "gymnasium level", which used to precede secondary education.

In many cases, the low level of education and professional qualification of the parents become a reference and an encouragement for the education of their children, since most of the students have expressed the wish of finishing secondary school in order to pursue a better living standard and a better profession than those of their parents.

For the same questionnaire applied in **school B**, students gave answers that denote the high level of education and professional qualification of their parents. In relation to the profession of their fathers, all students mentioned professions that require, at least, a college degree, such as: physicians, university teachers, engineers, and a dentist. It is important to note that, in order to be allowed to practice all of these four professions in Brazil, it is necessary to have a post-graduation course and, in most cases, a Master's and/or PhD degree. In addition, five of the fathers have their own companies and industries within Sao Paulo State and/or in other regions of the country.

As for the mothers, the following professions were mentioned: physician, university teachers, psychologist, dentist, economist, lawyer, entrepreneurs, and only two housewives. Obviously, these professions also require high levels of education and specialization but, even the mothers who are housewives also have completed a college degree.

Chapter Five – Students and the Internet

This chapter presents the profile the main object of this study: the students. Given the characteristics of distinct living standards and educational infrastructures, which were analyzed in chapter four, how do students perform on each environment? What are the dimensions of knowledge experienced by the well-off and the poor? Do patterns of internet

use vary from one group to the other? How do they experience the internet use at school? Does the use of the internet have different importance and meaning for students, according to their social class? How the use of the internet has affected the lives, perspectives and scope of imagination of students from different socio-economic and cultural realities? How do the poor cope with the digital and imagination gap? Can they overcome those barriers? In the following pages students will be answering some of these questions.

5.1 - The students

Of the group of 18 students who took part in the interview session in **school A**, only five are in the correct grade in relation to age/educational level. Their ages range from 16 to 23. Eleven of them work and two said they were unemployed at that moment. Those who are employed work as: assistant in a car-repair shop, maid, cook, assistant in a fabric industry, vendor, car washer, assistant in a warehouse and casual jobs.

The majority (11) said to be the oldest child of the family. Of these, 8 have some kind of work (or said to be unemployed) in order to help with the family income. In the group of those who are not the oldest child (7), two of them said that their older siblings are unemployed, and five of them said that their older siblings work as: human resources chief and journalist; secretaries and parking attendant; assistant in a fabric industry; 'perueiro' (a person who collects the fare in a informal transportation van); and shop attendant.

All students answered that they like going to school, although their reasons may vary a little. In general, they say they like school because that is where they meet their friends, talk and play. But some also say they like the teachers and a few classes. In addition to that, some of them say they want to finish school in order to have a better life in the future or because their parents insist that they finish school.

> "I like studying and I want to graduate." F.

> "I want to graduate to see if I get the chance to have a better life." F.

> "I come to school to make something useful out of my time and because my father wants me to finish school." M.

"My mother wants me to finish school." M.

"I come to school because I want to graduate and find a better job later on." M.

"I come to school to meet my friends and because my mother wants me to graduate." M.

Only four students have internet connection at home and five have never used a computer. Those who do not have internet connection at home but have already used it, have done it for the first time in the house of a relative, a friend, a neighbor, at the work of a relative or a friend, or during a computer course. At present, some of them make use of the internet at the local telecenter.

When asked about what they thought of the computer room of their school, most of them said that it looked very nice but it did not have enough computers and, most important, they said they had never used the room before. In fact, for many students, that was the first time that they actually entered the computer room.

"The computer room is the most beautiful place of the school. Wow, it looks like if we were inside a space ship, a flying saucer. I'm feeling very important in here." M.

"Even if we had broadband internet it wouldn't make any difference because we never have classes in the computer room. Teachers choose only the best students for the classes on the PC room, which is locked most of the time." F.

"I told my father that we had a computer room in school and he was so excited, he almost cried. Just imagine what he is going to say when he knows that we spent so much time in here today!" F.

All 18 students of the group interviewed in **school B** are in the correct grade in relation to age and educational level. They are aged 16 or 17 and none of them work. Five of them

have older siblings who do not work either; they are university students in areas such as law, medicine and engineering.

As well as in school A, students said they like school because of their friends, teachers, classes and the nice environment. However, although finishing secondary school is considered to be very important, it is not their ultimate goal, but just one necessary step towards university and professional career.

> "Being in the last year (*of secondary school*)... I don't know. It doesn't really mean anything to me. It's just normal." M.

> "I like coming to school because, you know, things are like this: they ask me what my mom does and I say 'she's a physician'; and my father 'he's a university professor'. So what am I? For the time being I can say I'm just a student, but I have to be something." M.

> "The person who doesn't go to school becomes an animal or a just a thing in today's society. We are here to take care of our future." M.

> "I want to have a good educational background because if you quit school you may even be successful but will always be seen as stupid and ignorant, and I don't want to be like that." M.

All the students who took part in the interview in **school B** have computer and internet connection at home. Many of them were taught how to read and write in the computer. Thus, the internet represents "just" one more item in their lives, since they were raised in an environment where the mobile phone, videogame, VCR, computer and the internet were 'common' equipments. The internet is a very important one, though, since all of them use it every day for several hours.

As for the computer room of their school, it was regarded as "good" or "very good". In general, it is used twice a week and students think that computer/internet classes are "interesting" or "much more interesting than normal classes".

5.2 - Patterns of use

Students from **school A** who have internet access at home complain that the main constraints in the use of the internet are the telephone costs and the bad quality of (dial-up) connection. Although they share the use of the computer with other people in the household, they say they do not have problems with lack of privacy.

Those who do not have internet access at home use the local telecenter or pay a few visits to relatives and friends who have internet connection at home or at work. Although there are cyber cafes in Sao Paulo and even in poor neighborhoods, such as Cidade Tiradentes, their prices are just not affordable for these students.

Students from **school B** do not have problems with lack of privacy either, but that is because they have their own personal computer with broadband connection.

Regardless of their socio-economic background or gender, though, students who have access to the internet use it for chatting, downloading music, games, e-mail and for school work - in this order of interest. Most of them have learnt how to use the computer, softwares and the internet by themselves or with the help of friends. When asked about what they liked about the internet, they answered:

> "For me, the internet is something naturally associated with studies. I use the web to study since 1997." F., school B.

> "What fascinates me more in the computer and the internet is the possibility of being able to learn things by myself." M., school B.

> "I like to use the internet for chatting and for school research. I even found a girlfriend via the internet. If I could I would stay in the telecenter the whole day." M., school A.

> "I use the internet to send CVs because I'm looking for a job. I think it is more than fair that the teachers control the use of the computers (*in the telecenter*)." F., school A.

"I like to enter the 'Travessos' website (*a popular musical group*) to send messages to Rodriguinho, their leading singer. All the girls do the same here. It's the most popular website. It has pictures, interviews, lyrics, it's really cool." F., school A.

"I like to use the internet especially for chatting and to check 'Antonio João' (*a virtual pet that grows up a little everyday*)." F., school A.

"I like to search for religious websites and I know of many people who do the same." M., school A.

Most of the students agree that the internet and the e-mail have increased their network of friends. On average, they send about 10 e-mails per day, but receive many more than that - due to spam and newsletters. They all agree that now is much easier to make friends, not only in Brazil, but abroad, as well. In addition to this, they say that now it is possible to receive the latest news from their favorite websites via newsletters.

5.3 - Vocational training

Since there isn't any kind of vocational training in **school A**, students have been trying to create their own ideas about the importance of ICTs in the labor market. In general, they think that the internet is a good information source and that it has had a positive impact on their lives and professional perspectives. In the beginning of our conversation about this issue they seemed to have high expectations in relation to the internet.

"Before, without the internet, I didn't have information about the world." F.

"I want to have the chance to learn informatics, and improve even more my studies." M.

"At the moment I can't afford a course, and I thought the classes and lectures (*at the local telecenter*) were very interesting. It changed many things. This initiative

should come from everyone, if each person did his/her own part things would be better, and people would learn more, and learn about the rights they are entitled to." F.

"I have been learning a lot. In principle, I want to use the computer (*at the local telecenter*) to make researches and write school works, but I think that the contact with technology will help me to get a good job within a few months. It will be good for me (*the course*). When I start working I can already say that I know how to work with the computer." F.

"I'll certainly have better chances of improving my life." M.

"I think that after following and completing an informatics course I can find a good job." M.

"Yes (*the internet has changed my expectations in relation to my career/job perspectives*), because I wasn't sure about what my profession would be. Using the internet I learnt about what kind of courses there are for me." F.

"If you send your CV via e-mail it makes a better 'impression'. The company already assumes that you know how to work with the computer." M.

However, when asked more specifically about what kind of professional career or job they thought their computer skills would be useful for, they were very vague, not knowing exactly how to make an effective use of such skills.

"My father paints decorated walls and I think we can announce his work in the internet." M.

"I don't know, but I think I will learn something. I can't afford a better course now but I hope I can do so later. Then, maybe I can even find a better job in the computer area or something related to it." F.

"I still have to difficulties to deal with the 'buttons', but I know how to draw and write with the mouse and the keyboard. But next week I'm going to learn how to use the internet (at the local telecenter). This will help me with my studies and to have a lighter work. In Bahia (in the Northeast), the ones who have computer skills can work anywhere." M.

It is very important to note that, since only a minority of the poor population manages to finish secondary education, these students are a sort of 'elite' of the neighborhood. Thus, despite the fact that they do not receive any vocational training (related or not to ICTs), I had the impression that, for most of them, completing secondary education has a much more important meaning than the fact of having or not having access to the internet.

"For me, being in the last year is a victory. I know so many people in this neighborhood who studied in this school, studied even with us, but quit in the 7th or 8th grade (*of primary education*), or in the 1st year (*of secondary education*). They had to work to help their families. My cousin had to quit school in the 5th grade because her mother had a baby and she had to stay at home taking care of her little sister, cooking, ironing, things like that." F.

"Don't think that it was easy to get here (*to the last year of secondary school*). My mother spent years fighting with my father, who wanted me to quit school, saying that an educated woman was nonsense, that I could help my mom working as a maid too. Now I want to study even more." F.

"I suffered a lot, inside and outside school, to get to the 3rd year (*of secondary education*). But now that I'm here, it feels great. It's the same as reaching the top of

a mountain and then look all the way down, and see that you came out from the bottom and now you're up here. Wow, it's just great." M.

"I think it is great to be finishing school. I want to continue to study, if I could, I would go to college, I'd like to be electrical engineer. It can be difficult, but I'm going to fight because studying is everything to me. If I can't go to college, I'm going to make a computer course, English course, anything to get a nice job." M.

"It's very thrilling, I'm so proud of myself that I have no words. I'm the first in my family to complete secondary education." M.

Unfortunately, at the same time that they feel happy for being in the last year of school, they are also very skeptical about their future after "conquering" a secondary education degree. This impression can be exemplified with the following answers to the question about the importance of being in the last year of school.

"It's good, but what am I going to do after this? I don't know... it was so difficult to get here, and now I ask myself: so what? Will it be useful for anything? It's really difficult to get a place in the public university, you know that. And classes are during the evenings, which are very disorganized... If it is to waist my time (*studying like this*) I prefer to work in the open market (*selling fruits and vegetables*), or anywhere." M.

"It was good. It makes us feel important (*finishing school*), but what is going to happen to us now? I'm going to try to continue studying, I mean, I'd like to continue studying but I don't know if I'm going to make it. My parents are unemployed and my brothers and I will have to work harder, and I still have a little bother to take care of. I know of some well-off neighborhoods close-by, where there are people looking for maids, so what should I do then?" F.

"I do want to continue studying. I wanted to go to college but this is for rich people, I'll never be able to afford it. (*"But what about public university?", I asked.*) And do you think we have chances to be approved in those exams? There are only 'daddy's kids' there, and we are out of that world for a long time already. Do you know why? What we learn here is not the same as in a school that is... normal. There they have books, teachers have a good salary, they have a decent place to study...I know that they even have computer at home." F.

"My sister works as an attendant in a supermarket. She comes out of the work at 6pm. Well, since she only has to take one bus, it even seems that she can make it to be at 7pm in school for her first class, right? Nonsense. When the bus is not late, then it is her boss that makes her stay until 8pm to check the cashier's balance. What about me? I know that it is going to be the same thing with me." F.

On the other extreme, the main objective of the pedagogic framework of **school B** is to prepare its students to the future job market. For this reason, in the second year of the secondary educational level, students can choose in which area they want to have more specialization: Humanities, Exact Sciences or Bio-medic Sciences. In addition, due to this job market oriented pedagogic approach, the school also emphasizes the learning of foreign languages and computer skills. As one teacher puts it:

"Due to the internationalization, the teaching of foreign languages is very strong here, with the prevalence of the English, but since 1996 we also have the option for the Spanish language. This is because within ten or 15 years the student of today will want to become a leader in the work market. Our present concern is with foreign languages and cutting-edge technologies because this is what is demanded from young people who are entering the job market." M., Informatics teacher.

So, despite of their huge interest in ICTs, especially in the internet, when it comes to professional goals students of school B see computer skills as one more item added to their

educational background, which will eventually insert them in the group of the highly qualified professionals.

> "My parents say that everything they have they got through education, and I also think that I will only get things through my work. And today, to enter to work market you need to have more and more education." F.

> "I'm happy to be in the last year (*of secondary school*), but only this doesn't mean anything. I want to go to a good university, be approved in the vestibular[20]for Unicamp[21] (University of Campinas/SP) and do a course that can give me lots of money." M.

> "Nowadays, everybody knows how to use the computer and the internet, and most of people speak at least one foreign language. Having a college degree is something very normal, too. So, in order to get a real good job, you have to have extra courses, be specialized in a certain area, study abroad... do everything you just to place yourself above the average professional profile." M.

> "It's good to be finishing school. I have notion of everything, the way of learning... people here are very nice, not only with things related to the disciplines, but in lessons of life, too. I think that people here are different. People in other schools have a stereotyped vision, they don't have the same idea of school, they are only interested in grades and if they were approved in the exams. They're not interested in learning. Those who study in public school then... Poor them! The other day, the maid's daughter of my house - she's also finishing school - was worried about an exam. It was about Sciences... If you could only see her notebook! Everything had to be copied from the blackboard, and it was everything wrong. Things that I learned in the sixth grade she didn't know them yet. Poor girl... not a chance (*of competing for a good job*)." F.

As these statements show, the digital divide walks hand in hand with the social exclusion - it reaches more the people with less education, black people and the less developed areas of the country. In his study about ICTs Saith had already stated that the digital divide could also be defined "in terms of ICT access and use gaps between various social categories of the population within any given system: thus, between households with different levels of income and assets; different levels of education; differences in occupations; by language (as English continues to dominate usage and software development); by racial/ethnic group; by gender; and by age. On the whole the pattern of inequalities with respect to ICT mirrors the wider cumulative patterns of social privilege and exclusion" (2001: 5).

Chapter Six - Conclusion

Since it is known that the internet has a great influence in social, economic and cultural areas, it was soon noticed that computers could also play an extraordinary role in the educational field. Today computers connected to the internet are object of desire of all schools. They have massively arrived in private schools and, in a much slower pace, in public schools as well. For this reason, this paper gives an overview of the use of the internet on education and its impact on life perspectives of students. The intention here was not to be in favor or against the adoption of the internet in schools; but rather to show some information about its implementation and impact in two different schools through the opinion of students themselves.

Obviously, the result of this work does not represent the reality of what is happening in the entire country, but it does show a small fraction of the problems and inequalities within the Brazilian educational system through the analysis of this case study.

In Brazil, at present, the lack of educational software is something of the past, computer usage became more and more sophisticated and new utilities were found for this fascinating machine that has always been associated with 'the solution' for many problems. Thus, it would be expected by now that the increasing number of computers in schools would have

started showing the advantages of this technological revolution. Unfortunately, this is not the case. Despite the fact that ICTs can actually contribute for teaching and learning processes, this specific case study shows that only a minority of teachers and students has access to these resources and, more importantly, know how to use them. Yes, computers have arrived in schools but have not added anything to education yet. But because information technology "is not limited to a specific social niche; it pervades society at large, affecting all people at all times" (Hamelink, 1988: 8) several experiences have been put in practice in order to provide people with access to ICTs as a first step to promote digital inclusion.

Governmental initiatives aimed at this objective, however, have not proved to be achieving the expected results thus far. At the local level, the plan of creating telecenters in the most marginalized neighborhoods looks more like political propaganda. The telecenter in Cidade Tiradentes (but other telecenter units within São Paulo city as well) has a very small number of computers with internet connection in relation to the number of inhabitants of the community. At the federal level, things do not look much better. The implementation of the Telecomunidade Program, which was supposed to interconnect schools, libraries, health centers, hospital, and security agencies, has not started yet - its funding (FUST) has been blocked since its creation due to 'fiscal adjustments' policies.

In addition, it is very important to note that, despite the fact that the internet might in fact contain unlimited resources, being connected rarely implies that internet users will be 'contaminated' with what is good in the world wide web. For reaching this purpose, it is necessary to have a good information management. A lot of literature on this issue has shown that information is not the same as knowledge, or in other words, the access to information does not produce a well-prepared student who will transform this information into knowledge, and knowledge into action. As Saith put it, "empowerment comes from effective usage, not from simple access to ICT infrastructure" (2001, 3).

A suggestive evidence of this it that the main use of this tool by teenagers (regardless of their social class), is internet chatting. Of course this form of internet usage should be seen

as a positive one because, since computers are present in all areas of the job market, learning how to use them is part of the literacy process. But this is a poor consolation prize if compared with the educational promises of ICTs.

As the statements of students show in chapter five, in general, the internet has not actually affected or changed their perspectives and dreams. In fact, much of students' attitude in relation to their future is a direct product of the social environment they live in. The well-off, for instance, who have lived with the internet since their childhood and receive a strong educational and vocational background both at home and at school, take for granted the fact that they will, eventually, occupy top leading positions in the job market. On the other extreme, the poor, who do not have access to the internet or to vocational training and have always lived in a much harsher and deprived reality, do not have much hope of getting better jobs than those of their parents, nor expect the opportunity of upward social mobility. Moreover, "given that the school system is spatially segregated, public schools in devalued spaces become mechanisms of reproduction of social devaluation, unable to provide the necessary skills for the informational labor market, and becoming instead training grounds for survival in a world of social irrelevance" (Castells, 1996: 10).

Hence, it is definitely true that computer skills and internet usage, both in schools and in professional life, amplify the social differences. However, such differences are primarily caused and reinforced by the social aspects and actors of the environment within which they live and act: family, neighborhood, school and work. As Castells (2001: 260) explains, although studies on this issue are scarce "it may well be that, in a context where the ability to process information on and with the internet becomes crucial, children from disadvantaged families fall farther behind their class mates with greater information-processing skills that they obtain from their exposure to a better-educated home environment. Differential learning capacities, under relatively similar intellectual and emotional conditions, are correlated with the cultural and educational level of the family. If these trends were to be confirmed, in the absence of corrective measures, the use of the internet, both in schools and in professional life, could amplify the social differences rooted in class, education, gender, and ethnicity".

Wolpert shows another example of how environment and social constraints play a fundamental role in the potential impact of ICTs on low-income communities. He writes:

> "Conventional wisdom stressed the example of upward mobility by earlier immigrant groups and the trickle-down effects of economic expansion. The evidence showed, however, that these communities were both havens and traps for their residents. . . . Good schools and a culture that stressed upward mobility might help their children escape poverty. Many did, but concentrated neighborhood poverty and deterioration of schools and other public services had the opposite impact over time. The longer children resided in communities with concentrated poverty, the greater the children's downward mobility" (1996: 73).

Taking this account as a very similar example of what happens in the Brazilian case, the promise that ICTs may be the key to transform the lives of urban low-income communities seems to be very questionable - to say the least. As Marx (1996: 133) puts it, historically speaking "computation is a technology to which access is limited by peculiarly exacting qualifications in the degree of literacy, general education, self-confidence, and - especially - the verbal facility need for its use. . . . Yet we are asked to believe that the most disadvantaged fraction of the population, through mastery of this intimidating technology, can expect to compete successfully for the available jobs and escape from poverty".

Another author who shares some of this view is William Mitchell. On his paper on equitable internet access, he writes about the importance of providing internet access to low-income communities as a way to promote social inclusion, however, he also recognizes that:

> "Throughout history, the affluent and the privileged have been in a far better position to benefit immediately from new technologies than the poor and the marginalized. Other things being equal, the same will be true of digital technology and computer networks; low-income communities will probably find it more

> difficult than affluent ones to get wired and connected, they will be less able to pay for the necessary electronic appliances, they will not be such attractive markets for software and online content, and they have fewer resources to educate their members to meet the new challenges and opportunities of the digital age" (1996: 163).

What must be clearly understood is that computer and internet access (or the lack of it) is only part of the problem. The digital divide is, in fact, only a mirror of the social divide in Brazil, as stated in chapter two. All the material assembled during field work reflects, once again, the socio-economic inequalities that are seen in the rest of the country. The disparities are astonishing when one compares the living standards of two distinct neighborhoods, the infrastructure and resources of each school, the qualification of the teachers, the educational background and professions of the parents. Not surprisingly, the profile of the digitally included is the same as of the socially included: they are 'whiter', more and better educated, have a higher income and, consequently, have a much higher living standard. In this sense, the way Brazilian society functions, has not changed much in the last five centuries.

However, for the same reasons that the State cannot exempt itself from providing its citizens with indispensable basic services and equality of opportunities for all, it must also provide equitable access for all, since it is a fact that "today computer literacy is a prerequisite for most desirable jobs, and access to the new technology is every child's democratic right (Marx, 1996: 133).

Education is an issue concerned to all and informatics in education is one more challenge for the coordination of the State along with the civil society. Digital inclusion has to be about the widespread capacity of acquiring, interpreting, expressing, producing and organizing knowledge, and transforming knowledge into action. As Mitchell (1996: 153) wittily puts it, "as with water, sewer, gas, and electric service, members of low-income communities need to get the 'pipes' - in this case, pipes for digital information - connected

to their homes, workplaces, schools, libraries, community centers, and other potentially important delivery points."

Endnotes

[1] The new technological revolution has received several denominations: Revolution of New Information Technologies, Digital Revolution, Informational Revolution, The Age of Access, among others (Silveira, 2001). This paper, however, will refer to it as Knowledge Society, an expression that is also widely used.

[2] For more on technological determinism, see "Does Technology Drive History? The Dilemma of Technological Determinism", by Merritt Roe Smith and Leo Marx.

[3] Here, it is important to specify what "empowerment" implies. As Haynes (1997: 120) explains: "empowerment means acquiring the awareness and skills necessary to take charge of one's own life chances. It is about facilitating the ability of individuals (and groups) to make their own decisions and, to a greater extent than hitherto, to shape their own destinies. In sum, for increased empowerment, people must be able to participate in decision-making". Taking this definition into account, one would inevitably ask if technology really offers the opportunity of empowerment to the people.

[4] See "Brasil tem 5ª maior população do mundo", O Estado de S. Paulo, at http://www.estadao.com.br/agestado/noticias/2001/mai/09/44.htm

[5] See "Os números da exclusão social no Brasil", O Estado de S. Paulo, at http://www.estado.estadao.com.br/editorias/2002/12/04/ger015.html

[6] See "Brasil tem 94,9% de crianças entre 7 e 14 anos na escola", O Estado de S. Paulo, at http://www.estadao.com.br/agestado/noticias/2002/mai/08/141.htm

[7] See "A história da Internet: Brasil", newspaper O Estado de S. Paulo, at http://www.estado.estadao.com.br/edicao/especial/internet/brasil.html

[8] According to the Managing Committee of the Internet Brazil, www.cg.org.br

[9] According to the study "Map of Digital Exclusion", whose results were announced on 10/04/2003.

[10] The National Survey by Sample of Households (PNDA) as well as the Demographic Census 2000 were conducted by the National Institute of Geography and Statistics (IBGE).

[11] Interview with Marcelo Neri published by the newspaper Folha de S. Paulo, on 10/04/2003.

[12] At present, it is estimated the FUST collects about R$ 1 billion per year in taxes paid by telecom companies.

[13] See "PT vai usar Fust para cumprir meta de superávit em 2003", Folha Online, at http://www1.folha.uol.com.br/folha/dinheiro/ult91u60163.shtml

[14] According to a study of the Center of Population Studies of the University of Campinas.

[15] Data from the Program of Improvement of Information about Mortality (Pro-Aim), of the Municipality of São Paulo.

[16] The data is part of the study "Geography of the Brazilian Education 2001", published by the National Institute of Educational Studies and Researches (Inep), of the Ministry of Education.

[17] In general, Brazilian public universities offer high quality education. For this reason, the competition for their courses is very big. All candidates to a graduation course in one of these universities have to go through two or three series of very demanding and difficult exams. Ironically, it is a widely known fact that the vast majority of candidates who are approved are former students from private schools who are much better prepared for this kind of exam.

[18] The survey was done in 2002 and its results were published on 10/04/2003. Despite the fact that only ten States took part in this survey, which represents 30% of the 2,5 million education professionals, CNTE says that the portrait reflects the reality of the country's public educational system.

[19] Former Health Minister of the government of Fernando Henrique Cardoso.

[20] "Vestibular" is an exam required to enter any college or university in Brazil. The exams for public universities, such as Unicamp and USP, are the most difficult and most competitive ones.

[21] Unicamp is a public university localized in the city of Campinas, close by to Sao Paulo city. It is considered the best university in Brazil and one of the best in Latin America.

Annex

Model of Questionnaire for Quantitative Survey.

1. Age and place of birth:
2. Profession and place of birth of your father and mother:
3. Do you have older siblings? What do they do?
4. Do you work? Where?
5. Why do you come to school?
6. What do you like the most in your school and what do you dislike in it?
7. How do you like the computer/nternet room of your school?
8. How often do you use the computer/internet room in school?
9. What do you think of your computer/internet classes? Are they interesting or useful for you?
10. Do you have internet connection at home?
11. Since when do you use the internet?
12. Do you think computer and internet skills are important in your life? Why?

Model of in-depth interviews (To complement the survey).

Obs.: this document contains a set of suggestions to facilitate the focus and expediency in carrying out the interviews. Other elements might be modified and/or added depending on the flow of each interview.

Use of the computer:

1. How important is the computer for your daily life? Please explain.
2. Do you have computer at home? If 'Yes', how many?
3. How many people use it?
4. Do you think you have enough privacy to use the computer/internet?
5. Do you have access the internet outside the house?
6. Do you go to cyber cafés?

Internet Use – Content:

7. Where and when was your first contact with the internet?
8. What did you largely use the internet for in the beginning?
9. Can you tell me what you use the internet for these days?
10. What interests you most on the internet? (music, chat, games, news, education, e-mail etc.)
11. Which website do you visit most often? (what is the most popular site in your opinion?)
12. Can you now get information that would have been unavailable otherwise? What sort of information?
13. Do you use the internet for your school work? Give an example.
14. Some say email and the internet opened the world for them, do you agree, and why (not)?
15. How often do you use e-mail? How many e-mails do you receive/send per week?
16. Has the internet or email increased your network (i.e. connections with people you met in the internet)?

Internet Use – Constraints:

17. If you think of the constraints you experience in using the internet and/or email, can you give a list of them?
18. What do you consider the most crucial constraint of access to the internet?
19. How old is your computer?
20. What's the configuration of your computer?
21. What software do you use? Do you have an anti-virus installed?
22. Did you get any training to enhance your computer skills? How did you learn to use the computer and the internet?

Visions:

23. How do you think the internet has affected your life?
24. Do you think your computer/internet skills will help you after you finish school?
25. Has the internet changed your expectations in relation to your career/job perspectives?
26. For what kind of career/job do you think your computer and internet skills will be useful?

Model of Questionnaire for teachers of public and private schools.

1. Age:
2. Male ( ) Female ( )
3. Do you teach in a public of private school?
4. Do you use the internet? If 'Yes', since when?
5. Do you have internet connection at home?
6. Do you use the computer for your daily work? Please explain.
7. Does your school have a computer room for the students?
8. Do you think it is a well equipped computer room (number of computers, quality/age of computers, fast internet connection, etc)?
9. Did you get any training to enhance your computer skills?
10. How often is do you use the computer room for your classes?
11. Do you think that the use of the internet in classes has affected the level of interest and participation of students?
12. Do you think it has affected the quality level of students' work?
13. Do you think that the use of ICTs has affected drop out rates?
14. Does your school use ICTs as a tool for vocational training?
15. Of your former students, could you tell what happened to them after they left school? Did they manage to find a job? If so, what kind of job?
16. Does your school participate in school networks of educational resources for exchange of experiences and information?
17. How do you envision the future role of the internet for your school and for lecturing?

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